California Regional Water Quality Control Board
San Francisco Bay Region

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#18

TO: Craig J. Wilson
Division of Water Quality
State Water Resources Control Board

FROM: Thomas E. Mumley
Statewide TMDL Program Manager

DATE: February 13, 2004

SUBJECT: TMDL Roundtable Comments on Draft Water Quality Control Policy for Developing *California's Clean Water Act* Section 303(d) List - December 2003

Thank you for the opportunity to provide comments on the proposed Policy. As you know, the staff of the Regional Boards has many years of experience conducting water quality assessments and developing 303(d) lists of impaired waters. We are well aware of the challenges and shortcomings of past listing exercises and welcome the benefits afforded by a policy, such as greater consistency amongst the Regions and better documentation of listing recommendations and decisions. Unfortunately, we find significant technical, procedural, and legal flaws and shortcomings in the proposed Policy. We provided detailed recommendations on a multitude of technical and procedural issues for consideration in developing the policy, but regrettably, most of these recommendations have been ignored or overlooked in the proposed Policy. Nevertheless, we are committed to assist in the development and implementation of a more workable and less controversial policy that is also less vulnerable to legal challenges.

The proposed Policy is inconsistent and in some parts in conflict with existing water quality standards, the Surface Water Ambient Monitoring Program, and our recently developed TMDL Guidance. The Policy, as proposed, does not reflect the details of many specific water quality standards such as spatial and temporal applicability and frequency and duration of allowed non-attainment. Very limited monitoring programs and data have significantly challenged and constrained previous listing exercises in California. Unfortunately, the proposed Policy exacerbates rather than alleviates this problem. The data requirements of the proposed Policy are vastly beyond those provided by SWAMP, and most troubling is that the proposed policy provides dischargers with a disincentive (a smaller dataset is less likely to result in listing). Our recently developed TMDL Guidance is based on the premise of a lower threshold for listing that is more consistent with existing monitoring programs and resolves concerns about listing errors by calling for confirmation of impairment findings and, if necessary, further assessment as part of a TMDL project.

Our most critical issues are summarized below in four general areas.

1. Standard Statistical Method and a Weight of Evidence Method

Issue – Over-reliance on binomial method with 10% acceptable exceedance rate as method for determining compliance with water quality standards.

detailed evaluation of the adequacy of a program, in addition to performing a water quality assessment. Determining whether non-attainment of standards is solely due to natural background levels requires an assessment of sources. The Regions are also required to make a distinction between impairments that are due to pollutants versus pollution, which may require an evaluation that cannot be readily performed with available information. The recently completed TMDL Guidance provides procedures and mechanisms for evaluating and recognizing enforceable programs, and deciding when and how to consider natural sources and pollutants versus pollution.

4. Priority and TMDL Schedules

Issue – The Policy directly links priority setting with specific schedules for TMDL completion.

Recommendation – The priority of a listing and the schedule for a TMDL should be separate. Priorities for addressing all identified impairments should be established. Work planning (stating when an impairment should be addressed) can be dealt with in the context of the USEPA/State Board partnership agreement and each Fiscal Year's work plan.

Discussion - The proposed policy goes beyond the regulations that require the state to list impairments as high, medium, or low and to identify those that are targeted for TMDL development in the next two years. The policy requires the Regional Board to determine whether a TMDL will be used to resolve an impairment; determine when that TMDL will be completed; and assign a completion date consistent with that priority. Scheduling completion of TMDLs involves a program planning effort that goes well beyond the needs of an assessment. The Regions will need to know the estimated level of effort to address each listed water; how the listed water will be addressed per the TMDL (Impaired Waters) Guidance; and the amount of resources available to address different impairment issues. This expansion in scope would bog down the assessment effort and require important planning decisions to be made based on very limited information. Use of the normal program planning processes for identifying how impairments will be addressed is more appropriate then piggybacking on the Listing effort.

In addition to these comments on critical issues, we are also submitting more detailed comments that expand on these issues and others. Our detailed comments also relate to proposed revisions to the policy that we present in a redline/strikeout format. Finally, we are submitting for your consideration the recommendations and comments they we previously submitted to State Board staff prior to public notice of the draft Policy.

We appreciate your consideration of these comments and restate our commitment to work with you and your staff on the development and implementation of a more workable policy.

Attachments

- Detailed TMDL Roundtable Comments
- Proposed Policy Revisions
  - Redline/Strikeout Version
  - Revised Version
- Pre-Draft Policy Recommendations
  - Comparison of Draft Policy and TMDL Roundtable Recommendations
  - December 2002 TMDL Roundtable Recommendations
  - March 2003 TMDL Roundtable Recommendations

Detailed TMDL Roundtable Comments on the December 2003 Draft Listing Policy

All references to Sections below refer to the section numbers in the December 2, 2003 version of the Draft Listing Policy.

1. Standard Statistical Method and a Weight of Evidence Method

Recommendation - Use the binomial method as an initial screen of numeric data to determine attainment of standards, **and** use the weight of evidence procedure recommended by the Regions *if some evidence contradicts the conclusion reached from the binomial method.*

Suggested Changes to Text – The text in Sections 3 and 4 has been revised to clarify the applicability of the binomial method. The changes clarify that the binomial method is only applied to numeric data. A number of limitations on the use of certain types of data and information are eliminated from the Policy.

The "Alternate Data Evaluation" section has been renamed the "Weight of Evidence" method and has been modified. The "Weight of Evidence" method describes the types of documentation that must be provided to justify listing a water body, if the binomial method is either inapplicable or would suggest not listing. The text deleted from various identified "Listing Factors" is either combined into one section or reflected in the "Weight of Evidence" method.

Justification – The binomial method is not sufficient to identify waters not attaining standards or to delist waters. Primary reliance on the binomial method would lead to a redefinition of almost all State and federal water quality standards. Most standards are written as a maximum (not to exceed), a minimum (not to go below), or have an allowed frequency of exceedance (e.g. once in 3 years for EPA aquatic life criteria). As currently described, the Draft Listing Policy would allow those standards not to be attained, *but would not require listing.*

For example, dissolved oxygen objectives are often written as a minimum with no allowed frequency of going below that minimum. The Listing Policy would allow dissolved oxygen to be at or near zero for one month out of a year (i.e. less than 10% of the time) with no resulting requirement to list. The arbitrary choice of a 10% exceedance rate, when no such allowable rate is specified in the water quality objective, is a de facto rewriting of water quality standards.

This deficiency of the binomial method necessitates the description of a "Weight of Evidence" method, which explicitly considers such critical issues as how the standard is defined in regulation. The "Weight of Evidence" method also takes into consideration critical data and information that the binomial method filters out. The binomial method cannot and does not account for the magnitude of the exceedance, when water quality standards are violated, whether past observations of exceedances are likely to recur, or how various lines of evidence might "fit" together to support a listing or delisting decision.

The current "Alternate Data Evaluation" section does not provide a robust and comprehensive alternative to the binomial method. The "Alternate Data Evaluation" section seems to establish 6 criteria that must be met in order to justify a listing. The criteria to use an equivalent level of

confidence to the binomial method means the "Alternate Data Evaluation" would have the same deficiencies as the binomial method itself. A different statistical method may be used under this scenario, but all of the assumptions would need to be the same.

The "Weight of Evidence" method can also be used for de-listing. In some instances, the binomial method may require continued listing, even when the weight of evidence suggests that standards are attained. With a "Weight of Evidence" approach non-numeric information, such as knowledge of a site clean-up can be brought to bear in assessing compliance with standards.

2. Confusing, Redundant, or Unnecessary Language

Recommendation – The Policy should be brief, non-repetitive, and focused on the requirements State Board wishes to establish to assess the status of the State's surface waters. Any guidance or suggestions should be developed as separate technical modules (as is being done with the TMDL Guidance).

Suggested Changes to Text – Numerous changes to the text are suggested in sections 1, 3, 4, and 6 to clarify text, remove redundant language, and to clarify application of the Policy. A discussion of and justification for the specific changes are described below.

Justification - Section 1 - Language regarding how the Policy is not to be used is deleted. The purpose of the Policy is already described, so it is unnecessary to identify how it shall not be used. Language is added to clarify that the Policy is to assess attainment of standards in surface waters and is not limited to attainment of specific types of standards (i.e. only pollutant-based standards). This clarification is made, since Section 303(d)(1)(A) requires the State to identify waters not attaining *any* standard and to account for the severity of the *pollution* in priority ranking. The Draft Policy focuses exclusively on *pollutants* which are a subset of pollution by definition in the Clean Water Act.

Section 3 - Redundant language on the application of the Binomial Method found in Sections 3.1.1, 3.1.2, 3.1.3, 3.1.5, 3.1.6, 3.1.8, and 3.1.9 is combined into one section. It is unnecessary to repeat the same information and describe the same assessment approach in multiple sections.

In section 3.1, references to other sections on data preparation are deleted, as are limitations on the use of certain types of data. The sections on data preparation stand on their own. Reference to a limited number of those sections implies that the other sections on data preparation may not be applicable. Of particular concern are the limitations put on the use of information from a spill, violation of a permit or WDRs, and visual information. These limitations are not justified or necessary. Any information and data on the conditions of a water body must be considered regardless of the source. It appears, but it is not clear, that the intent is to preclude listing a water body if the cause of nonattainment of water quality standards is due solely to a spill or violation. This concept may be appropriate under certain scenarios such as when the nonattainment is short lived and/or remediated via corrective action. Whereas, when there is a spill or violation in conjunction with other discharges and/or spills or violations, it would make no sense to limit use of information or data associated with the event to assess to water body. Furthermore, a responsive action to a spill or violation is often collection of data on conditions throughout a

water body not only within the vicinity of a discharge. Limiting use of these data is clearly an unintended consequence.

Sections 3.1.2, 3.1.5, 3.1.7, 3.1.8, and 3.1.9 are deleted, but key concepts are incorporated into the "Weight of Evidence" section.

The discussion of the cause of depressed dissolved oxygen in section 3.1.2 is eliminated. Depressed dissolved oxygen can have a number of causes and it is confusing to have a limited discussion of one possible cause (nutrients). Since it is not clear why such direction is necessary to conclude dissolved oxygen standards are not met, the discussion is deleted.

The discussion in section 3.1.5 on bioaccumulation is eliminated. The limited nature of the discussion provides little policy direction, and, therefore is unnecessary.

Language in section 3.1.6 has been eliminated that refers to follow-up studies that must be conducted following identification of toxicity. Reference to appropriate reference and control measures is eliminated, since section 6 discusses data quality issues. Discussion of how to associate toxicity test results to specific pollutants is eliminated, since the discussion implies that there are a limited number of ways of associating toxicity to pollutants.

The requirement to complete a toxicity identification evaluation (identify the pollutant causing or contributing to the toxicity) prior to development of a TMDL is problematic for several reasons. A toxicity identification evaluation is most often very difficult and expensive, and the concept of "completed" is very subjective. In many cases it may be easier and less expensive to identify the source or sources causing the toxicity and seek a toxicity reduction evaluation leading to corrective action. In such cases, it is possible to develop a toxicity-based TMDL or its equivalent. The restriction of "prior to development of a TMDL" implies that no other TMDL related effort could be conducted even in cases where it would be more cost-effective and timely to consider toxicity identification as part of the development of a TMDL.

Section 3.1.7 is eliminated to avoid redundancy and lack of clarity. The key concepts are incorporated into either section 3.1.1 or into the Weight of Evidence method.

Section 3.1.8 is eliminated to avoid redundancy and lack of clarity. The key concepts are incorporated into either section 3.1.1 or into the Weight of Evidence method.

Section 3.1.9 is eliminated to avoid redundancy and lack of clarity. The key concepts are incorporated into either section 3.1.1 or into the Weight of Evidence method.

Section 3.1.10 is clarified with respect to the State's anti-degradation policy. As currently written, it is not clear that "a trend of declining water quality" is to be specifically reviewed with respect to the anti-degradation policy. Such reference is necessary, since degradation of water quality is allowed if certain conditions under State Board resolution 68-16 are met.

Section 3.1.11 has been eliminated and replaced with the "Weight of Evidence" method. Section 3.1.11 lacks clarity with respect to how a waterbody would be listed, and otherwise, puts

unnecessary and unjustified restrictions on "Alternate Data Evaluation". It is not clear what types of "scientifically" defensible procedures would be acceptable for analyzing data and how certain types of procedures could be shown to be equivalent to the Binomial Method in terms of confidence level and hypothesis testing. For example, it is scientifically defensible to evaluate data graphically and to consider seasonal patterns of exceedances, but it is not clear how such an evaluation would meet this criteria. Further comments on use of a null hypothesis are provided below under **5. Other Significant Issues**. Section 3.1.11 also appears to require that a narrative objective not be attained in order to list under the "Alternate Data Evaluation". It is not clear why numeric standards could not be evaluated using an alternate to the Binomial Method.

In Section 4, redundant reference to the application of the binomial method is combined into one section. This section includes numerous subsections that repeat the identical evaluation approach for different pollutant types. Such redundancy is unnecessary.

In Section 6.2.1 language regarding the order that information should be reviewed is eliminated. It is unclear why the Policy should specify the order in which to evaluate information, since Regions would just evaluate all relevant information together; therefore this language is deleted.

In Section 6.2.2.2, documentation of decisions is substituted for individual fact sheet preparation. Rewording is suggested to ensure that the Regional Board documents the basis of each decision, but does not require the Region to repeat information that might be common to a number of recommendations. Redundancies in the type of documentation required are deleted in Section 6.2.2.2.

In Section 6.2.3, language regarding the primacy of the Listing Policy over Regional Board policies in interpreting narrative objectives is eliminated. It is not clear why it is necessary for the Listing Policy to supersede Regional Board Basin Plans and it is unclear how this section would do so. If there were any conflict between the interpretation of narrative objectives described in the Listing Policy and in Basin Plans, a great deal of confusion would be created among the public. For purposes of the Listing Policy, attaining narrative objectives would mean one thing, while for all other Regional Board actions attainment of objectives would mean something different. The procedure for selecting evaluation guidelines is also clarified – with State guidelines preferred over federal. This is done to ensure consistency between State agencies and between Regions in selecting appropriate guidelines.

Section 6.2.5.3 is eliminated since Section 6.2.5.6 discusses aggregation of data by reach (e.g. spatial representation).

Language in Section 6.2.5.4 regarding how samples should be collected is deleted, since this provides monitoring guidance that is not appropriate for a Listing Policy. Language regarding the use of data collected on a single day or during a single event is eliminated, since this language suggests should not be used as the primary data to support Listing. The justification for such a requirement is unclear and the meaning of "primary" data in the context of this section is not clear.

Section 6.2.5.5, which describes minimum number of samples, is eliminated. This Section refers to a Planning List, which is not described elsewhere. In addition, the application of the binomial method already discusses how small sample sizes would be handled, so this Section appears unnecessarily redundant. There is no need to restrict the number of samples for the "Weight of Evidence" method, since multiple lines of evidence can be used to support a listing or delisting decision.

The first paragraph in Section 6.2.5.6 is eliminated since a similar description of aggregation of data can be found in the following paragraph.

Section 6.2.5.9 was changed to clarify that data should be transformed in a manner consistent with how the standard is expressed. Reference to averaging samples collected less than seven days apart is eliminated. If a standard does not include an averaging period, it generally means no averaging period was adopted and the standard must be considered a maximum (or minimum depending on the parameter measured).

In Section 6.2.5.10 redundant language was struck and references to "samples" and "measurements" were changed to "data points". The change to "data points" was made, since once individual samples or measurements are averaged or transformed the binomial method is applied to the new "data point" and not to the individual samples or measurements.

In Section 6.2.12 language that provides examples is removed to emphasize the parts of the discussion that provide policy direction.

In Section 6.3 changes are made to the description of the Regional Board approval procedures to be more consistent with legal requirements and standard practices.

In Section 6.4 references to "fact sheets" are changed to "documentation" for consistency with changes suggested to Section 6.2.2.2.

3. Proposed Policy goes beyond assessing attainment of standards

Recommendation –Eliminate burden on Regional Boards beyond performing the assessment of whether water quality standards are being attained.

Suggested Changes to Text – The Enforceable Program Category in Section 2.3 is eliminated, together with the Enforceable Program Factors in Section 3.3. Text in Sections 3.1 that refers to not listing waters that reflect "... physical alteration of the water body that cannot be controlled or natural background conditions..." has been eliminated. References to "pollutants" have been changed to "pollution".

Justification - The Enforceable Program Category would require the State to do much more than determine whether a water is attaining standards as part of the 303(d) Listing process. The TMDL Guidance, which will soon be considered by the State Board, will outline alternatives to TMDL development, including procedures for recognizing enforceable programs. There is no

reason to duplicate those procedures or to link the determination of an enforceable program to the Listing Policy.

Such a linkage would require the Regional Boards to make two determinations regarding each water: 1) Are water quality standards being attained?; and 2) Is there an "enforceable program" that will ensure attainment of standards? To answer the second question, the Regional Boards and State Board may need to consider a vast amount of additional data and information as various interest groups try to demonstrate that they have an enforceable program in place.

Demonstration that an enforceable program is viable and will result in attainment of standards is not trivial as evidenced by the seven criteria that must be evaluated. Many of the factors in the enforceable program category are similar to steps that must be taken as part of TMDL development. The Regions would need to analyze the sources; quantify the level of contribution of each source; evaluate the effectiveness of the management practices or controls to be put in place; and assess whether the combination of all of the controls and practices will result in attainment of standards.

Identification of enforceable programs will be an important component of each Region's evaluation of the appropriate action to take to address impaired waters. Such a process should be done carefully and deliberately and not "piggy-backed" onto a water quality assessment process that is already resource-intensive and conducted in a short time frame.

The draft Listing Policy states that waters impaired by "natural background conditions" or that reflect "physical alteration of the water body that cannot be controlled" should not be identified on the 303(d) List. The TMDL Guidance describes how such identified waters can be addressed, so there is no need to determine how to address these waters as part of the water quality assessment process. Determining whether non-attainment of standards is due to "natural background conditions" would require a source analysis that quantifies both "natural" and human sources of pollution. The second identified "off-ramp" from the List would require a determination that 1) physical alteration of the water is the cause of non-attainment of standards; and 2) that the physical alteration cannot be controlled. The time, resources, and information requirements are much greater than what is required to determine the standard is not attained.

The draft Listing Policy also focuses on "pollutants" versus "pollution". Section 303(d)(1)(A) of the Clean Water Act requires the identification of all waters not attaining standards, since it requires a priority ranking based on the severity of the *pollution*. TMDLs are only required for certain *pollutants*. These distinctions are important since the Clean Water Act defines *pollution* broadly as "... the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water", whereas, *pollutants* are defined as a subset of pollution. The Listing Policy should require the identification of all waters not meeting standards to be consistent with federal law and use the TMDL Guidance to identify the options for addressing different pollution problems. Trying to distinguish between pollution and pollutants may require additional evaluation that is not part of the water quality assessment process – for example, a dissolved oxygen problem may be due to pollutants such as nutrients as well as alterations in the stream channel configuration or flow regime.

4. Priority and TMDL Schedules

Recommendation – The priority of a listing and schedule for TMDL should be separate. Priorities for addressing all identified impairments should be established. Work planning (stating when an impairment should be addressed) can be dealt with in the context of the USEPA/State Board partnership agreement and each Fiscal Year's work plan.

Suggested Changes to Text – In Section 4 remove the language that associates priorities with specific schedules for TMDL development.

Justification – The TMDL Guidance identifies the options available to address surface water impairments. Development and adoption of a TMDL will be one of the options, but not the only option. The priority ranking should focus on the relative importance of addressing the impairment, whether a TMDL is the appropriate tool or not. The specific schedule for addressing an individual impairment will be based on the resources available; the proposed option pursued for addressing the impairment; and whether the water and impairment can be grouped as part of a larger project. Evaluation of the various factors that go into scheduling is more appropriately done in the context of year-to-year work planning and consistent with the US EPA/State Board partnership agreement.

It will be important for the Regional Boards and State Board to communicate their plans for dealing with impaired waters, but such communication need not be linked to the Listing Process. The TMDL Project Tracking Tool could be used (or modified as needed) to provide the public with information on how an impairment is being addressed; when the Regional Board will address it; and where the Regional Board is in the process.

5. Other Significant Issues

The Alternatives Analysis in the FED should be revised to provide a rationale for the each alternative that is chosen. Currently, the FED describes different alternatives and identifies the preferred alternative, but provides no apparent rationale for the choice of alternative. This approach does not appear to be consistent with CEQA requirements.

The Listing Policy should include a clear Sunset Provision. The Listing Policy is largely untested and the consequences of implementation of this Policy are not clear. A Sunset Provision would allow the State Board and public to review whether the Policy is effectively implementing federal law and meeting the goals of the Policy. A sunset date of 2008 or 2009 is suggested to allow the Policy to be applied at least twice prior to review.

The Listing Policy does not establish a clear Listing Cycle. Currently, federal regulations require an update to the 303(d) list every two years. The process outlined in the Draft Listing Policy is similar to the process used in 1998 and 2002. The requirements for Regional Board hearings may add additional time to what we have observed in the past. It should be noted that for the 1998-303(d) list update, the Regions began the assessment process in the spring of 1997 and US EPA did not approve the list until the summer of 1999. For the 2002-303(d) list update, the solicitation process began in February 2001 and US EPA did not approve the list until July 2003.

The listing process defined in the Draft Policy will likely continue to take more than 2 years to complete. This will put the State in a situation of continually updating the 303(d) list. As an alternative, the State Board should pursue a longer 303(d)-list update cycle (e.g. four years). If federal regulations require a 2-year update, the State Board could define an intensive update every four years (i.e. full review of all available data) with a less intense update in between (e.g. a review of specific requests for changes).

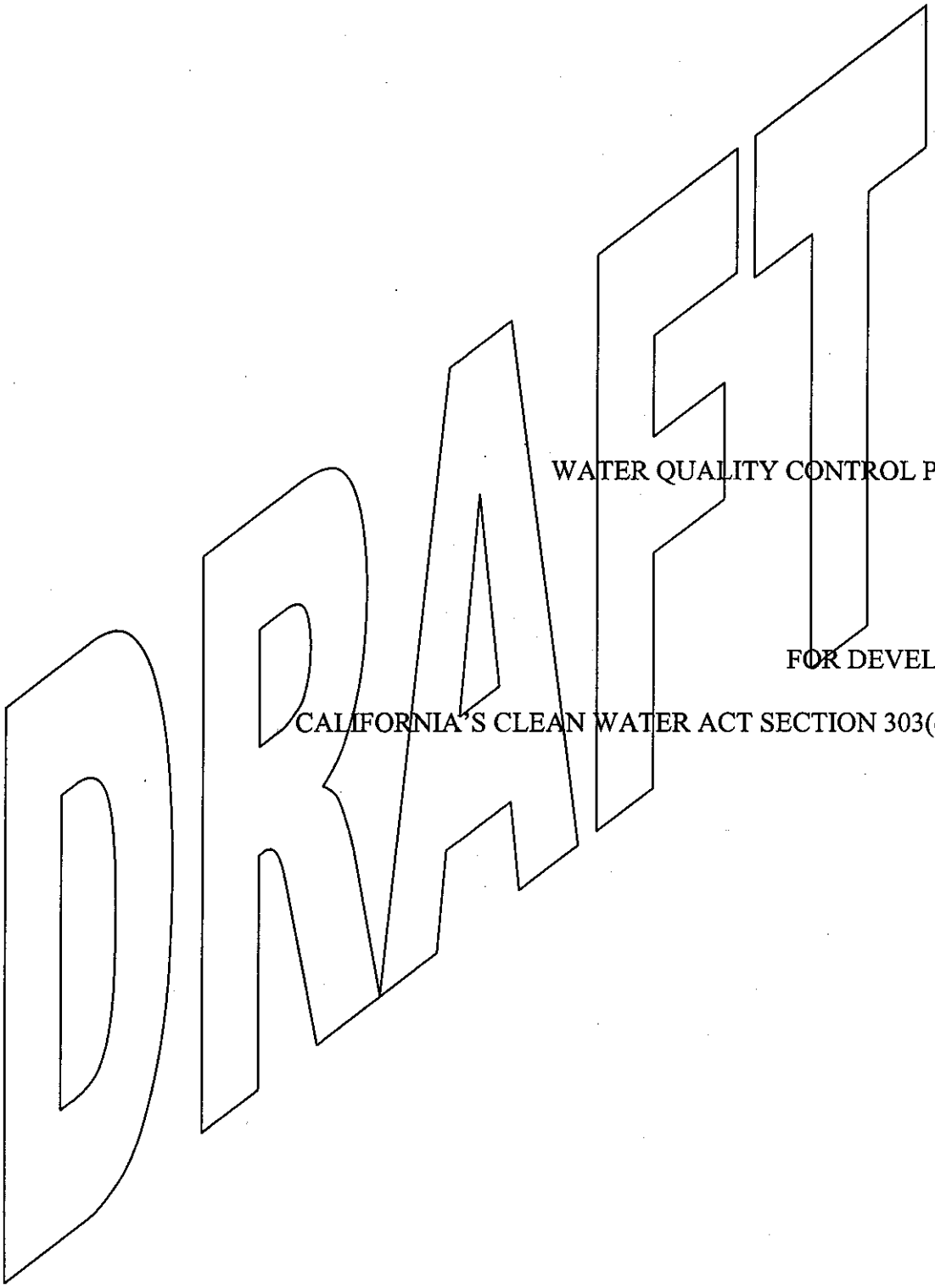
The Listing Policy should use the Technical Module approach used in the TMDL Guidance. The Listing Policy itself should just define general parameters for conducting the 303(d) List assessment. Over time, specific technical modules should be developed that would provide guidance, but not mandates, on how to conduct specific types of assessments (e.g. bioaccumulation; pathogens; nutrients; sediment). There are a wide variety of technical issues that must be considered in performing assessments for different types of pollution. The science in performing such assessments is evolving and should not be mandated within a policy. Guidance, which could be updated prior to each Listing cycle, would allow the Regions and State Board to use the most current science in evaluating available data and information to determine standards attainment.

The Draft Policy requires use of the null hypothesis that water quality standards are attained when evaluating data. This is counter intuitive, inconsistent with other water quality programs such as the Surface Water Ambient Monitoring Program, and our recently developed TMDL Guidance, and creates a disincentive to monitor. Hypothesis testing is fundamental to implementation of the scientific method wherein a hypothesis is formulated based on consideration of available knowledge and information. Then the hypothesis is tested resulting in its acceptance or rejection. The use of the hypothesis that water quality standards are not attained is clearly appropriate when there is information indicating there is or may be impairment. Then the complete readily available data set would be used to verify the hypothesis. Note that use of the hypothesis that water quality standards are not attained does not mean that all waters in California are assumed to be impaired a priori. Use of the hypothesis is restricted to situations where there is some information indicating impairment.

Use of the null hypothesis that water quality standards are attained requires a high burden of proof and data requirements well beyond what will be generated by the Surface Water Ambient Monitoring Program. Furthermore, it creates a disincentive for the regulated community to monitor since a smaller data set is less likely to result in listing. On the other hand, use of the null hypothesis that water quality standards are not attained creates in incentive to monitor since there is less chance that a water body will be found impaired incorrectly. Regardless, use of the lower threshold of proof afforded by the null hypothesis that water quality standards are not attained is consistent with the TMDL Guidance. The TMDL Guidance calls for review of the finding of impairment and further assessment if necessary as an initial step in the TMDL development process.

State of California

STATE WATER RESOURCES CONTROL BOARD



WATER QUALITY CONTROL POLICY

FOR DEVELOPING

CALIFORNIA'S CLEAN WATER ACT SECTION 303(d) LIST

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WATER QUALITY CONTROL POLICY FOR DEVELOPING CALIFORNIA'S CLEAN WATER ACT SECTION 303(d) LIST

1 ~~*Introduction*~~*General Provisions*

Pursuant to California Water Code section 13191.3(a), this State policy for water quality control (Policy) describes the process by which the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs) shall comply with the listing requirements of section 303(d) of the federal Clean Water Act (CWA) [303(d) list]. The goal of this Policy is to establish a standardized approach for developing California's section 303(d) list. It is the intent of this Policy that the approach be as simple and transparent as possible, while ensuring that all surface waters not attaining standards are clearly identified.

CWA section 303(d) requires states to identify surface waters that do not meet applicable water quality standards[1] after the application of certain technology-based controls. ~~The~~This Policy establishes a two-part methodology ~~to~~ for evaluating attainment of water quality standards in California's surface waters. The first part applies a standard statistical method (Binomial Method) to determine whether standards are attained. If a water quality standard is clearly not attained using the Binomial Method, the surface water is listed with no requirement for further evaluation. If the Binomial Method does not trigger listing, but some evidence indicates potential non-attainment, this Policy requires that the State use a second method. This Weight of the Evidence Method requires the State to evaluate all available information to determine whether standards are attained.

~~be used~~The methodology to develop the section 303(d) list~~[40 CFR 130.7(b)(6)(i)]~~ is established by this Policy and includes:

- ~~California Listing Factors and Delisting Factors;~~Listing factors and de-listing factors;
- ~~the~~The process for evaluation of readily available data and information; and
- ~~Total Maximum Daily Load (TMDL) priority~~Priority setting and scheduling.

This Policy applies only to the listing process methodology used to comply with CWA section 303(d). In order to make decisions regarding standards attainment, this Policy provides guidance to interpret data and information by comparison to beneficial uses, existing numeric and narrative water quality objectives, and antidegradation considerations. ~~The Policy shall not be used to:~~

~~- determine compliance with any permit or waste discharge requirement provision;~~
~~- establish, revise, or refine any water quality objective or beneficial use; or~~

[1] Water quality standards include beneficial uses, applicable numeric or narrative water quality objectives, federal water quality criteria promulgated as California standards, and anti-degradation requirements.

~~translate narrative water quality objectives for the purposes of regulating point sources.~~

~~2Structure of the CWA Section 303(d) List~~

~~This section contains the categories of waters to be included in the section 303(d) list. Sections 3 and 4 contain the factors that shall be used to add and remove waters from the list. The California section 303(d) list shall contain the following categories:~~

~~2.1Water Quality Limited Segments Category~~

~~Waters shall be placed on this portion of the section 303(d) list if the water quality standard is not attained, the standards nonattainment is due to a pollutant or pollutants, and remediation of the standards attainment problem requires a TMDL.~~

~~This category constitutes the list of water quality limited segments for which one or more TMDL(s) are needed. A water segment shall be placed in this category if it is determined, in accordance with the California Listing Factors, that a pollutant has caused or is suspected of causing standards to not be attained.~~

~~Where more than one pollutant is associated with the standards not attained for a single water segment, the water segment shall remain in this category of the section 303(d) list until TMDLs for all pollutants have been completed, are approved by USEPA, an implementation plan is adopted, and water quality standards are attained.~~

~~2.2TMDLs Completed Category~~

~~Water segments shall be listed in this category once a TMDL has been developed and approved by the U.S. Environmental Protection Agency (USEPA) and that, when implemented, are expected to result in full attainment of the standard. Waters shall only be removed from this category of water quality standards are attained.~~

~~2.3Enforceable Program Category~~

~~Water segments shall be listed in this category of the section 303(d) list if pollution control requirements other than TMDLs are reasonably expected to result in the attainment of the water quality standard. Consistent with 40 CFR 130.7(b)(1)(i), (ii), and (iii), water segments shall be listed in this subcategory when other pollution control requirements required by local, state, or federal authority are stringent enough to implement water quality standards applicable to such waters. Waters shall only be removed from this category if water quality standards are attained.~~

~~3~~2 ~~California~~ Listing Factors

RWQCBs and SWRCB shall use the following factors to develop the~~California~~ section 303(d) list. ~~The factors for placement of water segments on the list are presentedbelow.~~

~~Water Quality Limited Segments Factors~~

~~This section provides the methodology for developing the Water Quality Limited Segments portion of the section 303(d) list. Waters meeting the conditions in section 3.1 do not attain water quality standards, waters not meeting the conditions in section 3.1 attain water quality standards. If data and information do not meet the data quality or quantity requirements (sections 6.2.4 and 6.2.5), it is uncertain if water quality standards are attained.~~

~~Data and information collected during a known spill or violation of an effluent limit in a permit or waste discharge requirement (WDR) shall not be used in the assessment of objectives and beneficial use attainment as required by this Policy. If standards exceedances reflect physical alteration of the water body that cannot be controlled or natural background conditions, the water segment shall not be placed on the section 303(d) list. Except as allowed by section 6.2.5.2, only the most recent data and information (up to 10 years old) shall be used. Data shall be appropriately transformed as described in section 6.2.5.9 depending on the averaging period stated in the water quality objective or criterion. Visual assessments or other semi-quantitative assessments may not be used as the sole line of evidence to support a section 303(d) listing.~~

Water segments shall be placed on the section 303(d) list if any of the following conditions are met:

~~3.1.1~~2.1 Numeric Water Quality ~~Objectives and Criteria for Toxicants~~Objectives, Criteria, and Evaluation Guidelines for Pollutants in Water

~~3.1.2~~Numeric water quality ~~objectives for toxic pollutants, including maximum contaminant levels where applicable, or California/National Toxics Rule water quality criteria~~objectives, federal criteria promulgated as state standards, or evaluation guidelines used to interpret narrative objectives (see Section 5.2.3) are exceeded in 10 percent of the samples with a confidence level of 90 percent using a binomial distribution (Table ~~3~~2.1). For sample populations less than 20, when 5 or more samples exceed the water quality objective, the segment shall be listed. Waters shall not be listed if the binomial method indicates impairment but the Weight of Evidence indicates attainment (see Section 3.3).

~~**Numeric Water Quality Objectives for Conventional or Other Pollutants in Water**~~

~~Numeric water quality objectives for conventional pollutants are exceeded in 10 percent of the samples with a confidence level of 90 percent using a binomial distribution (Table 3.1). For sample populations less than 20, when 5 or more samples exceed the water quality objective, the segment shall be listed.~~

~~For depressed dissolved oxygen, if measurements of dissolved oxygen taken over the day (diel) show low concentrations in the morning and sufficient concentrations in the afternoon, then it shall be assumed that nutrients are responsible for the observed dissolved oxygen concentrations if riparian cover, substrate composition or other pertinent factors can be ruled out as controlling~~

~~dissolved oxygen fluctuations. In the absence of diel measurements, concurrently collected measurements of nutrient concentration shall be assessed as described in section 3.1.1 to applicable and appropriate water quality objectives or acceptable evaluation guidelines (section 6.2.3).~~

2.2 ~~-~~Numerical Water Quality Objectives or Standards for Bacteria Where Recreational Uses Apply

~~In the absence of a site-specific exceedance frequency, bacteria water quality standards are exceeded in 10 percent of the samples with a confidence level of 90 percent using a binomial distribution (Table 3.1). For sample populations less than 20, when 5 or more samples exceed the water quality objective the segment shall be listed. If a site-specific exceedance frequency is available, it may be used instead of the 10 percent exceedance frequency. The site-specific exceedance frequency shall be the number of water quality standard exceedances in a relatively unimpacted watershed. To the extent possible, RWQCBs shall identify one or more reference beaches or water segments in a relatively unimpacted watershed to compare to measurements.~~

For bacterial measurements from coastal beaches, if water quality monitoring was conducted April 1 through October 31 only, a 4 percent exceedance percentage shall be used for the Binomial Method, in the absence of a site-specific exceedance frequency.
~~used. If the exceedance is due to a beach closure related to a sewage spill, the water segment shall not be placed on the section 303(d) list.~~
Beach postings~~that are not backed by water quality data~~ shall not be ~~used~~the sole basis for ~~to support~~ placement of a water segment on the section 303(d) list.

2.3 Health Advisories

A health advisory against the consumption of edible resident organisms or a shellfish harvesting ban has been issued by the Office of Environmental Health Hazard Assessment or Department of Health Services and there is a designated or existing fish consumption beneficial use for the segment. ~~In addition, water segment~~ A water body need not be listed if more recent data or information indicates that the advisory is no longer representative of current conditions. ~~specific data are available indicating the evaluation guideline for tissue is exceeded.~~

~~**3.1.5Bioaccumulation of Pollutants in Aquatic Life Tissue**~~

~~The tissue pollutant levels in organisms exceed a pollutant-specific evaluation guideline satisfying the requirements of section 6.2.3 in 10 percent of the samples with a confidence level of 90 percent using a binomial distribution (Table 3.1). For sample populations less than 10, when 3 or more samples exceed the evaluation guideline, the segment shall be listed.~~

~~Acceptable tissue concentrations are measured either as muscle tissue or whole body residues. Residues in liver tissue alone are not considered a suitable measure. Animals can either be transplanted (if a resident species) or collected from resident populations.~~

2.4 Water/Sediment Toxicity

The water segment exhibits statistically significant water or sediment toxicity in 10 percent of the samples with a confidence of 90 percent using a binomial distribution (Table ~~3~~2.1) ~~and the toxicity is associated with a pollutant or pollutants~~. For sample populations less than 10, when 3

or more samples exhibit toxicity, the segment shall be listed. ~~if the observed toxicity is associated with a pollutant or pollutants. Waters may be placed on the section 303(d) list for toxicity alone. If the pollutant has not been identified, studies identifying the pollutant causing or contributing to the toxicity shall be completed prior to the development of a TMDL.~~

~~Reference conditions include laboratory controls (using a t-test or other applicable statistical test), the lower confidence interval of the reference envelope, or, for sediments, response less than 90 percent of the minimum significant difference for each specific test organism.~~

~~Appropriate reference and control measures must be included in the toxicity testing. Acceptable methods include, but are not limited to, those listed in water quality control plans, the methods used by Surface Water Ambient Monitoring Program (SWAMP), the Southern California Bight Projects of the Southern California Coastal Water Research Project, American Society for Testing and Materials (ASTM), U.S. Environmental Protection Agency, the Regional Monitoring Program of the San Francisco Estuary Institute, and the Bay Protection and Toxic Cleanup Program (BPTCP).~~

~~Association of pollutant concentrations with effect should be determined by any one of the following:~~

~~A.~~

~~A.Sediment quality guidelines (satisfying the requirements of section 6.2.3) are exceeded in 10 percent of the samples with a confidence level of 90 percent using a binomial distribution (Table 3.1). For sample populations less than 10, when 3 or more samples exceed the evaluation guideline, the segment shall be listed. In addition, using rank correlation, the observed effects are correlated with measurements of chemical concentration in sediments. If these conditions are met, the pollutant shall be identified as "sediment pollutant(s)."~~

~~B.For sediments, an evaluation of equilibrium partitioning or other type of toxicological response that identifies the pollutant that may cause the observed impact.~~

~~C.Development of an evaluation (such as a toxicity identification evaluation) that identifies the pollutant that contributes to or caused the observed impact.~~

~~3.1.7Nuisance~~

~~Nuisance water odor, taste, excessive algae growth, foam, turbidity, oil, litter or trash, and color shall be placed on the section 303(d) list if qualitative visual assessments or other semi-quantitative assessments of the water segment and associated numerical water quality data meets any one of the following:~~

~~*3.1.7.1Nutrient related*~~

~~For excessive algae growth, unnatural foam, odor, and taste, acceptable nutrient related evaluation guidelines are exceeded as described in section 3.1.1.~~

~~*3.1.7.2Other Types*~~

~~An acceptable evaluation guideline is exceeded as described in section 3.1.1 for taste, color, oil sheen, turbidity, litter, trash, and odor not related to nutrients. These types of nuisance may also~~

~~be placed on the section 303(d) list when there is significant nuisance condition when compared to reference conditions.~~

~~3.1.8Adverse Biological Response~~

~~A water segment exhibits adverse biological response as compared to reference conditions measured in resident individuals and these impacts are with associated water or sediment concentrations of pollutants as described in section 3.1.6. Endpoints for this factor include reduction in growth, reduction in reproductive capacity, abnormal development, histopathological abnormalities, and other adverse conditions.~~

~~Growth Measures:~~ ~~Reductions in growth can be determined using suitable measurements of field populations.~~

~~Reproductive Measures:~~ ~~Reductions in viability of eggs or offspring, or reductions in fecundity. Suitable measures include: pollutant concentrations in tissue, sediment, or water which have been demonstrated in laboratory tests to cause reproductive impairment, or significant differences in viability or development of eggs between reference and test sites.~~

~~Abnormal Development:~~ ~~Can be determined using measures of physical or behavioral disorders or aberrations.~~

~~Histopathology:~~ ~~Abnormalities representing distinct adverse effects, such as carcinomas or tissue necrosis, must be evident.~~

~~Qualitative visual assessments or other semi-qualitative assessments may be used as secondary lines of evidence to support placement on the section 303(d) list for repeated fish kills or repeated bird kills related to water quality conditions.~~

~~For adverse biological response related to sedimentation, the water segment shall be placed on the section 303(d) list if adverse biological response is identified and effects are associated with clean sediment loads in water or those stored in the channel. Waters shall be placed on the section 303(d) list if evaluation guidelines (satisfying the conditions of section 6.2.3) are exceeded in 10 percent of the samples with a confidence level of 90 percent using a binomial distribution (Table 3.1). For sample populations less than 20, when 5 or more samples exceed the water quality objective, the segment shall be listed.~~

~~3.1.9Degradation of Biological Populations and Communities~~

~~A water segment exhibits significant degradation in biological populations and/or communities as compared to reference site(s) and associated water or sediment concentrations of pollutants as described in section 3.1.6. This condition requires diminished numbers of species or individuals of a single species or other metrics when compared to reference site(s). The analysis should rely on measurements from at least two stations.~~

~~For population or community degradation related to sedimentation, the water segment shall be placed on the section 303(d) list if degraded populations or communities are identified and effects are associated with clean sediment loads in water or those stored in the channel. Waters~~

~~shall be placed on the section 303(d) list if evaluation guidelines (satisfying the conditions of section 6.2.3) are exceeded in 10 percent of the samples with a confidence level of 90 percent using a binomial distribution (Table 3.1). For sample populations less than 20, when 5 or more samples exceed the water quality objective, the segment shall be listed.~~

~~3.1.10~~2.5 Trends in Water Quality

A water segment exhibits concentrations of pollutants or water body conditions~~for any listing factor that shows~~showing a trend of declining water quality and the Regional Board has not made a finding consistent with State Board Resolution No. 68-16 that the degradation in water quality is in the best interest of the people of the State. Numeric, pollutant-~~standards attainment. This section is focused on addressing the antidegradation component of water quality standards. Numeric, pollutant-s~~specific water quality objectives need not be exceeded to satisfy this listing factor. In assessing trends in water quality RWQCBs shall:

1. Use data collected for at least three years;
2. Establish specific baseline conditions;
3. Specify any statistical approaches used to evaluate the declining trend in water quality measurements;
4. Specify the influence of seasonal effects, interannual effects, changes in monitoring methods, changes in analysis of samples, and other factors deemed appropriate~~; and~~.

~~5.Determine the occurrence of adverse biological response (section 3.1.8), degradation of biological populations and communities (section 3.1.9), or toxicity (section 3.1.6).~~

~~Waters shall be placed on the section 303(d) list if the declining trend in water quality is substantiated (steps 1 through 4 above) and impacts are observed (step 5).~~

2.6 Weight of Evidence Method

~~Waters~~When the binomial method does not result in the listing of a water body and some information indicates non-attainment of standards, then the weight of evidence method shall be used. Water segments shall be placed on the section 303(d) list if the weight of evidence demonstrates that a water quality standard is not attained.

When recommending listing based on the weight of evidence, the RWQCB must justify its recommendation to list by:

- providing any data or information supporting the listing;
- describing how the data or information are relevant to the water quality standard; and,
- demonstrating that the weight of evidence of the data and information indicate that the water quality standard is not attained.

Data and information used in the weight of evidence evaluation may include:

- Magnitude of standards exceedences or impairments
- Frequency of standards exceedences relative to any allowed frequency of exceedance
- Adverse biological responses, such as reduction in growth, reduction in reproductive capacity, abnormal development, histopathological abnormalities, and other adverse conditions

- Degradation of biological communities, including but not limited to diminished numbers of species or individuals of a single species
- Nuisance conditions such as odor, taste, excessive algae growth, foam, turbidity, oil, litter or trash, and color
- Photographic evidence of standards non-attainment
- Specific water body or watershed characteristics
- Pollution sources and discharge patterns
- Calibrated and validated modeling results
- Potential impacts to humans or wildlife from consumption of fish or shellfish
- Any federal, State, or local government requirements that could affect the cause of pollution
- Data not meeting the quality and quantity requirements for the binomial method

~~**3.1.11Alternate Data Evaluation**~~

~~For data (or aspects of data such as measurement magnitude) not otherwise addressed in section 4.2 or for situations where an individual line of evidence would not support the placement of a water on the section 303(d) list, waters should be placed on the section 303(d) list if water quality objectives are exceeded providing the RWQCB justifies in the water body fact sheet the decision to list. At a minimum the justification must demonstrate:~~

~~- The data and information are related to a pollutant or toxicity.~~
~~- The data and information meet quality assurance requirements (section 6.2.4).~~
~~- The measurements can be analyzed using a scientifically defensible procedure that provides an equivalent level of confidence as the listing factors in section 3.1 and tests the null hypothesis that water quality standards are attained.~~
~~- The data and information can be compared to applicable water quality objectives, water quality criteria, or numeric guidelines (section 6.2.3).~~
~~- The magnitude of the water quality objective or water quality criterion exceedance shall be considered, if appropriate.~~
~~- Corroborating evidence from independent lines of evidence show narrative water quality standards are not attained.~~

~~RWQCBs may use an alternate exceedance frequency, if justified. Justification may include, but is not limited to:~~

~~- site-specific study that identifies an applicable exceedance frequency.~~
~~- significance of the water body (e.g., Outstanding National Resource Water, State Water Quality Protection Area, etc.).~~

TABLE ~~3~~2.1: MINIMUM NUMBER OF MEASURED EXCEEDANCES NEEDED TO PLACE A WATER SEGMENT ON THE SECTION 303(D) LIST WITH AT LEAST 90% CONFIDENCE THAT THE ACTUAL EXCEEDANCE RATE IS GREATER THAN OR EQUAL TO 10 PERCENT

Sample sizes		Place on the section 303(d) list if at least this number of exceedances	Sample sizes		Place on the section 303(d) list if at least this number of exceedances
From	To		From	To	
10	11	3	245	253	32
12	18	4	254	262	33
19	25	5	263	270	34
26	32	6	271	279	35
33	40	7	280	288	36
41	47	8	289	297	37
48	55	9	298	306	38
56	63	10	307	315	39
64	71	11	316	324	40
72	79	12	325	333	41
80	88	13	334	343	42
89	96	14	344	352	43
97	104	15	353	361	44
105	113	16	362	370	45
114	121	17	371	379	46
122	130	18	380	388	47
131	138	19	389	397	48
139	147	20	398	406	49
148	156	21	407	415	50
157	164	22	416	424	51
165	173	23	425	434	52
174	182	24	435	443	53
183	191	25	444	452	54
192	199	26	453	461	55
200	208	27	462	470	56
209	217	28	471	471	57
218	226	29	480	489	58
227	235	30	490	498	59
236	244	31	499	500	60

For samples greater than 500, the number of exceedances to place waters on the section 303(d) list shall be calculated using the following equation: Excel® function CRITBINOM(Number of samples, 0.10, 0.90) + 1.

~~3.2TMDLs Completed Category Factors~~

~~This section provides the methodology for development of the TMDL completed category. A water segment shall be placed on this portion of the section 303(d) list if the conditions for placement in the water quality limited segments category (section 3.1) are met and both of the following additional conditions are met:~~

~~– A TMDL has been approved by USEPA for the pollutant-water segment combination.~~
~~– An implementation plan has been approved for the TMDL.~~

~~3.3Enforceable Program Category Factors~~

~~This section provides the methodology for development of the enforceable program list portion of the section 303(d) list. Waters shall be placed in the enforceable program category if water quality standards are not met and there is an existing program being implemented to address the identified problem. A water segment shall be placed on this list if the conditions for placement on the list of water quality limited segments are met (section 3.1) and the all of the following additional conditions are met:~~

~~– For point sources, the discharge controls are enforceable. The control mechanism for nonpoint sources must be included in an agency-sponsored watershed plan or other programs that will obviate the need for a TMDL. It must be demonstrated that control measures for point and nonpoint sources will be implemented.~~
~~– The controls are specific to the water body and pollutant(s) of concern.~~
~~– If the enforceable program is a permit or waste discharge requirement, the majority of the pollutant loading is associated with the permitted source.~~
~~– The controls are in place or scheduled for implementation. Documentation shall include, but is not limited to: permits, WDRs, contracts, Superfund site remediation planning documents, or enforcement actions. Documentation that Best Management Practices (BMPs) will lead to attainment of water quality standards shall be based on site-specific study, case studies from other similar locations, or research results from applicable situations.~~
~~– The timeframe for implementation is established.~~
~~– The controls are sufficient to assess if water quality standards will be attained within a reasonable time. Documentation shall include an estimate of when attainment of water quality standards is expected. Acceptable timeframes for standards attainment are: (1) before next listing cycle, (2) within the life of the permit, (3) prior to renewal of the WDR, (4) within the compliance schedule, or (5) within the schedule presented in a watershed plan.~~
~~– Water quality standards attainment can be demonstrated through an existing monitoring program or a future monitoring program with reasonable assurance of implementation.~~

~~Control efforts that address one or more of the sources of pollutants that cause or contribute to the water quality standards not being met that do not address other contributing sources shall not be placed in the enforceable program category.~~

~~Water segments placed in this category shall be moved to the water quality limited segments category if the implemented management measures are unsuccessful within the scheduled timeframe or if the program is not implemented as scheduled.~~

43 ~~California Delisting~~De-Listing Factors

This section provides the methodology for removing waters from the section 303(d) list ~~(including the water quality limited segments category, enforceable program category, and TMDLs completed category)~~.

All listings of water segments shall be reevaluated if the listing was based on faulty data. Faulty data include, but are not limited to, typographical errors, improper quality assurance/quality control procedures, or limitations related to the analytical methods that would lead to improper conclusions regarding the water quality status of the segment.

If objectives or standards have been revised and the site or water meets water quality standards, the water segment shall be removed from the section 303(d) list. The listing of a segment shall be reevaluated if the water quality standard has been changed.

Water segments shall be removed from the section 303(d) list if the following conditions are met:

4.13.1 Numeric Water Quality Objectives, Criteria, ~~or Standards for Toxicants in Water~~ and Evaluation Guidelines for Pollutants in Water

Numeric water quality ~~objectives for toxic pollutants, including maximum contaminant levels where applicable, or California/National Toxics Rule water quality criteria~~objectives, federal criteria promulgated as State standards, or evaluation guidelines used to interpret narrative objectives (see Section 5.2.3) are exceeded in fewer than 10 percent of the samples with a confidence level of 90 percent using a binomial distribution (Table 43.1). The minimum sample size is 22. In addition, the Weight of Evidence method (Section 3.3) indicates standards are attained.

~~4.2Numeric Water Quality Objectives for Conventional or Other Pollutants in Water~~

~~Numeric water quality objectives for conventional pollutants are exceeded in fewer than 10 percent of the samples with a confidence level of 90 percent using a binomial distribution (Table 4.1). The minimum sample size is 22.~~

~~4.3Numeric Water Quality Objectives for Bacteria in Water~~

~~Numeric water quality objectives or standards for bacteria are exceeded in fewer than 10 percent of the samples with a confidence level of 90 percent using a binomial distribution (Table 4.1). The minimum sample size is 22.~~

3.2 Health Advisories

The health advisory used to list the water segment has been removed or the chemical or biological contaminant-specific evaluation guideline for tissue is no longer exceeded.

~~4.5Bioaccumulation of Pollutants in Aquatic Life Tissue~~

~~Numeric pollutant-specific evaluation guidelines are exceeded in fewer than 10 percent of the samples with a confidence level of 90 percent using a binomial distribution (Table 4.1). The minimum sample size is 22.~~

~~4.6Water/Sediment Toxicity~~

~~Water/Sediment Toxicity or associated water or sediment quality guidelines are exceeded in fewer than 10 percent of concurrently collected samples with a confidence level of 90 percent using a binomial distribution (Table 4.1). The minimum sample size is 22.~~

~~4.7Nuisance~~

~~The water segment no longer satisfies the conditions to be listed for nuisance condition or associated numerical water or sediment data meets any one of the following:~~

~~4.7.1Nutrient-related~~

~~For excessive algae growth, unnatural foam, odor, taste, applicable numerical nutrient-related evaluation guidelines are not exceeded as described in sections 4.1 or 4.2.~~

~~4.7.2Other Types~~

~~Acceptable numerical evaluation guidelines are not exceeded as described in sections 4.1 and 4.2 for color, oil sheen, turbidity, litter, trash, taste, or odor not related to nutrients. These types of nuisance shall also be removed from the list when there is no significant nuisance condition when compared to reference conditions.~~

~~4.8Adverse Biological Response~~

~~Adverse Biological Response is no longer evident or associated water or sediment numeric pollutant-specific evaluation guidelines are exceeded in fewer than 10 percent of samples with a confidence level of 90 percent using a binomial distribution (Table 4.1). The minimum sample size is 22.~~

~~4.9Degradation of Biological Populations and Communities~~

~~Biological Populations and Communities degradation is no longer evident or associated water or sediment numeric pollutant-specific evaluation guidelines are exceeded in fewer than 10 percent of samples with a confidence level of 90 percent using a binomial distribution (Table 4.1). The minimum sample size is 22.~~

~~4.10 Alternate Data Evaluation~~

~~For data and aspects of data (e.g., measurement magnitude) not otherwise addressed in the above sections or for situations where an individual line of evidence would not support the removal of a water on the section 303(d) list, waters shall be removed from the list if water quality objectives are no longer exceeded providing that:~~

~~—The data and information are related to a pollutant or toxicity.~~
~~—Data meet quality assurance requirements (section 6.2.4).~~

~~—The measurements can be analyzed using a scientifically defensible procedure that provides an equivalent level of confidence as the factors in section 4 and tests the null hypothesis that water quality standards are not attained.~~

~~—The data and information can be compared to applicable water quality objectives, water quality criteria, or numeric guidelines (section 6.2.3).~~

~~—If appropriate, the magnitude of the water quality objective or water quality criterion exceedance shall be considered.~~

~~—Corroborating evidence from independent lines of evidence show narrative water quality standards are attained.~~

~~—An alternative approach was used originally to place the water segment on the list (section 3.1.11).~~

3.3 Weight of Evidence Method

When the binomial method would result in the delisting of a water body, but some information indicates non-attainment of standards, the weight of the evidence method shall be used to assess whether delisting is appropriate. When making this assessment all available data and information must be evaluated. The weight of evidence method may also be used to justify delisting when data and information indicates that standards are attained, even if the binomial method would not result in delisting.

When recommending de-listing based on the weight of evidence, the RWQCB must justify its recommendation by:

- providing the data or information supporting the de-listing;
- describing how the data or information are relevant to the water quality standard; and,
- demonstrating that the weight of evidence of the data and information indicate the water quality standard is attained and non-attainment of standards is not likely to recur.

Data not meeting the quality and quantity requirements for the binomial method may be used in this evaluation.

TABLE 43.1: MAXIMUM NUMBER OF MEASURED EXCEEDANCES ALLOWABLE TO REMOVE A WATER SEGMENT FROM THE SECTION 303(D) LIST WITH AT LEAST 90% CONFIDENCE THAT THE ACTUAL EXCEEDANCE RATE IS LESS THAN 10 PERCENT.

Sample sizes		Maximum number of exceedances allowable for delisting
From	To	
22	37	0
38	51	1
52	64	2
65	77	3
78	90	4
91	103	5
104	115	6
116	127	7
128	139	8
140	151	9
152	163	10
164	174	11
175	186	12
187	198	13
199	209	14
210	221	15
222	232	16
233	244	17
245	255	18
256	266	19
267	278	20
279	289	21

Sample sizes		Maximum number of exceedances allowable for delisting
From	To	
290	300	22
301	311	23
312	323	24
324	334	25
335	345	26
346	356	27
357	367	28
368	378	29
379	389	30
390	401	31
402	412	32
413	423	33
424	434	34
435	445	35
446	456	36
457	467	37
468	478	38
479	489	39
490	500	40

For samples greater than 500, the number of allowable exceedances shall be calculated using the following equation: Excel® function CRITBINOM(Number of samples, 0.10, 0.10) - 1.

4 Priority Setting and Scheduling

Waters on the section 303(d) list shall be ranked into high, medium, and low categories in order to set priority for development of TMDLs or other action as described in the Impaired Waters Guidance. The rankings shall be based on:

- Water body significance (such as importance and extent of beneficial uses, threatened and endangered species concerns, and size of water body).

Degree that water quality objectives are not met or beneficial uses are not attained or threatened (such as the severity of the pollution or number of pollutants/stressors of concern) [40 CFR 130.7(b)(4)].

~~Availability~~The list shall also identify those waters targeted for TMDL development in the next two years, irrespective of whether they are ranked high, medium, or low. In setting these targets, availability of funding and information to address the water quality problem may be considered in addition to the priority ranking for the water.

~~For water on the list of water quality limited segments, RWQCBs shall develop a schedule for those waters needing a TMDL using the following categories:~~

~~1.Those waters given a high priority are targeted for TMDL completion in the next two years.~~

~~2.Medium priority to be completed within 5 years.~~

~~3.Low priorities will be completed in more than 5 years.~~

~~All waters placed in the enforceable programs category and TMDL completed category shall be assigned a low priority and shall not be scheduled for TMDL development.~~

5 Policy Implementation

This section provides SWRCB guidance on implementation of this Policy.

5.1 Evaluating Existing Listings

Water segment and pollutants on the section 303(d) list shall be reevaluated if new data and information become available. The steps to complete a reevaluation are:

A. All readily available data and information shall be used to assess a water segment. Data and information older than ten years may be used if the original listing was based on that data.
B. In performing the reassessment, the RWQCBs shall use the ~~California~~ Listing Factors ~~(i.e., waters shall be assessed as if they had never been listed before) to assess each water segment-pollutant combination.~~ in this Policy. If the original listing was established using the provisions of this Policy, then the California De-listing Factors shall be used.

An interested party may request that an existing listing be reassessed under the provisions of the Policy. In requesting the reevaluation, the interested party must describe the reason(s) the listing is inappropriate, ~~state the reason~~describe how application of the Policy would lead to a different outcome, and provide the data and information necessary to enable the RWQCB and SWRCB to conduct the review.

The most recently completed section 303(d) list shall form the basis for any subsequent lists.

5.2 Process for Evaluation of Readily Available Data and Information

The RWQCBs and SWRCB shall use the following process to develop the section 303(d) list described above. The process has seven steps including:

- Definition of readily available data and information;
- Administration of the listing process;
- Evaluation guideline selection process;
- Data quality assessment process;
- Data quantity assessment process;
- RWQCB approval; and
- SWRCB approval.

5.2.1 Definition of Readily Available Data and Information

RWQCBs and SWRCB shall assemble and consider all readily available data and information. ~~The data and information shall be reviewed in the following order: submittals resulting from the solicitation, selected data possessed by the RWQCBs, and other sources.~~ At a minimum, readily available data and information includes paper and electronic copies of:

- The most recent section 303(d) list, the most recent section 305(b) report, and the most recent California Integrated Water Quality Report;

- Drinking water source assessments;

- Information on water quality problems in documents prepared to satisfy Superfund and Resource Conservation and Recovery Act requirements;

- Fish and shellfish advisories, beach postings and closures, or other water quality-based restrictions;

- Reports of fish kills, cancers, lesions or tumors;

- Dilution calculations, trend analyses, or predictive models for assessing the physical, chemical, or biological condition of streams, rivers, lakes, reservoirs, estuaries, coastal lagoons, or the ocean;

- Applicable water quality data and information from SWAMP, USEPA's Storage and Retrieval Database Access (STORET), the Bay-Delta Tributaries Database, Southern California Coastal Water Research Project, and the San Francisco Estuary Regional Monitoring Program; and

—

- Water quality problems and existing and readily available water quality data and information reported by local, state and federal agencies (including~~receiving water~~ monitoring data from discharger monitoring reports), citizen monitoring groups, academic institutions, and the public.

5.2.2 Administration of the Listing Process

5.2.2.1 Solicitation of All Readily Available Data and Information

SWRCB and RWQCBs shall seek all readily available data and information on the quality of surface waters of the State. To do this, the RWQCBs shall solicit all data and information available, including information available from the public. The SWRCB shall solicit all available data and information by gathering data and information from other state and federal agencies or groups that can provide data that are statewide in scope. The SWRCB information solicitation letter shall request that all parties having data and information pertaining to a specific Region should send the data and information directly to that RWQCB.

Readily available data and information shall be solicited from any interested party, including but not limited to: private citizens; public agencies; state and federal governmental agencies; non-profit organizations; and businesses possessing data and information regarding the quality of the Region's waters.

In general, the SWRCB and RWQCBs shall seek all readily available data and assessment information generated since the last listing cycle. For purposes of data and information solicitation, information is any documentation ~~describing~~related to the water quality condition of a surface water body. Data are considered to be a subset of information that consists of reports detailing measurements of specific environmental characteristics. The data and information may pertain to physical, chemical, and/or biological conditions of the Region's waters or watersheds.

Information ~~solicited~~ submitted in response to the solicitation should contain the following:

- The name of the person or organization providing the information;
- Mailing address, telephone numbers, and email address of a contact person for the information provided;
- Two hard copies and an electronic copy of all information provided. The submittal must specify the software used to format the information and provide definitions for any codes or abbreviations used;
- Bibliographic citations for all information provided; and
- If computer model outputs are included in the information, provide bibliographic citations and specify any calibration and quality assurance information available for the model(s) used.

Data submitted in response to the solicitation ~~solicited~~ should contain the following:

- Data in electronic form, in spreadsheet, database, or ASCII formats. The submittal should use the SWAMP data format and ~~should~~must define any codes or abbreviations used in the database.
- Metadata for the field data, i.e., when measurements were taken, locations, number of samples, detection limits, and other relevant factors.
- Metadata for any Geographical Information System data must be included. The metadata must detail all the parameters of the projection, including datum.
- A copy of the quality assurance procedures.
- Two hard copies of the data.
- Data from citizen volunteer water quality monitoring efforts require the name of the group and indication of any training in water quality assessment completed by members of the group.

Data and information previously submitted to RWQCBs, such as Discharge Monitoring Reports, ~~shall not be solicited~~should not be submitted as the data and information are already available to RWQCBs.

~~*6.2.2.2*~~*5.2.2.2 RWQCB ~~Fact Sheet Preparation~~Documentation*

~~When data and information are available, each RWQCB shall prepare a standardized fact sheet for each water and pollutant combination that is proposed for inclusion on the section 303(d) list. Fact sheets shall present a~~For each recommended addition to or deletion from the 303(d) list, the RWQCB shall document the basis for that recommendation. The documentation shall present a clear description of the line(s) of evidence used to support each ~~component of the weight of evidence approach.~~ recommendation. Documentation related to multiple recommendations may be summarized once ~~Fact sheets shall be prepared for all data and information solicited.~~and need not be repeated for each recommendation. If the data and information reviewed indicate standards are attained, ~~a single fact sheet may address multiple water and pollutant combinations.~~and the water is not listed, a summary of the analysis of that data and information shall be prepared.

The ~~fact sheets shall~~documentation should contain the following:

~~A.Region~~

A. Type of water body (Bay and Harbors, Coastal Shoreline, Estuary, Lake/Reservoir, Ocean, Rivers/Stream, Saline Lake, Tidal Wetlands, Freshwater Wetland)
B. Name of water body segment (including Calwater watershed)
C. Pollutant or type of pollution
D. Medium (water, sediment, tissue, habitat, etc.)
~~F.Water quality standards (copy applicable water quality standard, objective, or criterion from appropriate plan or regulation) including:~~
~~1.Beneficial use affected~~
~~2.Numeric water quality objective/water quality criteria plus metric (single value threshold, mean, median, etc.) or narrative water quality objective plus guideline(s) used to interpret attainment or non-attainment~~
~~3.Antidegradation considerations (if applicable to situation)~~
~~4.~~E. ~~Any other provision of the standard used~~ Applicable water quality standard(s). The specific water quality standard(s) used as the basis for the Listing recommendation must be described.
G. Brief Watershed Description (e.g., land use, precipitation patterns, or other factors considered in the assessment)
H. Summary of ~~numeric data~~data and information
As applicable, the following should be summarized for any data or information used to support a recommendation:
1. Quality assurance assessment
2. Methods used
3. Spatial representation, area that beneficial use is affected or determined to be supported ~~(including map)~~
4. Temporal representation
5. Site-specific information
6. Age of data or information
~~8.~~7. Effect of seasonality
8. Events/conditions that might influence~~data~~ evaluation (e.g., storms, flow conditions, laboratory data qualifiers, etc.)
9. Number of samples or observations
~~11.~~10. Number of samples or observations exceeding guideline or standard
~~Source of or reference for data~~
11. ~~I. Summary of non-numeric~~ Source of or reference for data or information.
12. Types of observations
~~2.Spatial representation, size affected (including map)~~
13. Reference conditions (if appropriate)
~~4.Temporal representation~~
~~5.Site-specific information~~
~~6.Age of information~~
~~7.Effect of seasonality~~
~~8.Events/conditions that might influence information evaluation (e.g., storms, flow conditions, laboratory data qualifiers, etc.)~~

~~9.Number of samples or observations~~
~~10.Number of samples or observations exceeding guideline or standard~~
~~11.Perspective on magnitude of problem~~
14. Numeric indices derived from qualitative data
~~13.Source of information~~

~~J. Potential source of pollutant (the source category should be identified as specifically as possible)~~

I. ~~K. Program(s) addressing the problem, if known and any conditions of the enforceable program category met~~Potential source(s) of pollution, if known

J. ~~L.~~ Data evaluation as required by Sections ~~3~~2 or ~~4~~3 of this Policy

~~M.~~K. Recommendation

L. ~~N. Priority ranking (developed only for the section 303(d) list as required by section 5 of this Policy).~~Priority ranking

M. ~~O. TMDL schedule (developed only for the section 303(d) list as required by section 5~~Identification of those water quality limited segments targeted for TMDL development in the next two years (as required by Section 4 of this Policy).

5.2.3 Evaluation Guideline Selection Process

~~Narrative water quality objectives shall be evaluated using numerical evaluation guidelines.~~ When evaluating narrative water quality objectives or attainment of beneficial ~~use protection,~~uses, it may be necessary for the RWQCBs and SWRCB ~~shall~~to identify the numeric evaluation guidelines that ~~represents~~represent ~~-~~standards attainment or beneficial use ~~protection. The guidelines are not~~ protection.
~~water quality objectives and should only be used for the purpose of developing the section 303(d) list. This section supersedes any regional water quality control plan or water quality control policy to the extent of any conflict.~~

To select an evaluation guideline, the RWQCB or SWRCBshall:

~~- Identify the water body, pollutants, and beneficial uses;~~
~~- Identify the narrative water quality objectives or applicable water quality criteria;~~

- ~~Identify~~identify the appropriate numeric evaluation guideline that~~potentially~~ represents attainment of water quality objectives ~~attainment~~ or protection of beneficial uses. ~~If this Policy requires evaluation values to be used as one line of evidence, the evaluation value selected shall be used in concert with the other required line(s) of evidence to~~In general, criteria or guidelines developed by California state agencies are preferred over federal criteria or guidelines. If ~~support the listing or delisting decision. Depending on the beneficial use and narrative standard, the following considerations should be used in the selection of evaluation guidelines:~~no applicable federal or State criteria or guidelines are available, criteria or guidelines developed by other states or countries or literature values may be used, if the relationship between the water quality standard and the evaluation guideline is documented. The following information may be useful in selecting the appropriate guideline:

  1. Sediment Quality Guidelines for Marine, Estuarine, and Freshwater Sediments: RWQCBs may select sediment quality guidelines that have been published in the peer-

reviewed literature or by state or federal agencies. Acceptable guidelines include selected values: effects range-median, probable effects level, probable effects concentration, and other sediment quality guidelines. ~~Only those sediment guidelines that are predictive of sediment toxicity shall be used (i.e., those guidelines that have been shown in published studies to be predictive of sediment toxicity in 50 percent or more of the samples analyzed).~~

2. Water Quality Guidelines for Marine, Estuarine, and Fresh Waters
RWQCBs may select water quality guidelines contained in "A Compilation of Water Quality Goals" (Marshack).

~~2.~~3. Evaluation Guidelines for the Protection of Human Consumption of Fish and Shellfish: RWQCBs may select the most restrictive evaluation published by USEPA or the Office of Environmental Health Hazard Assessment. ~~Maximum Tissue Residue Levels (MTRLs) and Elevated Data Levels (EDLs) shall not be used to evaluate fish or shellfish tissue data.~~

~~3.~~4. Evaluation Guidelines for Protection of ~~Aquatic Life~~Wildlife from Bioaccumulation of Toxic Substances: RWQCBs may select the ~~evaluation values~~guidelines for the protection of ~~aquatic life~~*wildlife published by the National Academy of Science.*

~~4.~~5. ~~For other parameters,~~Other evaluation guidelines may be used if it can be demonstrated that the evaluation guideline is:

- Applicable to the beneficial use
- Protective of the beneficial use
- Linked to the pollutant under consideration
- Scientifically-based ~~and peer reviewed~~or policy-based

~~Well described~~

~~Previously used or specifically developed to assess water quality conditions of similar hydrographic units~~

- Not more limiting than the natural background concentration (if applicable)

~~Identifies a range above which impacts occur and below which no or few impacts are predicted. For non-threshold chemicals, risk levels shall be consistent with comparable water quality objectives or water quality criteria.~~

Justification for alternate evaluation guidelines shall be ~~presented in the water body fact sheet.~~documented.

5.2.4 Data Quality Assessment Process

The following data are considered acceptable for use in developing the section 303(d) list:

~~The quality of the data used in the development of the section 303(d) list shall be of sufficiently high quality to make determinations of water quality standards attainment.~~

1. Data supported by a Quality Assurance Project Plan (QAPP) pursuant to the requirements of 40 CFR 31.45. ~~are acceptable for use in developing the section 303(d) list.~~

2. ~~The data~~ Data from major monitoring programs in California are considered of adequate quality. The major programs include, but are not limited to, SWAMP, the Southern California Bight Projects of the Southern California Coastal Water Research Project,U.S. Environmental Protection Agency's Environmental Monitoring and Assessment Program, the Regional Monitoring Program of the San Francisco Estuary Institute, and the Bay Protection and Toxic Cleanup Program (BPTCP).

3. Data collected by the United States Geological Survey, the California Department of Water Resources, the California Office of Environmental Health Hazard Assessment, and the California Department of Pesticide Regulation.

4. Other n~~N~~umeric data are considered credible and relevant for listing purposes if the data set submitted meets the minimum quality assurance/quality control requirements outlined below. A QAPP or equivalent information must be available containing, at a minimum, the following elements:

- Objectives of the study, project, or monitoring program;
- Methods used for sample collection;
- Field and laboratory analysis;
- Data management procedures; and
- Personnel training.

A site-specific or project-specific sampling and analysis plan for numeric data must also be available containing:

- Data quality objectives or requirements of the project;
- Rationale for the selection of sampling sites, water quality parameters, sampling frequency and methods that assure the samples are spatially and temporally representative of the surface water and representative of conditions within the targeted sampling timeframe; and
- Information to support the conclusion that results are reproducible.

For data under category 4 above, t~~T~~he RWQCBs shall ~~clearly~~ evaluate and ~~make a finding in the fact sheets on~~document the appropriateness of data collection and analysis practices. If any data quality objectives or requirements in the QAPP are not met, the reason for not meeting them and the potential impact on the overall assessment shall be clearly documented.

Data without rigorous quality control can be useful in combination with high quality data ~~and~~ or other information. If the data collection and analysis is not supported by a QAPP (or equivalent) or if it is not possible to tell if the data collection and analysis was supported by a QAPP (or equivalent), then the data ~~and information~~ cannot be used by itself to support listing or delisting of a water segment. ~~These data may only be used to corroborate other data and information with appropriate quality assurance and quality control.~~

For narrative and qualitative submittals, the submission must:

- describe events or conditions that indicate impacts on water quality, and that are outside the expected natural range of conditions;

- provide linkage between the measurement endpoint (e.g., a study that may have been performed for some other purpose) and the water quality standard of interest;
- be scientifically defensible;
- provide analyst's credentials and training; and
- be verifiable by SWRCB or RWQCB.

Any submittal not meeting these requirements will be considered, but will be given the appropriate weight.

For photographic documentation, the submission must:

- identify the date;
- identify specific location on a general area map or;
- ~~either~~ mark location on a USGS 7.5 minute quad map along with quad sheet name or provide location latitude/longitude;
- provide a thorough description of photograph(s);
- describe the spatial and temporal representation of the photographs;
- provide linkage between photograph-represented condition and condition that indicates impacts on water quality that are outside the expected natural range of conditions;
- provide photographer's rationale for area photographed and camera settings used; and
- be verifiable by SWRCB and RWQCB.

Any submittal not meeting these requirements will be considered, but will be given the appropriate weight.

5.2.5 Data Quantity Assessment Process

Once the available data and information are assembled, RWQCBs shall implement the following considerations before determining if water quality standards are exceeded. The following considerations shall be documented ~~in~~ for each water body ~~fact sheet~~.

5.2.5.1 Water-body specific information

Data used to assess water quality standards attainment should be actual data that can be quantified and qualified. Information that is descriptive, estimated, modeled, or projected may be used as ancillary lines of evidence for listing or delisting decisions. In order to be used in developing the lists:

- Data must be measured at one or more sites in the water segment;
- Environmental conditions in a water body or at a site must be taken into consideration (e.g., effects of seasonality, events such as storms, the occurrence of wildfires, land use practices, etc.); and
- The ~~fact sheet~~documentation shall contain a description of pertinent factors such as the depth of water quality measurements, flow, hardness, pH, the extent of tidal influence, and other relevant sample- and water body-specific factors.

5.2.5.2 Age of Data

Only the most recent 10-year period of data and information ~~shall~~ should be used for listing and delisting waters. Data or information older than 10 years may be used on a case-by-case basis if

the older data are used in conjunction with newer data to demonstrate trends or if the conditions in a water body have not changed or if more recent data or information are not available. ~~In either case, the reason~~ The rationale for using older data shall be ~~described~~ documented ~~in the water body fact sheet.~~ Older data ~~must~~should meet all data quality requirements presented in this Policy. ~~(Section 6.2.4).~~

~~*6.2.5.3Spatial Representation*~~
~~Samples shall be collected to be representative of spatial characteristics of the water segment. To the extent possible, all samples should be collected to statistically represent the segment of the water body or collected in a consistent targeted manner that represents the segment of the water body.~~

~~Samples collected within 200 meters of each other shall be considered the same station or location. However, samples less than 200 meters apart may be considered to be spatially independent samples if justified in the water body fact sheet. Samples from mixing zones should not be included as part of the data set.~~

5.2.5.3 Temporal Representation
~~Samples shall be collected to~~ Data and information should be representative of the temporal characteristics of the water body. Data and information should be reviewed to determine whether the water quality condition is likely to persist, unless factors causing that condition are changed, or whether the water quality condition is likely to occur again or periodically (i.e. the water quality condition is recurrent). ~~Samples used in the assessment must be temporally independent. If the majority of samples were collected on a single day or during a single short-term natural event (e.g., a storm, flood, or wildfire), the data shall not be used as the primary data set supporting the listing.~~

In general, ~~samples~~ data or information should be available from two or more seasons or from two or more events when effects or water quality objectives exceedances would be expected to occur. ~~be clearly manifested.~~

~~Sampling ephemeral waters, during a specific season, or during human caused events (except spills) should be used to assess significant pollutant related exceedances of water quality standards. Timing of the sampling should include the critical season for the pollutant and applicable water quality standard.~~ The documentation for any recommendation should include a description of ~~water quality fact sheet should describe~~ the significance of the sample timing and the environmental metric being used (e.g. some measurements will represent a point in time, whereas, others may integrate months or years of effects in the water body).

~~*6.2.5.5Minimum Number of Samples*~~
~~Generally, for assessment of numeric water quality standards or evaluation guidelines, a minimum of 10 or 20 temporally independent samples is needed from each water body segment for placement on the planning list or the section 303(d) list, respectively. Fewer samples may be used on a case by case basis if standards are exceeded frequently as described in the California Listing Factors.~~

~~For entire water bodies, comparable measurements (e.g., field measurements, constituents in water, sediment, or tissue) collected at multiple sites may be aggregated to meet the minimum requirement.~~

5.2.5.4 Aggregation of Data by Reach/Area

~~For some water bodies, Basin Plans define distinct water segments. At a minimum, data shall be aggregated by the water segments defined in the Basin Plans. In the absence of a Basin Plan segmentation system, the RWQCBs should consider defining distinct reaches based on hydrology (e.g., stream order, tributaries, dams, or channel characteristics) and relatively homogeneous land use. These components of the stream system can be logically grouped depending on the nature of the source of the pollutant and the designation of beneficial uses. Similarly, a lake or estuary can be divided into areas or embayments based on circulation studies, water quality data and adjacent land uses or discharges.~~

If available data suggest that a pollutant may cause an exceedance of ~~excursion above~~ a water quality objective, the RWQCB should identify land uses, subwatersheds, tributaries, or dischargers that could be contributing the pollutant to the water body. The RWQCBs should identify stream reaches or lake/estuary areas that may have different pollutant levels based on significant differences in land use, tributary inflow, or discharge input. Based on these evaluations of the water body setting, RWQCBs should aggregate the data by appropriate reach or area. The data may be aggregated by water segments defined in the RWQCB's Basin Plan. The aggregated data should then be evaluated to determine whether water quality standards are attained for that reach.

~~Data must be measured at one or more sites in the water segment in order to place a water segment on the section 303(d) list.~~ Data related to the same pollutant from two or more adjoining segments may ~~shall~~ be combined provided that such pooling of data would not result in a different recommendation for the individual segments. ~~there is at least one measurement above the applicable water quality objective in each segment of the water body. The pooled data shall be analyzed together.~~

~~*6.2.5.7Natural Sources*~~

~~If it is documented that natural conditions or processes cause a segment of a water body to be considered a water quality limited segment then the segment shall not be placed on the section 303(d) list. Documentation must address the natural source(s) of the chemical and explain why human causes can be ruled out as the cause of the water quality limited segment. Human caused sources (i.e., "waste" as defined in Water Code section 13050(d) or "pollution" as defined in Water Code section 13050(l) and 40 CFR 130.2(e)) can generally be ruled out where the excursions beyond objectives would occur in the absence of the human caused sources.~~

~~*5.2.5.3*~~*5.2.5.5 Quantitation of Chemical Concentrations*

When available data are less than or equal to the quantitation limit and the quantitation limit is less than or equal to the water quality standard~~:~~,

~~A. The~~ the value will be considered as meeting the water quality standard, objective, criterion, or evaluation guideline, ~~and~~

~~B. One half of the value of the quantitation limit shall be used in statistical analyses.~~

When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis.

The quantitation limit includes the minimum level, practical quantitation level, or reporting limit.

~~*5.2.5.4*~~*5.2.5.6 Transformation of data consistent with the expression of numeric water quality objectives, water quality criteria, or evaluation guidelines*

If the water quality objectives, criteria, or guidelines state a specific averaging period and/or mathematical transformation, the data should be transformed in a manner consistent with the numeric objectives, criteria, or guidelines prior to evaluating the data. ~~consistent manner prior to conducting any statistical analysis for placement of the water on the section 303(d) list.~~ If sufficient data are not available for the stated averaging period, the available data shall be used to represent the averaging period.

To be considered temporally independent for use with the Binomial Method, samples collected during the averaging period shall be combined and considered one sampling event. For data that is not temporally independent (e.g., when multiple samples are collected at a single location on the same day), the measurements shall be combined and represented by a single resultant value. Alternative data transformation methods may be used with the Weight of Evidence Method.

~~If the averaging period is not stated for the standard, objective, criterion, or evaluation guideline, then the samples collected less than 7 days apart shall be averaged.~~

5.2.5.7 Binomial Method Statistical Evaluation

~~Once data have been summarized, RWQCBs shall determine if standards are exceeded. The RWQCBs shall determine for each averaging period which data points exceed water quality standards. The number of measurements that exceed standards shall be reported in the water body fact sheet.~~

~~When numerical data are evaluated~~After data has been transformed as discussed above, all of the following steps shall be completed:

~~A.~~

~~For~~ Identify each data point representing the averaging period for the standard~~, the RWQCB shall answer the question: Are water quality standards met?~~

~~B. If the measurement~~ which ~~is~~ is greater than the water quality standard, objective, criterion, or evaluation guideline~~, . then the standard is considered exceeded.~~

A. Sum the number of ~~samples~~ data points exceeding the standard, objective, criterion, or evaluation guideline.

B. Sum the total number of ~~measurements~~ data points (sample population).

C. Compare the result to the appropriate table (i.e., Tables ~~3~~2.1 or 4~~3~~.1).

D. Report the result of this comparison ~~in the water body fact sheet~~.

~~*5.2.5.5*~~*5.2.5.8 Evaluation of Bioassessment Data*

When evaluating biological data and information, RWQCBs ~~shall~~should:

- Identify appropriate reference sites within water segments, watersheds, or ecoregions. Document methods for selection of reference sites.
- Evaluate bioassessment data at reference sites using water segment-appropriate method(s) and index period(s). Document sampling methods, index periods, and Quality Assurance/Quality Control procedures for the habitat being sampled and question(s) being asked.
- Evaluate bioassessment data from other sites, and compare to reference conditions. Evaluate physical habitat data and other water quality data, when available, to support conclusions about the status of the water segment.
- Calculate biological metrics for reference sites and develop an Index of Biological Integrity if possible.

5.2.5.9 Evaluation of Temperature Data

~~Temperature water quality objectives shall be evaluated as described is sections 6.2.5.1 through 6.2.5.10.~~ When "historic" or "natural" temperature data are ~~not~~ available, compliance with applicable temperature objectives can generally be determined directly[2]. ~~alternative approaches shall be employed to assess temperature impacts.~~

In the absence of necessary data to interpret ~~numeric~~ temperature water quality objectives, ~~recent~~ temperature monitoring data shall be compared to the temperature requirements of aquatic life in the water segment. ~~In many cases, fisheries, particularly salmonids, represent the beneficial uses most sensitive to temperature.~~ Information on the current and historic condition and distribution of the sensitive beneficial uses (e.g., fishery resources) in the water segment is necessary, as well as ~~recent~~ temperature data reflective of conditions experienced by the most sensitive life stage of the aquatic life species. If temperature data from ~~past (historic)~~ periods corresponding to times when the beneficial use was fully supported are not available, information about presence/absence or abundance of sensitive aquatic life species shall be used to infer ~~past (historic)~~ temperature conditions if loss of habitat, diversions, toxic spills, and other factors are also considered.

Determination of life stage temperature requirements of sensitive aquatic life species shall be based on peer-reviewed literature. Similarly, evaluation of temperature data shall be based on temperature metrics reflective of the temperature requirements for the sensitive aquatic life species. ~~For example, a common metric for assessing chronic (i.e., sub-lethal) effects on salmonids is the maximum weekly average temperature (MWAT), the highest value of the 7-day moving average of temperature. The MWAT of a particular water body can be compared to MWAT growth requirements for salmonids. Another measure of temperature requirements is the upper lethal limit, an acute temperature threshold. These thresholds vary for different species and for different ranges of species, and should be determined based on peer-reviewed literature.~~

[2] Most Regional Boards have temperature objectives stating that the natural receiving water temperature shall not be increased 5° F above the "natural" receiving water temperature.

5.3 RWQCB Approval

At a public hearing, RWQCB shall consider ~~each proposed water body fact sheet~~ recommended changes to the section 303(d) List . Advance notice and opportunity to comment shall be provided. After receiving testimony, each RWQCBs shall develop ~~written~~ responses to ~~all~~ comments as required by law. . After consideration of all testimony, each RWQCBs shall approve a resolution transmitting ~~their~~ its recommendations for the section 303(d) list. RWQCBs shall submit to SWRCB ~~the water body fact sheets,~~documentation of the basis for the recommendations responses to comments, documentation of the hearing process, and a copy of the rest of the administrative record. ~~all data and information considered.~~

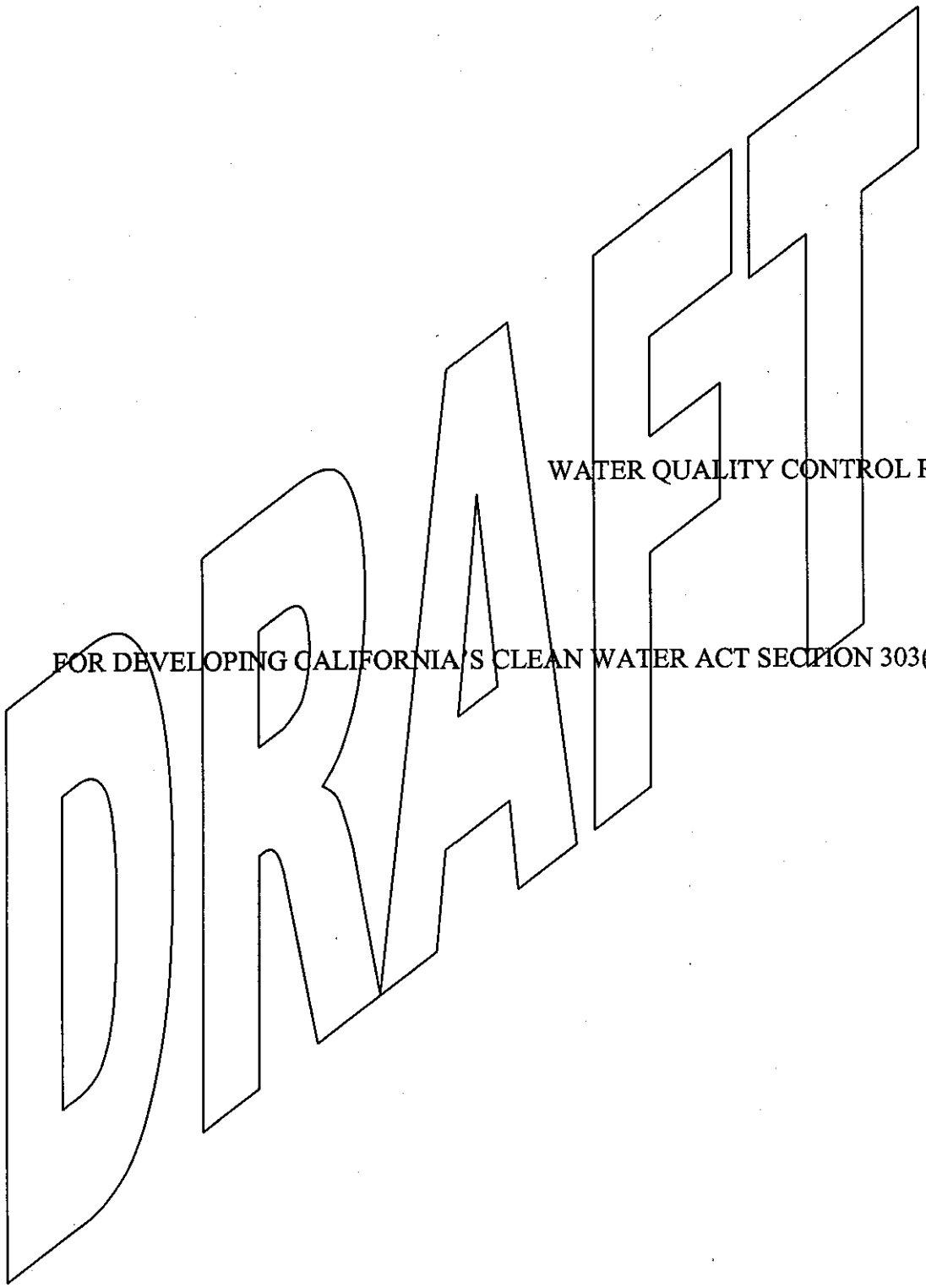
~~5.3~~5.4 SWRCB Approval

SWRCB shall only evaluate RWQCB-~~developed water body fact sheets~~ recommendations for completeness, consistency with this Policy, and consistency with applicable law. The SWRCB shall assemble ~~the fact sheets~~ documentation related to Regional Board recommendations and consolidate all the RWQCB lists into the statewide section 303(d) list.

Before the adoption of the section 303(d) list, the SWRCB shall hold a public workshop. Advance notice and opportunity to comment shall be provided. Comments shall be limited to the issues raised before the RWQCBs. Requests for review of specific listing decisions must be submitted to the SWRCB within 30 days of the RWQCB's decision. The SWRCB shall consider changes to only waters that are requested for review unless the SWRCB, on its own motion, decides to consider the recommendations on other waters. Subsequent to the workshop, the SWRCB shall approve the section 303(d) list at a Board Meeting. The approved section 303(d) list and the supporting fact sheets shall be submitted to USEPA for approval as required by the Clean Water Act.

State of California

STATE WATER RESOURCES CONTROL BOARD



WATER QUALITY CONTROL POLICY

FOR DEVELOPING CALIFORNIA'S CLEAN WATER ACT SECTION 303(d) LIST

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WATER QUALITY CONTROL POLICY FOR DEVELOPING CALIFORNIA'S CLEAN WATER ACT SECTION 303(d) LIST

1 General Provisions

Pursuant to California Water Code section 13191.3(a), this State policy for water quality control (Policy) describes the process by which the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs) shall comply with the listing requirements of section 303(d) of the federal Clean Water Act (CWA) [303(d) list]. The goal of this Policy is to establish a standardized approach for developing California's section 303(d) list. It is the intent of this Policy that the approach be as simple and transparent as possible, while ensuring that all surface waters not attaining standards are clearly identified.

CWA section 303(d) requires states to identify surface waters that do not meet applicable water quality standards[1] after the application of certain technology-based controls. This Policy establishes a two-part methodology for evaluating attainment of water quality standards in California's surface waters. The first part applies a standard statistical method (Binomial Method) to determine whether standards are attained. If a water quality standard is clearly not attained using the Binomial Method, the surface water is listed with no requirement for further evaluation. If the Binomial Method does not trigger listing, but some evidence indicates potential non-attainment, this Policy requires that the State use a second method. This Weight of the Evidence Method requires the State to evaluate all available information to determine whether standards are attained.

The methodology to develop the section 303(d) list is established by this Policy and includes:

- Listing factors and de-listing factors;
- The process for evaluation of readily available data and information; and
- Priority setting and scheduling.

This Policy applies only to the listing process methodology used to comply with CWA section 303(d). In order to make decisions regarding standards attainment, this Policy provides guidance to interpret data and information by comparison to beneficial uses, existing numeric and narrative water quality objectives, and antidegradation considerations.

[1] Water quality standards include beneficial uses, applicable numeric or narrative water quality objectives, federal water quality criteria promulgated as state standards, and anti-degradation requirements.

2 Listing Factors

RWQCBs and SWRCB shall use the following factors to develop the section 303(d) list. Water segments shall be placed on the section 303(d) list if any of the following conditions are met:

2.1 Numeric Water Quality Objectives, Criteria, and Evaluation Guidelines for Pollutants in Water

Numeric water quality objectives, federal criteria promulgated as state standards, or evaluation guidelines used to interpret narrative objectives (see Section 5.2.3) are exceeded in 10 percent of the samples with a confidence level of 90 percent using a binomial distribution (Table 2.1). For sample populations less than 20, when 5 or more samples exceed the water quality objective, the segment shall be listed. Waters shall not be listed if the binomial method indicates impairment but the Weight of Evidence indicates attainment (see Section 3.3).

2.2 Numerical Water Quality Objectives or Standards for Bacteria Where Recreational Uses Apply

For bacterial measurements from coastal beaches, if water quality monitoring was conducted April 1 through October 31 only, a 4 percent exceedance percentage shall be used for the Binomial Method, in the absence of a site-specific exceedance frequency.

Beach postings shall not be the sole basis for placement of a water segment on the section 303(d) list.

2.3 Health Advisories

A health advisory against the consumption of edible resident organisms or a shellfish harvesting ban has been issued by the Office of Environmental Health Hazard Assessment or Department of Health Services and there is a designated or existing fish consumption beneficial use for the segment. A water body need not be listed if more recent data or information indicates that the advisory is no longer representative of current conditions.

2.4 Water/Sediment Toxicity

The water segment exhibits statistically significant water or sediment toxicity in 10 percent of the samples with a confidence of 90 percent using a binomial distribution (Table 2.1). For sample populations less than 10, when 3 or more samples exhibit toxicity, the segment shall be listed.

2.5 Trends in Water Quality

A water segment exhibits concentrations of pollutants or water body conditions showing a trend of declining water quality and the Regional Board has not made a finding consistent with State Board Resolution No. 68-16 that the degradation in water quality is in the best interest of the people of the State. Numeric, pollutant-specific water quality objectives need not be exceeded to satisfy this listing factor. In assessing trends in water quality RWQCBs shall:

1. Use data collected for at least three years;
2. Establish specific baseline conditions;
3. Specify any statistical approaches used to evaluate the declining trend in water quality measurements;
4. Specify the influence of seasonal effects, interannual effects, changes in monitoring methods, changes in analysis of samples, and other factors deemed appropriate.

2.6 Weight of Evidence Method

When the binomial method does not result in the listing of a water body and some information indicates non-attainment of standards, then the weight of evidence method shall be used. Water segments shall be placed on the section 303(d) list if the weight of evidence demonstrates that a water quality standard is not attained.

When recommending listing based on the weight of evidence, the RWQCB must justify its recommendation to list by:

- providing any data or information supporting the listing;
- describing how the data or information are relevant to the water quality standard; and,
- demonstrating that the weight of evidence of the data and information indicate that the water quality standard is not attained.

Data and information used in the weight of evidence evaluation may include:

- Magnitude of standards exceedances or impairments
- Frequency of standards exceedances relative to any allowed frequency of exceedance
- Adverse biological responses, such as reduction in growth, reduction in reproductive capacity, abnormal development, histopathological abnormalities, and other adverse conditions
- Degradation of biological communities, including but not limited to diminished numbers of species or individuals of a single species
- Nuisance conditions such as odor, taste, excessive algae growth, foam, turbidity, oil, litter or trash, and color
- Photographic evidence of standards non-attainment
- Specific water body or watershed characteristics
- Pollution sources and discharge patterns
- Calibrated and validated modeling results
- Potential impacts to humans or wildlife from consumption of fish or shellfish
- Any federal, State, or local government requirements that could affect the cause of pollution
- Data not meeting the quality and quantity requirements for the binomial method

Sample sizes		Place on the section 303(d) list if at least this number of exceedances	Sample sizes		Place on the section 303(d) list if at least this number of exceedances
From	To		From	To	
10	11	3	245	253	32
12	18	4	254	262	33
19	25	5	263	270	34
26	32	6	271	279	35
33	40	7	280	288	36
41	47	8	289	297	37
48	55	9	298	306	38
56	63	10	307	315	39
64	71	11	316	324	40
72	79	12	325	333	41
80	88	13	334	343	42
89	96	14	344	352	43
97	104	15	353	361	44
105	113	16	362	370	45
114	121	17	371	379	46
122	130	18	380	388	47
131	138	19	389	397	48
139	147	20	398	406	49
148	156	21	407	415	50
157	164	22	416	424	51
165	173	23	425	434	52
174	182	24	435	443	53
183	191	25	444	452	54
192	199	26	453	461	55
200	208	27	462	470	56
209	217	28	471	471	57
218	226	29	480	489	58
227	235	30	490	498	59
236	244	31	499	500	60

For samples greater than 500, the number of exceedances to place waters on the section 303(d) list shall be calculated using the following equation: Excel® function CRITBINOM(Number of samples, 0.10, 0.90) + 1.

3 De-Listing Factors

This section provides the methodology for removing waters from the section 303(d) list.

All listings of water segments shall be reevaluated if the listing was based on faulty data. Faulty data include, but are not limited to, typographical errors, improper quality assurance/quality control procedures, or limitations related to the analytical methods that would lead to improper conclusions regarding the water quality status of the segment.

If objectives or standards have been revised and the site or water meets water quality standards, the water segment shall be removed from the section 303(d) list. The listing of a segment shall be reevaluated if the water quality standard has been changed.

Water segments shall be removed from the section 303(d) list if the following conditions are met:

3.1 Numeric Water Quality Objectives, Criteria, and Evaluation Guidelines for Pollutants in Water

Numeric water quality objectives, federal criteria promulgated as State standards, or evaluation guidelines used to interpret narrative objectives (see Section 5.2.3) are exceeded in fewer than 10 percent of the samples with a confidence level of 90 percent using a binomial distribution (Table 3.1). The minimum sample size is 22. In addition, the Weight of Evidence method (Section 3.3) indicates standards are attained.

3.2 Health Advisories

The health advisory used to list the water segment has been removed or the chemical or biological contaminant-specific evaluation guideline for tissue is no longer exceeded.

3.3 Weight of Evidence Method

When the binomial method would result in the delisting of a water body, but some information indicates non-attainment of standards, the weight of the evidence method shall be used to assess whether delisting is appropriate. When making this assessment all available data and information must be evaluated. The weight of evidence method may also be used to justify delisting when data and information indicates that standards are attained, even if the binomial method would not result in delisting.

When recommending de-listing based on the weight of evidence, the RWQCB must justify its recommendation by:

- providing the data or information supporting the de-listing;
- describing how the data or information are relevant to the water quality standard; and,
- demonstrating that the weight of evidence of the data and information indicate the water quality standard is attained and non-attainment of standards is not likely to recur.

Data not meeting the quality and quantity requirements for the binomial method may be used in this evaluation.

TABLE 3.1: MAXIMUM NUMBER OF MEASURED EXCEEDANCES ALLOWABLE TO REMOVE A WATER SEGMENT FROM THE SECTION 303(D) LIST WITH AT LEAST 90% CONFIDENCE THAT THE ACTUAL EXCEEDANCE RATE IS LESS THAN 10 PERCENT.

Sample sizes		Maximum number of exceedances allowable for delisting
From	To	
22	37	0
38	51	1
52	64	2
65	77	3
78	90	4
91	103	5
104	115	6
116	127	7
128	139	8
140	151	9
152	163	10
164	174	11
175	186	12
187	198	13
199	209	14
210	221	15
222	232	16
233	244	17
245	255	18
256	266	19
267	278	20
279	289	21

Sample sizes		Maximum number of exceedances allowable for delisting
From	To	
290	300	22
301	311	23
312	323	24
324	334	25
335	345	26
346	356	27
357	367	28
368	378	29
379	389	30
390	401	31
402	412	32
413	423	33
424	434	34
435	445	35
446	456	36
457	467	37
468	478	38
479	489	39
490	500	40

For samples greater than 500, the number of allowable exceedances shall be calculated using the following equation: Excel® function CRITBINOM(Number of samples, 0.10, 0.10) - 1.

4 Priority Setting and Scheduling

Waters on the section 303(d) list shall be ranked into high, medium, and low categories in order to set priority for development of TMDLs or other action as described in the Impaired Waters Guidance. The rankings shall be based on:

- Water body significance (such as importance and extent of beneficial uses, threatened and endangered species concerns, and size of water body)..

Degree that water quality objectives are not met or beneficial uses are not attained or threatened (such as the severity of the pollution or number of pollutants/stressors of concern) [40 CFR 130.7(b)(4)].

The list shall also identify those waters targeted for TMDL development in the next two years, irrespective of whether they are ranked high, medium, or low. In setting these targets, availability of funding and information to address the water quality problem may be considered in addition to the priority ranking for the water.

5 Policy Implementation

This section provides SWRCB guidance on implementation of this Policy.

5.1 Evaluating Existing Listings

Water segment and pollutants on the section 303(d) list shall be reevaluated if new data and information become available. The steps to complete a reevaluation are:

A. All readily available data and information shall be used to assess a water segment. Data and information older than ten years may be used if the original listing was based on that data.
B. In performing the reassessment, the RWQCBs shall use the Listing Factors in this Policy. If the original listing was established using the provisions of this Policy, then the California De-listing Factors shall be used.

An interested party may request that an existing listing be reassessed under the provisions of the Policy. In requesting the reevaluation, the interested party must describe the reason(s) the listing is inappropriate, describe how application of the Policy would lead to a different outcome, and provide the data and information necessary to enable the RWQCB and SWRCB to conduct the review.

The most recently completed section 303(d) list shall form the basis for any subsequent lists.

5.2 Process for Evaluation of Readily Available Data and Information

The RWQCBs and SWRCB shall use the following process to develop the section 303(d) list described above. The process has seven steps including:

- Definition of readily available data and information;
- Administration of the listing process;
- Evaluation guideline selection process;
- Data quality assessment process;
- Data quantity assessment process;
- RWQCB approval; and
- SWRCB approval.

5.2.1 Definition of Readily Available Data and Information

RWQCBs and SWRCB shall assemble and consider all readily available data and information. At a minimum, readily available data and information includes paper and electronic copies of:

- The most recent section 303(d) list, the most recent section 305(b) report, and the most recent California Integrated Water Quality Report;

- Drinking water source assessments;

- Information on water quality problems in documents prepared to satisfy Superfund and Resource Conservation and Recovery Act requirements;

- Fish and shellfish advisories, beach postings and closures, or other water quality-based restrictions;

- Reports of fish kills, cancers, lesions or tumors;

- Dilution calculations, trend analyses, or predictive models for assessing the physical, chemical, or biological condition of streams, rivers, lakes, reservoirs, estuaries, coastal lagoons, or the ocean;

- Applicable water quality data and information from SWAMP, USEPA's Storage and Retrieval Database Access (STORET), the Bay-Delta Tributaries Database, Southern California Coastal Water Research Project, and the San Francisco Estuary Regional Monitoring Program; and

- Water quality problems and existing and readily available water quality data and information reported by local, state and federal agencies (including monitoring data from discharger monitoring reports), citizen monitoring groups, academic institutions, and the public.

5.2.2 Administration of the Listing Process

5.2.2.1 Solicitation of All Readily Available Data and Information

SWRCB and RWQCBs shall seek all readily available data and information on the quality of surface waters of the State. To do this, the RWQCBs shall solicit all data and information available, including information available from the public. The SWRCB shall solicit all available data and information by gathering data and information from other state and federal agencies or groups that can provide data that are statewide in scope. The SWRCB information solicitation letter shall request that all parties having data and information pertaining to a specific Region should send the data and information directly to that RWQCB.

Readily available data and information shall be solicited from any interested party, including but not limited to: private citizens; public agencies; state and federal governmental agencies; non-profit organizations; and businesses possessing data and information regarding the quality of the Region's waters.

In general, the SWRCB and RWQCBs shall seek all readily available data and assessment information generated since the last listing cycle. For purposes of data and information solicitation, information is any documentation related to the water quality condition of a surface water body. Data are considered to be a subset of information that consists of reports detailing measurements of specific environmental characteristics. The data and information may pertain to physical, chemical, and/or biological conditions of the Region's waters or watersheds.

Information submitted in response to the solicitation should contain the following:

- The name of the person or organization providing the information;

- Mailing address, telephone numbers, and email address of a contact person for the information provided;
- Two hard copies and an electronic copy of all information provided. The submittal must specify the software used to format the information and provide definitions for any codes or abbreviations used;
- Bibliographic citations for all information provided; and
- If computer model outputs are included in the information, provide bibliographic citations and specify any calibration and quality assurance information available for the model(s) used.

Data submitted in response to the solicitation should contain the following:

- Data in electronic form, in spreadsheet, database, or ASCII formats. The submittal should use the SWAMP data format and must define any codes or abbreviations used in the database.
- Metadata for the field data, i.e., when measurements were taken, locations, number of samples, detection limits, and other relevant factors.
- Metadata for any Geographical Information System data must be included. The metadata must detail all the parameters of the projection, including datum.
- A copy of the quality assurance procedures.
- Two hard copies of the data.
- Data from citizen volunteer water quality monitoring efforts require the name of the group and indication of any training in water quality assessment completed by members of the group.

Data and information previously submitted to RWQCBs, such as Discharge Monitoring Reports, should not be submitted as the data and information are already available to RWQCBs.

5.2.2.2 RWQCB Documentation

For each recommended addition to or deletion from the 303(d) list, the RWQCB shall document the basis for that recommendation. The documentation shall present a clear description of the line(s) of evidence used to support each recommendation. Documentation related to multiple recommendations may be summarized once and need not be repeated for each recommendation. If the data and information reviewed indicate standards are attained, and the water is not listed, a summary of the analysis of that data and information shall be prepared.

The documentation should contain the following:

A. Type of water body (Bay and Harbors, Coastal Shoreline, Estuary, Lake/Reservoir, Ocean, Rivers/Stream, Saline Lake, Tidal Wetlands, Freshwater Wetland)
B. Name of water body segment (including Calwater watershed)
C. Pollutant or type of pollution
D. Medium (water, sediment, tissue, habitat, etc.)
E. Applicable water quality standard(s). The specific water quality standard(s) used as the basis for the Listing recommendation must be described.

G. Brief Watershed Description (e.g., land use, precipitation patterns, or other factors considered in the assessment)
H. Summary of data and information
As applicable, the following should be summarized for any data or information used to support a recommendation:
1. Quality assurance assessment
2. Methods used
3. Spatial representation, area that beneficial use is affected or determined to be supported
4. Temporal representation
5. Site-specific information
6. Age of data or information
7. Effect of seasonality
8. Events/conditions that might influence evaluation (e.g., storms, flow conditions, laboratory data qualifiers, etc.)
9. Number of samples or observations
10. Number of samples or observations exceeding guideline or standard
11. Source of or reference for data or information.
12. Types of observations
13. Reference conditions (if appropriate)
14. Numeric indices derived from qualitative data

I. Potential source(s) of pollution, if known
J. Data evaluation as required by Sections 2 or 3 of this Policy
K. Recommendation
L. Priority ranking
M. Identification of those water quality limited segments targeted for TMDL development in the next two years (as required by Section 4 of this Policy).

5.2.3 Evaluation Guideline Selection Process

When evaluating narrative water quality objectives or attainment of beneficial uses, it may be necessary for the RWQCBs and SWRCB to identify the numeric evaluation guidelines that represent standards attainment or beneficial use protection.
To select an evaluation guideline, the RWQCB or SWRCB shall:

- identify the appropriate numeric evaluation guideline that represents attainment of water quality objectives or protection of beneficial uses. In general, criteria or guidelines developed by California state agencies are preferred over federal criteria or guidelines. If no applicable federal or State criteria or guidelines are available, criteria or guidelines developed by other states or countries or literature values may be used, if the relationship between the water quality standard and the evaluation guideline is documented. The following information may be useful in selecting the appropriate guideline:

1. Sediment Quality Guidelines for Marine, Estuarine, and Freshwater Sediments: RWQCBs may select sediment quality guidelines that have been published in the peer-reviewed literature or by state or federal agencies. Acceptable guidelines include selected values: effects range-median, probable effects level, probable effects concentration, and other sediment quality guidelines.
2. Water Quality Guidelines for Marine, Estuarine, and Fresh Waters

RWQCBs may select water quality guidelines contained in "A Compilation of Water Quality Goals" (Marshack).

3. Evaluation Guidelines for the Protection of Human Consumption of Fish and Shellfish: RWQCBs may select the most restrictive evaluation published by USEPA or the Office of Environmental Health Hazard Assessment.

4. Evaluation Guidelines for Protection of Wildlife from Bioaccumulation of Toxic Substances: RWQCBs may select the guidelines for the protection of wildlife published by the National Academy of Science.

5. Other evaluation guidelines may be used if it can be demonstrated that the evaluation guideline is:
   - Applicable to the beneficial use
   - Protective of the beneficial use
   - Linked to the pollutant under consideration
   - Scientifically-based or policy-based
   - Not more limiting than the natural background concentration (if applicable)

Justification for alternate evaluation guidelines shall be documented.

5.2.4 Data Quality Assessment Process

The following data are considered acceptable for use in developing the section 303(d) list:

1. Data supported by a Quality Assurance Project Plan (QAPP) pursuant to the requirements of 40 CFR 31.45. 2. Data from major monitoring programs in California are considered of adequate quality. The major programs include, but are not limited to, SWAMP, the Southern California Bight Projects of the Southern California Coastal Water Research Project, U.S. Environmental Protection Agency's Environmental Monitoring and Assessment Program, the Regional Monitoring Program of the San Francisco Estuary Institute, and the Bay Protection and Toxic Cleanup Program (BPTCP).
3. Data collected by the United States Geological Survey, the California Department of Water Resources, the California Office of Environmental Health Hazard Assessment, and the California Department of Pesticide Regulation.

4. Other numeric data are considered credible and relevant for listing purposes if the data set submitted meets the minimum quality assurance/quality control requirements outlined below. A QAPP or equivalent information must be available containing, at a minimum, the following elements:

- Objectives of the study, project, or monitoring program;
- Methods used for sample collection;
- Field and laboratory analysis;
- Data management procedures; and
- Personnel training.

A site-specific or project-specific sampling and analysis plan for numeric data must also be available containing:

- Data quality objectives or requirements of the project;
- Rationale for the selection of sampling sites, water quality parameters, sampling frequency and methods that assure the samples are spatially and temporally representative of the surface water and representative of conditions within the targeted sampling timeframe; and
- Information to support the conclusion that results are reproducible.

For data under category 4 above, the RWQCBs shall evaluate and document the appropriateness of data collection and analysis practices. If any data quality objectives or requirements in the QAPP are not met, the reason for not meeting them and the potential impact on the overall assessment shall be clearly documented.

Data without rigorous quality control can be useful in combination with high quality data or other information. If the data collection and analysis is not supported by a QAPP (or equivalent) or if it is not possible to tell if the data collection and analysis was supported by a QAPP (or equivalent), then the data cannot be used by itself to support listing or delisting of a water segment. For narrative and qualitative submittals, the submission must:

- describe events or conditions that indicate impacts on water quality, and that are outside the expected natural range of conditions;
- provide linkage between the measurement endpoint (e.g., a study that may have been performed for some other purpose) and the water quality standard of interest;
- be scientifically defensible;
- provide analyst's credentials and training; and
- be verifiable by SWRCB or RWQCB.

Any submittal not meeting these requirements will be considered, but will be given the appropriate weight.

For photographic documentation, the submission must:

- identify the date;
- identify specific location on a general area map or;
- mark location on a USGS 7.5 minute quad map along with quad sheet name or provide location latitude/longitude;
- provide a thorough description of photograph(s);
- describe the spatial and temporal representation of the photographs;
- provide linkage between photograph-represented condition and condition that indicates impacts on water quality that are outside the expected natural range of conditions;
- provide photographer's rationale for area photographed and camera settings used; and
- be verifiable by SWRCB and RWQCB.

Any submittal not meeting these requirements will be considered, but will be given the appropriate weight.

5.2.5 Data Quantity Assessment Process

Once the available data and information are assembled, RWQCBs shall implement the following considerations before determining if water quality standards are exceeded. The following considerations shall be documented for each water body.

5.2.5.1 Water-body specific information

Data used to assess water quality standards attainment should be actual data that can be quantified and qualified. Information that is descriptive, estimated, modeled, or projected may be used as ancillary lines of evidence for listing or delisting decisions. In order to be used in developing the lists:

- Data must be measured at one or more sites in the water segment;
- Environmental conditions in a water body or at a site must be taken into consideration (e.g., effects of seasonality, events such as storms, the occurrence of wildfires, land use practices, etc.); and
- The documentation shall contain a description of pertinent factors such as the depth of water quality measurements, flow, hardness, pH, the extent of tidal influence, and other relevant sample- and water body-specific factors.

5.2.5.2 Age of Data

Only the most recent 10-year period of data and information should be used for listing and delisting waters. Data or information older than 10 years may be used on a case-by-case basis if the older data are used in conjunction with newer data to demonstrate trends or if the conditions in a water body have not changed or if more recent data or information is not available. The rationale for using older data shall be documented Older data should meet all data quality requirements presented in this Policy.

5.2.5.3 Temporal Representation

Data and information should be representative of the temporal characteristics of the water body. Data and information should be reviewed to determine whether the water quality condition is likely to persist, unless factors causing that condition are changed, or whether the water quality condition is likely to occur again or periodically (i.e. the water quality condition is recurrent). In general, data or information should be available from two or more seasons or from two or more events when effects or water quality objectives exceedances would be expected to occur. The documentation for any recommendation should include a description of the significance of the sample timing and the environmental metric being used (e.g. some measurements will represent a point in time, whereas, others may integrate months or years of effects in the water body).

5.2.5.4 Aggregation of Data by Reach/Area

If available data suggest that a pollutant may cause an exceedance of a water quality objective, the RWQCB should identify land uses, subwatersheds, tributaries, or dischargers that could be contributing the pollutant to the water body. The RWQCBs should identify stream reaches or lake/estuary areas that may have different pollutant levels based on significant differences in land use, tributary inflow, or discharge input. Based on these evaluations of the water body setting, RWQCBs should aggregate the data by appropriate reach or area. The data may be

aggregated by water segments defined in the RWQCB's Basin Plan. The aggregated data should then be evaluated to determine whether water quality standards are attained for that reach.

Data related to the same pollutant from two or more adjoining segments may be combined provided that such pooling of data would not result in a different recommendation for the individual segments.

5.2.5.5 Quantitation of Chemical Concentrations

When available data are less than or equal to the quantitation limit and the quantitation limit is less than or equal to the water quality standard,

the value will be considered as meeting the water quality standard, objective, criterion, or evaluation guideline. When the sample value is less than the quantitation limit and the quantitation limit is greater than the water quality standard, objective, criterion, or evaluation guideline, the result shall not be used in the analysis.

The quantitation limit includes the minimum level, practical quantitation level, or reporting limit.

5.2.5.6 Transformation of data consistent with the expression of numeric water quality objectives, water quality criteria, or evaluation guidelines

If the water quality objectives, criteria, or guidelines state a specific averaging period and/or mathematical transformation, the data should be transformed in a manner consistent with the numeric objectives, criteria, or guidelines prior to evaluating the data. If sufficient data are not available for the stated averaging period, the available data shall be used to represent the averaging period.

To be considered temporally independent for use with the Binomial Method, samples collected during the averaging period shall be combined and considered one sampling event. For data that is not temporally independent (e.g., when multiple samples are collected at a single location on the same day), the measurements shall be combined and represented by a single resultant value. Alternative data transformation methods may be used with the Weight of Evidence Method.

5.2.5.7 Binomial Method Statistical Evaluation

After data has been transformed as discussed above, all of the following steps shall be completed:

A. Identify each data point representing the averaging period for the standard which is greater than the water quality standard, objective, criterion, or evaluation guideline. Sum the number of data points exceeding the standard, objective, criterion, or evaluation guideline.
B. Sum the total number of data points (sample population).
C. Compare the result to the appropriate table (i.e., Tables 2.1 or 3.1).
D. Report the result of this comparison.

5.2.5.8 Evaluation of Bioassessment Data

When evaluating biological data and information, RWQCBs should:

- Identify appropriate reference sites within water segments, watersheds, or ecoregions. Document methods for selection of reference sites.
- Evaluate bioassessment data at reference sites using water segment-appropriate method(s) and index period(s). Document sampling methods, index periods, and Quality Assurance/Quality Control procedures for the habitat being sampled and question(s) being asked.
- Evaluate bioassessment data from other sites, and compare to reference conditions. Evaluate physical habitat data and other water quality data, when available, to support conclusions about the status of the water segment.
- Calculate biological metrics for reference sites and develop an Index of Biological Integrity if possible.

5.2.5.9 Evaluation of Temperature Data

When "historic" or "natural" temperature data are available, compliance with applicable temperature objectives can generally be determined directly[2].

In the absence of necessary data to interpret temperature water quality objectives temperature monitoring data shall be compared to the temperature requirements of aquatic life in the water segment. Information on the current and historic condition and distribution of the sensitive beneficial uses (e.g., fishery resources) in the water segment is necessary, as well as temperature data reflective of conditions experienced by the most sensitive life stage of the aquatic life species. If temperature data from historic periods corresponding to times when the beneficial use was fully supported are not available, information about presence/absence or abundance of sensitive aquatic life species shall be used to infer historic temperature conditions if loss of habitat, diversions, toxic spills, and other factors are also considered. Determination of life stage temperature requirements of sensitive aquatic life species shall be based on peer-reviewed literature. Similarly, evaluation of temperature data shall be based on temperature metrics reflective of the temperature requirements for the sensitive aquatic life species.

5.3 RWQCB Approval

At a public hearing, RWQCB shall consider recommended changes to the section 303(d) List. Advance notice and opportunity to comment shall be provided. After receiving testimony, each RWQCBs shall develop responses to comments as required by law. After consideration of all testimony, each RWQCB shall approve a resolution transmitting its recommendations for the section 303(d) list. RWQCBs shall submit to SWRCB documentation of the basis for the recommendations responses to comments, documentation of the hearing process, and a copy of the rest of the administrative record.

[2] Most Regional Boards have temperature objectives stating that the natural receiving water temperature shall not be increased 5° F above the "natural" receiving water temperature.

5.4 SWRCB Approval

SWRCB shall only evaluate RWQCB-recommendations for completeness, consistency with this Policy, and consistency with applicable law. The SWRCB shall assemble documentation related to Regional Board recommendations and consolidate all the RWQCB lists into the statewide section 303(d) list.

Before the adoption of the section 303(d) list, the SWRCB shall hold a public workshop. Advance notice and opportunity to comment shall be provided. Comments shall be limited to the issues raised before the RWQCBs. Requests for review of specific listing decisions must be submitted to the SWRCB within 30 days of the RWQCB's decision. The SWRCB shall consider changes to only waters that are requested for review unless the SWRCB, on its own motion, decides to consider the recommendations on other waters. Subsequent to the workshop, the SWRCB shall approve the section 303(d) list at a Board Meeting. The approved section 303(d) list and the supporting fact sheets shall be submitted to USEPA for approval as required by the Clean Water Act.

Review of State Board's December 2003 Draft Listing Policy Relative to TMDL Roundtable Recommendations

The following provides a review of the State Board's draft "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List" dated December 2003 (Draft Listing Policy). The Draft Listing Policy is evaluated relative to the recommendations developed by the TMDL Roundtable staff and provided to State Board staff in December 2002.

The TMDL Roundtable recommendations are numbered and can be found in the document titled "Policy for the Identification of Surface Waters not Meeting Water Quality Standards; Recommendations from the Regional Board Representatives of the TMDL Round Table to the Management Coordinating Committee" dated December 18, 2002. The recommendations were developed based on contributions from 50 Regional Board staff and the Office of Chief Counsel's TMDL/303(d) expert. Those recommendations were developed over the course of several months with the intent of providing a solid technical and legal foundation for State Board's Listing Policy.

In summary, Regional Board staff and OCC prepared thirty-two recommendations. Seven of the recommendations are wholly or substantially incorporated into the Draft Listing Policy. Thirteen of the recommendations have been incorporated into the Draft Listing Policy in part, but significant portions of the Draft Listing Policy are inconsistent with those recommendations or do not include key components of the recommendations. The Draft Listing Policy is substantially in conflict with the remaining twelve recommendations or does not address the recommendation at all.

The basis for the discrepancies between the Regional Board staff and OCC recommendations and the Draft Listing Policy come from two fundamental issues:

1. Regional Board staff viewed the Listing Policy as a tool to guide the process of assessing attainment of water quality standards. This approach was based on the assumption that the TMDL Guidance (currently being developed with Tetra Tech as the lead) would define the types of actions that could be taken when a water is not attaining standards. State Board staff view the Listing Policy as a guide to both assessment and planning. Therefore, parts of the Draft Listing Policy suggest what action will be taken (and when) depending on factors other than whether standards are attained.
2. Regional Board staff believed that the great variability in how standards and criteria are expressed combined with even greater variations in data quality and quantity from water body to water body precludes the development of a "one size fits all" analytical method. The Regional Board staff, therefore, recommended a consistent assessment process that would allow for any necessary changes in analytical approach based on differences in criteria and data availability. State Board staff generally requires the use of a single analytical method and allowable exceedance rate for all waters, pollutants, and standards.

Recommendation 1: The listing policy should address all assessed surface waters not attaining water quality standards. Water quality standards include numeric criteria, narrative criteria, beneficial uses, and antidegradation considerations.

Draft Listing Policy: The Draft Listing Policy is not consistent with this recommendation. The Draft Listing Policy would fail to identify water quality problems related to invasive species, habitat degradation, flow modification, or other "non-pollutant" sources. Only those waters not meeting standards due to "pollutants" (e.g. pesticides, nutrients, sediment, etc) would be identified.

Recommendation 2: The listing process should not describe a process for determining whether water quality standards are appropriate.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation, since there is no step requiring review of uses and standards.

Recommendation 3: The policy should be applied retroactively within time and resource constraints. Approaches for applying this policy to currently listed waters should be described.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. Existing listings must be reevaluated if new data and information are available; otherwise, reevaluation appears to be discretionary and based primarily on whether an interested party requests such an evaluation.

Recommendation 4: The policy should not describe the actions to be taken as a consequence of listing.

Draft Listing Policy: The Draft Listing Policy is not consistent with this recommendation. The 303(d) list would include priorities and schedules for the development of TMDLs for all listed waters. The Enforceable Programs Category specifies the types of actions that must take place for waters to be considered an "Enforceable Program". These required actions may be in conflict with the Impaired Waters Guidance being developed.

Recommendation 5: The policy should describe how waters are removed from the List. Waters should be removed from the List when the data and information indicate that water quality standards are being attained.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. Section 4 describes how waters can be removed from the 303(d) List. Waters can be delisted if fewer then 10% of the samples are not exceeding standards. The Policy, therefore, allows waters in non-attainment of standards to be delisted.

Recommendation 6: The policy should address how water bodies are identified on the List. To the extent practicable, water body segments not meeting standards should be identified in a consistent manner.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation. Section 6.2.5.6 describes how data should be aggregated by reach/area and presumably how such reaches should be defined. There is an apparent inconsistency between sections 6.2.5.3 and 6.2.5.6. Section 6.2.5.3 (Spatial Representation) implies that data from a given station can only represent 200 meters of a stream section, whereas, section 6.2.5.6 suggests a number of factors be used to define stream or waterbody segment.

Recommendation 7: The effect of listing is to target the water body for a thorough evaluation of the nature and extent of a problem and implementation of an appropriate response. The process that the Regional Boards will use to identify an appropriate response will be addressed in the Impaired Waters Guidance. The response could be anything from permitting actions, enforcement actions, voluntary actions, revisions of the standards if appropriate, or another appropriate response to address the impairment.[1] A TMDL may or may not be required.

Draft Listing Policy: The Draft Listing Policy is <u>not</u> consistent with this recommendation. Also see Recommendation 4. The Draft Listing Policy requires that specific actions take place for waters on certain lists. The Regional Board recommended an acknowledgement that data may be sufficient to determine non-attainment of standards, but may not be sufficient to determine a course of action.

[1] A decision tree flow chart should be developed to clearly describe the appropriate course of action to follow for listed waters.

Recommendation 8: Solicitation: Each Regional Board should be responsible for soliciting information from interested parties within its Region. The State Board should be responsible for requesting information from agencies/entities that are likely to have information relevant to multiple regions (e.g., from federal/State agencies or from the State university systems). The solicitation process should take place during the same period of time in each Region.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation. The Draft Listing Policy should explicitly state that the solicitation process will take place concurrently at the State Board and Regions.

Recommendation 9: Assessment Process: The Regional Boards should be responsible for assessing the existing and readily available information, including information received during the solicitation process. The Regional Boards should also be responsible for identifying waters on the List. The Regional Boards may hold a workshop and/or public hearing to take comments on staff recommendations. The Regional Boards should then take formal action to adopt recommended changes to the List. The Regional Boards will be responsible for submitting to the State Board the administrative record which supports their recommendations. The State Board should review each Regional Board's recommendations for consistency with the Listing policy. The State Board should accept Regional Board recommendations, unless they are inconsistent with the Listing policy or applicable law. The State Board should then adopt the statewide List through a formal action.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation. The Draft Listing Policy also makes it clear that only issues raised before the Regional Boards will be considered. The Listing Policy may also need to explicitly limit the time period for submission of data and information.

Recommendation 10: Frequency of Updates to the List: A solicitation for data and information and assessment of the need for changes to the List should take place every four years. The Regional Board may, on its own motion, recommend changes to the List between periodic updates. Any such changes must go through the same process as the periodic updates (e.g., Regional Board adoption of the recommended change, State Board approval, and USEPA approval for Section 303(d) listed waters).

Draft Listing Policy: The Draft Listing Policy is <u>not</u> consistent with this recommendation. The Draft Listing Policy makes no mention of the frequency of the assessment process. Currently annual 305(b) reports are required and biennial 303(d) lists. Without a defined State policy on the frequency of assessment, the State will likely be conducting continual and possibly overlapping assessment processes.

Recommendation 11: Waters Currently on the Section 303(d) List: All waters currently on the Section 303(d) list (as of 2002) should be reviewed for consistency with this listing policy within the first two listing cycles following adoption of the listing policy. Recommendations per this Listing Policy should be made for these waters. Waters on the current Section 303(d) list may also be reviewed between periodic updates as described in Recommendation 10 above.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy includes provisions for reevaluating currently listed waters, but does not give a timeline for completing the reevaulation.

Recommendation 12: Listing Factors: A water should be listed when readily available data and information indicate that existing water quality standards (which include narrative criteria, numeric criteria, beneficial uses, and anti-degradation considerations) are not attained on a persistent or recurrent basis.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy seems to rely primarily on the application of a binomial distribution to evaluation of the data. Although a universal acceptable exceedance rate is established (10%), the approach does not distinguish between exceedances that are grouped in time or distributed. The "Alternate Data Evaluation" (3.1.11) allows the use of other methods, but may not result in identification of all waters not attaining standards.

Recommendation 13: Delisting or Not Listing Factors:

a) Readily available data and information indicates that water quality standards are being attained.

b) Some data and information indicate past non-attainment of water quality standards, but other information or data indicates that the water quality problem is not recurrent or persistent. Overall, the available information indicates that water quality standards are currently being attained.

c) New data or information indicates that faulty data led to the original listing. Assessment of remaining (credible and non-faulty) data **either** indicates that water quality standards are attained or is inconclusive. Faulty data include, but are not limited to, typographical errors, improper quality assurance/quality control procedures, or limitations related to the analytical methods that would lead to improper conclusions regarding the water quality status of the segment.

d) Standards have been revised or beneficial use designations have been modified and have received all required State and federal approvals and available data and information indicate that water quality standards are being attained.

e) The Regional Board has made findings pursuant to State Board Resolution 68-16 to allow degradation of the high quality of the water body.[2] Data and information indicates that the degradation does not exceed that which is permitted in such a finding.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. Recommendations 13 c) and 13 d) have been incorporated. A binomial distribution method is used to determine attainment, rather then Recommendation 13 a). Recommendation 13 b) is partially addressed by section 4.10 of the Draft Listing Policy, but it is unclear how section 4.10 would be applied. Recommendation 13 e) does not appear to be included in the Draft Listing Policy.

[2] For reasons similar to those described in Recommendation 2, the antidegradation finding must be made in a proceeding outside of the Listing process. Note that a finding allowing some degradation to occur does not establish a basis for allowing non-attainment of other water quality standards (i.e. numeric objectives, narrative objectives, or beneficial uses).

Recommendation 14: For waters on the List, the Regional Board should establish high, medium, and low priority categories based on the following factors: a) Water body significance (such as importance and extent of beneficial uses, threatened and endangered species concerns, and size of water body); b) Degree that water quality standards are not met or beneficial uses are not attained or threatened (such as the severity of the pollution or number of pollutants/stressors of concern; see 40 CFR 130.7(b)(4)); c) Availability of information to address the water quality problem.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation. The Draft Listing Policy (Section 5) includes the priority setting factors in Recommendation 14.

Recommendation 15: The Regional Board will not assign schedules on the List. A priority setting is not a scheduling commitment. The Regional Board will determine schedules based upon additional considerations including but not limited to available funds, Triennial Review List priorities, applicable court orders, Watershed Management Initiative (WMI) priorities, and other relevant administrative constraints.

Draft Listing Policy: The Draft Listing Policy is <u>not</u> consistent with this recommendation. The Draft Listing Policy specifically includes scheduling requirements that are directly tied to the established priorities for waters on the 303(d) list.

Recommendation 16: A data management system to store the basic data attributes of surface waters not attaining standards should be used (e.g., such as is currently done for the Section 305(b) Water Quality Assessment report through the GEOWBS data management interface). To allow queries related to surface waters not attaining standards, this database shall contain, at a minimum, the following attribute fields: Name of water body; Pollution/pollutant, if known, or indicate "unknown"; Numeric identification of water body (CU, HU, HA, HSA, etc.); County(ies); Major water body name; Standard (beneficial use not supported, objective not met, or antidegradation not attained); Overall size (acres, lineal miles, square miles); Size of impaired portion, if known; Comment/descriptor (useful language to help an individual recognize the watershed). In addition to the above attributes, the database will continue to allow the Regional Board to assign priorities (high, medium, low) for actions to be taken.

Draft Listing Policy: The Draft Listing Policy is <u>not</u> consistent with this recommendation. Although compilation, through Fact Sheets, of many of the data attributes is discussed, management of that data is not mentioned.

Recommendation 17: To provide a minimum statewide level of consistency and completeness in soliciting existing and readily available data and information, each Regional Board will solicit, and document its methods and sources for soliciting, existing and readily available data and information. In general, Regional Boards shall seek readily available data and information generated since the prior List evaluation period. For purposes of data and information solicitation, information is any documentation describing the current or anticipated water quality condition of a surface water body. Data are considered to be a subset of information that consists of reports detailing measurements of specific environmental characteristics. Data and information not submitted by interested parties in response to the solicitation are not considered to be readily available.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation. A requirement that each Region document its solicitation process should be added to be fully consistent with Recommendation 17.

Recommendation 18: **METHODS:** The State Board should provide a list of general methods for acquiring data and information (e.g., mailings to Basin Plan mailing lists and lists of other interested parties; website posting; direct requests to select agencies; and internal Regional Board staff requests) that the Regional Water Boards will, at a minimum, use to solicit existing and readily available data and information.

Draft Listing Policy: The Draft Listing Policy is <u>not</u> consistent with this recommendation. No description of the methods to be used to conduct the solicitation is provided.

Recommendation 19: **SOURCES:** The policy should provide a list of specific sources that the Regional Boards will, at a minimum, solicit for existing and readily available data and information produced since the prior List evaluation period. The list of sources should include:

(1) Stakeholders and interested parties, including, at least,

- Other government agencies (e.g. CDFG, CDWR, CDPR, USFWS) via direct solicitation by the State Board
- Other (previously identified) interested parties via solicitation letter
- General public via solicitation on the Regional Board's website

(2) Other sources for existing and readily available data and information produced since the prior list evaluation period such as:

- The most recent Section 305(b) Report
- CWA Section 319 non-point source assessments
- Drinking water source assessments
- Dilution calculations or predictive models for assessing the attainment of applicable water quality standards
- Water quality problems reported by local, state and federal agencies; members of the public (for example citizen monitoring groups); or academic institutions
- Data, information, and reports available internally from Regional Board projects/programs/units/groups since the prior list evaluation period.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation.

Recommendation 20: **FORMAT:** Data and information submittals to the Regional Boards should contain the following:

a. The name of the person and/or organization providing the information.

b. The name of the person certifying the completeness and accuracy of the data and information provided.

c. The person certifying data and information may also provide a statement as to what impairment they believe is occurring.

d. Mailing address, telephone numbers, and email address of a contact person for the information provided.

e. Two hard copies and one electronic copy of all information provided. Data should be submitted in electronic form. Data may be submitted in other formats negotiated with the pertinent Region.

f. If computer model outputs or GIS files are included in the information, submitters should provide bibliographic citations and specify any calibration and quality assurance information available for the model(s) used. Metadata for the field data should be provided (i.e., when measurements were taken, locations, number of samples, detection limits, and other relevant factors). For GIS files, the metadata must detail all the parameters of the projection, including datum.

g. Bibliographic citations for all information provided.

h. A description of, and reference for, the quality assurance procedures and whether data quality objectives were attained (see Section 4.1 below).

i. In addition, data from citizen volunteer water quality monitoring efforts should include an indication of any training in water quality assessment completed by members of the group.

j. For photographs, the information listed for photo documentation in Section 4.1.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy contains most of the components of recommendation 20, but does not include a requirement to state whether data quality objectives were attained as part of the QAPP, nor does it include items b, c, or j.

Recommendation 21: To provide statewide consistency and completeness in the formats and procedures of documentation for the List Administrative Record, each Regional Board will use, at a minimum, similar general and specific types of formats and procedures of documentation for submitting its List recommendations to the State Board for the Administrative Record.

The documentation should be provided in electronic format, as document and spreadsheet files (as appropriate), using standard file formats (e.g., Microsoft Word or Excel) as agreed upon between each Regional Board and the State Board. Documentation should include (SEE DECEMBER 18, 2002 RECOMMENDATIONS FOR THE DETAILS ON THE DOCUMENTATION)

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy includes a number of the same information attributes as Recommendation 21, but also includes numerous additional data attributes that must be described for each water body. Additionally, the Draft Listing Policy does not describe the information, other than Fact Sheet information, that must be included in the Administrative Record.

Recommendation 22: Staff from the Regional Boards and State Board should collaborate to specify some general guidance on managing data and information.

DWQ and OIT staff of the State Board will investigate a networked data management system (e.g., utilizing ArcGIS and GeoWBS) in which the Regional Boards' data and recommendations will be compiled.

Some approach for processing, storing and retrieving data and scanned information will be required. Accessible archives of all information submitted are an increasing challenge, due to volume and variety of formats. Support, with staffing, hardware, and software, will need to be long-term and distributed among the State Board and Regional Board offices. Office of Information Technology staff should evaluate the following alternatives:

a. State Board investigates contract services, via commercial vendor, to provide a web site outside the state network, to improve access and security for public and state employees.

b. State Board and Regional Boards develop this web site using state network facilities.

At the end of the list update process, the entire contents of the web site could be transmitted to a State Board server for preservation as the Administrative Record.

Draft Listing Policy: The Draft Listing Policy is not consistent with this recommendation. The Draft Listing Policy does not discuss data management.

Recommendation 23: Regional Boards should use the decision processes described below and summarized in Figures 1 and 2 (on pages 52 and 53) to evaluate the attainment of beneficial uses and narrative and numerical objectives in surface waters, and to evaluate compliance with the antidegradation component of water quality standards. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION PROCESS.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy adopts many of the process steps contained in Recommendation 23. The Draft Listing Policy goes beyond Recommendation 23 in providing prescriptive requirements for many of the process steps in terms of how data should be evaluated, allowable age of data, minimum sample size, and limitations on the temporal and spatial representativeness of individual data points.

Recommendation 24: The following factors must be considered and documented to make management decisions using toxicity monitoring data. This decision process is outlined in the attached figure and in narrative form below. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF TOXICITY DATA.

Draft Listing Policy: The Draft Listing Policy is not consistent with this recommendation. The Draft Listing Policy relies solely on application of the binomial method for evaluating toxicity test results, rather than the process described in Recommendation 24.

Recommendation 25: Evaluation of aquatic habitat/aquatic life-supporting beneficial uses incorporates several types of toxicity and chemical data including both water column data and sediment quality data. Each type of data may generally be evaluated independently of the others, and listing for non-attainment of the aquatic life use results when an adequate amount of data indicates impaired beneficial use. A determination of impairment should be based on an environmentally-representative number of samples collected over a timeframe reasonably representative of existing conditions. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF TOXICITY TO AQUATIC LIFE.

Draft Listing Policy: The Draft Listing Policy is not consistent with this recommendation. The tiered approach for assessing toxicity to aquatic life is not reflected in the Draft Listing policy.

Recommendation 26: A water body should be listed if any one of the following three criteria is met: SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF BIOACCUMULATIVE SUBSTANCES.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy allows the use of the screening values and guidelines suggested in Recommendation 26. The Draft Listing Policy uses the binomial method with a 10% exceedance rate, rather than the mean or median as in Recommendation 26.

Recommendation 27: The following data requirements and processes should be used in assessment of compliance with numeric bacteriological water quality objectives. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF NUMERIC BACTERIOLOGICAL WATER QUALITY OBJECTIVES.

Draft Listing Policy: The Draft Listing Policy is not consistent with this recommendation. Recommendation 27 focuses on an evaluation based on the existing water quality objectives, whereas the Draft Listing Policy uses the binomial method and a 10 percent exceedance rate or a 4 percent exceedance rate for coastal beaches between April 1 and October 31.

Recommendation 28: Several relevant parameters—listed in Table 4 and 5—may be useful for establishing nutrient listings. The utility of these parameters varies, based on our current state of knowledge, and on the directness of their linkage to nutrient-related beneficial use impairment. The process for listing and/or delisting water bodies for nutrient impairment is to utilize a weight of evidence approach using the parameters in Tables 4 and 5 below, as appropriate, for each beneficial use designation in combination with the decision process in the "Determining Compliance with Water Quality Standards" flowcharts (Figures 1 and 2). Other scientifically defensible criteria may also be used. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF NUTRIENTS.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy discusses algae growth as part of a discussion of "Nuisance" conditions and dissolved oxygen under "Conventional Pollutants". A general discussion of nutrients is not included in the Draft Listing Policy. In addition, the Draft Listing Policy applies a 10% exceedance rate and the use of the binomial method to dissolved oxygen data.

Recommendation 29: When data of sufficient quantity and quality (see Section 4.1 above) are available, a comparison of current and "historic" or "natural" water temperatures can be made to determine whether water quality objectives are being met. If the current temperature regime of COLD or WARM waters has been altered from the "natural" or "historic" temperature regime in a manner prohibited by the applicable objective, then the water quality objective is not being met and the water body shall be determined impaired by temperature. The provisions of the State Board's Thermal Plan should also be considered.

When "historic" or "natural" temperature data are not available, alternative approaches must be employed to assess temperature impairment. One such approach is presented here. This approach is based on the assumption that the beneficial uses associated with aquatic life are most sensitive to modifications to natural temperature regimes. Other beneficial uses that may also be affected by temperature include recreation and aquaculture; other approaches for assessing temperature impairment may be more appropriate for these beneficial uses. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF TEMPERATURE INFORMATION.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy discusses temperature issues in a manner generally consistent with Recommendation 29 in Section 6.2.5.12, but appears to apply the binomial method in Section 3.1.2, which was not recommended by the Regions.

Recommendation 30: Waters shall be listed based on sufficient credible data and information that indicate that water quality standards for sediment are not met, or that impacts to beneficial uses occur and are caused by sediment. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF SEDIMENT INFORMATION.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy discusses sediment issues in a manner generally consistent with Recommendation 30, but appears to apply the binomial method in Section 3.1.8 & 3.1.9, which was not recommended by the Regions.

Recommendation 31: Water bodies that have beneficial uses that are impaired due to factors such as lack of flow, degraded aquatic habitat, and physical changes to stream channels should be identified on the List.

Draft Listing Policy: The Draft Listing Policy is not consistent with this recommendation. Such waters would not be listed.

Recommendation 32: The assessment process below should be followed until biological standards (biocriteria) have been incorporated into a Regional Board's Basin Plan. After that time these standards would necessarily guide listing decisions for the affected geographic areas. Regional Boards (especially the larger Regions) will probably adopt biocriteria for one or a few areas at a time, not for the whole Region at once. After the biocriteria are adopted for a specific area, watershed, ecoregion or waterbody type, those established biocriteria would guide listing or delisting decisions for that area only. The remainder of the Region (for which no biocriteria have yet been adopted) would still follow the process below. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON BIOLOGICAL MONITORING AND ASSESSMENTS.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy discusses evaluation of bioassessment data in a manner generally consistent with Recommendation 32 in Section 6.2.5.11. The Draft Listing Policy requires that a link between specific pollutants and degraded conditions must be made before a water is listed.

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

REGIONAL WATER QUALITY CONTROL BOARDS
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CENTRAL COAST REGION
LOS ANGELES REGION
CENTRAL VALLEY REGION
LAHONTAN REGION
COLORADO RIVER BASIN REGION
SANTA ANA REGION
SAN DIEGO REGION

Policy for the Identification of Surface Waters not Meeting Water Quality Standards

Recommendations from the Regional Board Representatives
of the TMDL Round Table to
the Management Coordinating Committee

18 December 2002

Version 1.2

State of California

California Environmental Protection Agency

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DISCLAIMER

This publication contains staff recommendations from the nine California Regional Water Quality Control Boards. No Regional Board policy or regulation is either expressed or intended.

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

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List of Acronyms and Abbreviations

§	Section (as in a law or regulation)
Basin Plan	Water Quality Control Plan
CDFG	California Department of Fish and Game
CDPR	California Department of Pesticide Regulation
CDWR	California Department of Water Resources
CWA	Federal Clean Water Act
CWC	California Water Code
DWQ	State Board Division of Water Quality
GIS	Geographic Information System
OEHHA	California Office of Environmental Health Hazard Assessment
OIT	State Board Office of Information Technology
Porter-Cologne or Porter-Cologne Act	Porter-Cologne Water Quality Control Act as amended (CWC Section 13000 et seq.)
State Board	California State Water Resources Control Board
Regional Board	California Regional Water Quality Control Board
USEPA	United States Environmental Protection Agency
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Survey

Definitions

Concept Paper	Refers to the document entitled "Concepts for Developing a Policy for Listing and De-Listing on California's 303(d) List", released for the AB 982 Public Advisory Group meeting of July 23, 2002
List	Refers to California's list of surface waters not attaining water quality standards.
Listing Policy	Refers to the policy for identifying waters to be included on the List.
Persistent	Used in the context of evaluating water quality data and information. A water quality condition that is likely to endure or exist, unless factors causing that condition are changed.
Recurrent	Used in the context of evaluating water quality data and information. A water quality condition that is likely to appear or occur again or periodically.

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1 INTRODUCTION

Water Code § 13191.3 requires the California State Water Resources Control Board (State Board) to develop guidelines for: a) the purpose of listing and delisting waters and b) developing and implementing the Total Maximum Daily Load (TMDL) program and TMDLs. The State Board is preparing two policies to address these requirements. This document is directed to the listing and delisting policy, which would be used for future updates to California's Clean Water Act (CWA) Section 303(d) list of impaired surface water bodies.

In July 2002 State Board staff completed a draft "Concept Paper" document, outlining proposed policy direction and alternatives for discussion with the AB 982 Policy Advisory Group (PAG). Staff of the nine Regional Water Quality Control Boards (Regional Boards) had significant concerns with the Concept Paper's proposed direction on a number of issues, and agreed to develop alternative Regional Board recommendations. Regional Board workgroups discussed these issues between August and October 2002, and drafted 22 separate issue papers. Members of the TMDL Program Roundtable reviewed the issue papers and formed a steering committee to edit the issue papers into a unified set of Regional Board staff recommendations. This document is the result of that process.

Scope of Recommendations

The Regional Board recommendations address the solicitation and assessment of data and information on water quality and beneficial use attainment, and the general process to be followed in formulation of an impaired waters list. As used in this document, the word "List" refers to a statewide list of all surface water bodies that are not attaining water quality standards. This List would not be limited to waters requiring TMDLs. This is consistent with the language of Section 303(d)(1)(A) of the CWA.

Assessment of waters that are attaining standards (or waters with insufficient data to determine whether standards are attained) is outside of the scope of these recommendations. Regional Board staff may provide separate recommendations at a later date on the relationship of the "Impaired Waters List" to the CWA Section 305(b) assessment process, and on the desirability of a "watch list" or "monitoring priority list" for waters with insufficient data. Additional recommendations may also be provided later for other issues that were not resolved or could not be covered by Regional Board workgroups due to staff time constraints.

Differences with the Listing Policy Concept Paper[1]

The "binomial model" approach proposed in the Concept Paper does not provide the flexibility needed to assess the attainment of water quality standards in California, given the state's wide diversity of aquatic ecosystems and water uses, and the variability among standards in the Regional Boards' Basin Plans. Furthermore, the binomial model is inconsistent with the manner in which most of California's water quality objectives are expressed. None of the Regional Board workgroups favored exclusive use of the binomial model. Instead, the Regional Board recommendations describe general procedures to be followed in the solicitation and evaluation of data and information, with a few specific recommendations on criteria for use with certain categories of pollutants and stressors.

The Regional Board staffs are strongly opposed to the Concept Paper's proposed linkage of priority ranking and schedules (and its direction that TMDLs for all high priority waters be completed within two years). The Concept Paper assumes that priorities and schedules are for TMDL development. The Regional Board recommendations assume that priorities are for a broader group of potential actions to address impairment, and that schedules (including schedules for TMDLs) will be developed and updated through the Regional Boards' annual workplan processes rather than through formal action on the List.

Advantages of Recommended Approach

The alternative approach recommended below will provide overall consistency in the assessment approaches used by all Regional Boards while allowing the flexibility necessary to address regional differences and site-specific concerns. The Regional Boards' Best Professional Judgment (BPJ) is an essential component of the evaluation process, however "transparency" can and should be provided through documentation of the assessment process, and the scientific rationale for listing/delisting, in water body fact sheets. The maintenance of a single "Impaired Waters List" and database will allow the state to respond to potential changes in USEPA regulations for the implementation of Section 303(d). Future federal regulations could at some point require state submission of a subset of this list of impaired waters. Should federal regulations change in this regard, the structure of California's Impaired Waters List will be easily amenable to sorting the waters to accommodate any such requirements.

Format

In general, each section in the report includes an introduction followed by the recommendation. The recommendations are numbered and indented for easier reference. The exception to this formatting convention is the section on Determining Compliance with Water Quality Standards. In some cases a rationale is given to provide context to

[1] "Concepts for Developing a Policy for Listing and De-Listing on California's 303(d) List", released by DWQ for the AB 982 Public Advisory Group meeting of July 23, 2002

the recommendation. The rationale is not indented and is preceded by the heading "*Rationale*".

2 SCOPE OF THE LISTING POLICY AND GENERAL LISTING CONSIDERATIONS

2.1 Scope of Listing Policy

This section provides general recommendations on what the listing policy should or should not address.

Recommendation 1: The listing policy should address all assessed surface waters not attaining water quality standards. Water quality standards include numeric criteria, narrative criteria, beneficial uses, and antidegradation considerations.

Rationale: The public and regulatory agencies should have one list of surface waters not attaining standards. This will allow easier tracking and identification of water quality problems. Whether a surface water requires a TMDL to address the problem should not be a factor in reaching a conclusion that the water quality standard is not attained. If federal law or regulations are changed to require the submittal of a subset of a broad list (i.e. a list of waters still requiring TMDLs), this can still be done.

Recommendation 2: The listing process should not describe a process for determining whether water quality standards are appropriate.

Rationale: The listing policy should focus solely on the assessment process and the assessment should be based on water quality standards that exist at that time. If the assessment process indicates a potential problem with the water quality standards, the Regional Board may choose to review or revise the standards prior to taking any other action on that water body. However, including a review of standards and uses in the assessment process would be unduly burdensome and time consuming. The Regional Board would not be able to change the standard as part of the assessment process without amending its Basin Plan, and without generating an administrative record that would be wholly unwieldy.

Recommendation 3: The policy should be applied retroactively within time and resource constraints. Approaches for applying this policy to currently listed waters should be described.

Rationale: It may not be possible to apply this policy to currently 303(d) listed waters during the next assessment, unless significant time and resources are set aside to do so. In some cases (e.g., due to an upcoming TMDL or renewal of a permit), it may be desirable to apply the policy to currently 303(d) listed waters prior to the next assessment. The policy should describe procedures for this process, but it should allow flexibility to Regional Boards regarding its use.

Recommendation 4: The policy should not describe the actions to be taken as a consequence of listing.

Rationale: The assessment process should be separate from decisions on the actions needed to correct the identified problem. Data that are sufficient to identify nonattainment of standards may not be sufficient for determining the proper course of action. A separate policy should be developed that identifies the alternatives for addressing nonattainment of water quality standards.

Recommendation 5: The policy should describe how waters are removed from the List. Waters should be removed from the List when the data and information indicate that water quality standards are being attained.

Rationale: Once standards are attained, the water body and associated problem description should be removed from the List. It would be confusing to the public and regulatory agencies if the List contained both waters attaining standards and waters not attaining standards. If a TMDL has been established or other regulatory response initiated the water would still remain listed until the standards are attained. Such listings will allow tracking of the progress of any actions taken.

Recommendation 6: The policy should address how water bodies are identified on the List. To the extent practicable, water body segments not meeting standards should be identified in a consistent manner.

Rationale: Different Regional Boards have used different methods for identifying waters or watersheds on the Section 303(d) list (e.g. some have listed watersheds and others have listed small stream segments). This can lead to misperceptions regarding the relative scope of water quality problems in one Region versus another. The policy should describe a consistent method for identifying water body/problem pairs so an accurate assessment of the status of the State's surface waters can be made.

2.2 Effects of Listing

This section discusses the consequences of listing a water body for nonattainment of standards.

Recommendation 7: The effect of listing is to target the water body for a thorough evaluation of the nature and extent of a problem and implementation of an appropriate response. The process that the Regional Boards will use to identify an appropriate response will be addressed in the TMDL development policy. The response could be anything from permitting actions, enforcement actions, voluntary actions, revisions of the standards if appropriate, or another appropriate response to address the impairment.[2] A TMDL may or may not be required.

[2] A decision tree flow chart should be developed to clearly describe the appropriate course of action to follow for listed waters.

Rationale: The identification of a water quality problem should trigger some type of action. The most appropriate action to take will depend on a number of factors, including legal requirements, the approach that is likely to most effectively address the problem, and whether the problem has been adequately characterized. Listing should not automatically trigger a specific, pre-defined action, since what is known about a problem and how best to address it can differ significantly from water body to water body.

2.3 Listing Process

This section describes the administrative process that the State will undertake to periodically update and make changes to the List of surface waters not attaining water quality standards.

Recommendation 8: Solicitation: Each Regional Board should be responsible for soliciting information from interested parties within its Region. The State Board should be responsible for requesting information from agencies/entities that are likely to have information relevant to multiple regions (e.g., from federal/State agencies or from the State university systems). The solicitation process should take place during the same period of time in each Region.

Rationale: Regional Boards have the greatest knowledge of interested parties within their Regions, as well as knowledge of those entities collecting relevant data and information. The State Board is better positioned to ensure that sister State agencies and federal agencies are aware of and responsive to our request for information. The solicitation process should take place concurrently among Regions to avoid confusion among parties who may have interests in multiple Regions.

Recommendation 9: Assessment Process: The Regional Boards should be responsible for assessing the existing and readily available information, including information received during the solicitation process. The Regional Boards should also be responsible for identifying waters on the List. The Regional Boards may hold a workshop and/or public hearing to take comments on staff recommendations. The Regional Boards should then take formal action to adopt recommended changes to the List. The Regional Boards will be responsible for submitting to the State Board the administrative record which supports their recommendations. The State Board should review each Regional Board's recommendations for consistency with the Listing policy. The State Board should accept Regional Board recommendations, unless they are inconsistent with the Listing policy or applicable law. The State Board should then adopt the statewide List through a formal action.

Rationale: The Regions are most familiar with their local watersheds and the conditions within those watersheds, so primary assessment responsibility must stay with the Regions. The Regional Boards should act on staff recommendations, with a focus on the appropriate priorities and actions for each water body on the List. Since the Regional

Board action can significantly impact the direction the Regional Board takes on surface water, it should be a formal action. The State Board should review Regional Board recommendations for consistency with the Listing Policy and applicable law. In some cases, a Regional Board's judgment may be consistent with the Listing Policy, but the State Board could reasonably come to a different conclusion based on the same data. In this case, deference should be given to the Region.

Recommendation 10: Frequency of Updates to the List: A solicitation for data and information and assessment of the need for changes to the List should take place every four years. The Regional Board may, on its own motion, recommend changes to the List between periodic updates. Any such changes must go through the same process as the periodic updates (e.g., Regional Board adoption of the recommended change, State Board approval, and USEPA approval for Section 303(d) listed waters).

Rationale: The assessment process (formal solicitation and assessment of readily available data and information) should take place every four years. A more frequent cycle would lead to continual assessment, since the process can take up to two years from the initial solicitation to final USEPA approval of the Section 303(d) list. A less frequent cycle would lead to a list that is out of date. A process for amending the List between cycles should be identified in case new information becomes available that would change the assessment and subsequent decision on action(s) to address the problem.

Recommendation 11: Waters Currently on the Section 303(d) List: All waters currently on the Section 303(d) list (as of 2002) should be reviewed for consistency with this listing policy within the first two listing cycles following adoption of the listing policy. Recommendations per this Listing Policy should be made for these waters. Waters on the current Section 303(d) list may also be reviewed between periodic updates as described in Recommendation 10 above.

Rationale: The State must expeditiously review waters currently on the Section 303(d) list for consistency with the Listing Policy. Available resources may prevent all waters from being reviewed during the first listing cycle after adoption of the Listing Policy. The Regions should perform and document a consistency review for all currently (2002) listed waters by the completion of the second listing cycle. This recommendation is based on the adoption of Recommendation 10.

2.4 Listing/Delisting Factors

The listing/delisting factors below describe the broad issues that should be considered in adding waters to the List, for deleting waters from the List, or for not adding waters to the List. Specific recommendations for factors to consider in listing/delisting are described in Section 4.

Recommendation 12: Listing Factors: A water should be listed when readily available data and information indicate that existing water quality standards

(which include narrative criteria, numeric criteria, beneficial uses, and anti-degradation considerations) are not attained on a persistent or recurrent basis.

Rationale: The primary focus of the List is to identify for the public those surface waters that are not attaining water quality standards and to identify for the Regional Boards pollution or pollutant problems that must be addressed. Data and information should indicate that non-attainment of standards is persistent or recurrent.[3] If the non-attainment of the standards does not appear to be persistent or recurrent, then the Regional Board need not take any listing action. The Regional Board may determine, as a separate action outside of the listing process, that more data and information should be collected.

Recommendation 13: Delisting or Not Listing Factors:

a) Readily available data and information indicates that water quality standards are being attained.

b) Some data and information indicate past non-attainment of water quality standards, but other information or data indicates that the water quality problem is not recurrent or persistent. Overall, the available information indicates that water quality standards are currently being attained.

c) New data or information indicates that faulty data led to the original listing. Assessment of remaining (credible and non-faulty) data **either** indicates that water quality standards are attained or is inconclusive. Faulty data include, but are not limited to, typographical errors, improper quality assurance/quality control procedures, or limitations related to the analytical methods that would lead to improper conclusions regarding the water quality status of the segment.

d) Standards have been revised or beneficial use designations have been modified and have received all required State and federal approvals and available data and information indicate that water quality standards are being attained.

e) The Regional Board has made findings pursuant to State Board Resolution 68-16 to allow degradation of the high quality of the water body.[4] Data and information indicates that the degradation does not exceed that which is permitted in such a finding.

Rationale: Waters should be removed from the List or not added to the List if the available data and information indicates that water quality standards are being attained.

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[3] Data and information need not indicate that nonattainment of standards is frequent for a listing decision to be made. The relevant standard or criteria should be consulted to determine if there is an acceptable frequency of exceedance.

[4] For reasons similar to those described in Recommendation 2, the antidegradation finding must be made in a proceeding outside of the Listing process. Note that a finding allowing some degradation to occur does not establish a basis for allowing non-attainment of other water quality standards (i.e. numeric objectives, narrative objectives, or beneficial uses).

The status of attainment may change based on new water quality data and information, an administrative action (such as changing the standard or use), or new information on the quality of data previously used. The same decision rationale is used to delist a water as is used to not list a water. These general delisting (or not listing) factors should be considered in the review of data and information for all types of pollutants and pollution and all surface water body types.

2.5 Priority Ranking

This section addresses the meaning of priority ranking and the factors that should be considered in priority ranking. The term "priority ranking" refers to priorities for taking action to address impairment. Such actions may or may not involve TMDL development.

Recommendation 14: For waters on the List, the Regional Board should establish high, medium, and low priority categories based on the following factors: a) Water body significance (such as importance and extent of beneficial uses, threatened and endangered species concerns, and size of water body); b) Degree that water quality standards are not met or beneficial uses are not attained or threatened (such as the severity of the pollution or number of pollutants/stressors of concern; see 40 CFR 130.7(b)(4)); c) Availability of information to address the water quality problem.

Recommendation 15: The Regional Board will not assign schedules on the List. A priority setting is not a scheduling commitment. The Regional Board will determine schedules based upon additional considerations including but not limited to available funds, Triennial Review List priorities, applicable court orders, Watershed Management Initiative (WMI) priorities, and other relevant administrative constraints.

Rationale: Regional Boards should assign priorities to waters addressing the need for Regional Board corrective action. For example, some water bodies need corrective actions sooner than others because of the extent of impacts to beneficial uses or the size of the area impacted. In some cases the Regional Board will have insufficient information to determine the urgency of a problem. Regional Boards can assign priorities in accordance with the quantity of information available to document conformance with water quality standards.

The List should not contain Regional Board schedules. Regional Board schedules are determined based upon available funding and other factors. Year-to-year work planning, Triennial Review, and the WMI Chapter are utilized to focus available funding.

Low priority issues may be addressed sooner than higher priority issues, if desirable, e.g., in conjunction with a higher priority water, or because the solution may be easier to adopt. Priorities will help to guide Regional Boards in addressing water quality impairment. Priorities will not address when and how these commitments are met.

2.6 Structure of the List

There has been discussion of whether there should be a single list or a multi-part list. This section provides recommendations as to how the List should be structured.

Recommendation 16: A data management system to store the basic data attributes of surface waters not attaining standards should be used (e.g., such as is currently done for the Section 305(b) Water Quality Assessment report through the GEOWBS data management interface). To allow queries related to surface waters not attaining standards, this database shall contain, at a minimum, the following attribute fields: Name of water body; Pollution/pollutant, if known, or indicate "unknown"; Numeric identification of water body (CU, HU, HA, HSA, etc.); County(ies); Major water body name; Standard (beneficial use not supported, objective not met, or antidegradation not attained); Overall size (acres, lineal miles, square miles); Size of impaired portion, if known; Comment/descriptor (useful language to help an individual recognize the watershed). In addition to the above attributes, the database will continue to allow the Regional Board to assign priorities (high, medium, low) for actions to be taken.

Rationale: The continued use of available data management tools to track the quality of surface waters in California provides the appropriate structure for the List. Inclusion of the attributes recommended above will give the public basic information on surface waters not attaining standards. Additional attributes could be added, if tracking of proposed action steps is desired (e.g., TMDL development, further assessment, other control actions). By maintaining the basic water body attributes in a database, various reports can be produced depending on legal requirements or public information needs. There is no need to create and maintain separate "lists" of water bodies, which would inevitably contain similar data attributes and would lead to greater potential for error as the same data are entered in multiple documents.

3 ADMINISTRATION OF THE LISTING PROCESS

The administration of the listing process should be done in a manner that balances the need to review available information, the desire to make the assessment process as transparent as possible, and the Regional Board resources available to conduct the assessment.

3.1 Solicitation of Existing and Readily Available Data and Information

The solicitation process for "existing and readily available data and information" should be defined so that the public and the Regional and State Boards will know, at a minimum, what data and information will be sought and from what sources, and how the sources will be solicited.

Recommendation 17: To provide a minimum statewide level of consistency and completeness in soliciting existing and readily available data and information, each Regional Board will solicit, and document its methods and sources for soliciting, existing and readily available data and information. In general, Regional Boards shall seek readily available data and information generated since the prior List evaluation period. For purposes of data and information solicitation, information is any documentation describing the current or anticipated water quality condition of a surface water body. Data are considered to be a subset of information that consists of reports detailing measurements of specific environmental characteristics. Data and information not submitted by interested parties in response to the solicitation are not considered to be readily available.

Recommendation 18: **METHODS:** The State Board should provide a list of general methods for acquiring data and information (e.g., mailings to Basin Plan mailing lists and lists of other interested parties; website posting; direct requests to select agencies; and internal Regional Board staff requests) that the Regional Water Boards will, at a minimum, use to solicit existing and readily available data and information.

Recommendation 19: **SOURCES:** The policy should provide a list of specific sources that the Regional Boards will, at a minimum, solicit for existing and readily available data and information produced since the prior List evaluation period. The list of sources should include:

(1) Stakeholders and interested parties, including, at least,

- Other government agencies (e.g. CDFG, CDWR, CDPR, USFWS) via direct solicitation by the State Board
- Other (previously identified) interested parties via solicitation letter
- General public via solicitation on the Regional Board's website

(2) Other sources for existing and readily available data and information produced since the prior list evaluation period such as:

- The most recent Section 305(b) Report
- CWA Section 319 non-point source assessments
- Drinking water source assessments
- Dilution calculations or predictive models for assessing the attainment of applicable water quality standards
- Water quality problems reported by local, state and federal agencies; members of the public (for example citizen monitoring groups); or academic institutions

- Data, information, and reports available internally from Regional Board projects/programs/units/groups since the prior list evaluation period.

Recommendation 20: **FORMAT:** Data and information submittals to the Regional Boards should contain the following:

a. The name of the person and/or organization providing the information.

b. The name of the person certifying the completeness and accuracy of the data and information provided.

c. The person certifying data and information may also provide a statement as to what impairment they believe is occurring.

d. Mailing address, telephone numbers, and email address of a contact person for the information provided.

e. Two hard copies and one electronic copy of all information provided. Data should be submitted in electronic form. Data may be submitted in other formats negotiated with the pertinent Region.

f. If computer model outputs or GIS files are included in the information, submitters should provide bibliographic citations and specify any calibration and quality assurance information available for the model(s) used. Metadata for the field data should be provided (i.e., when measurements were taken, locations, number of samples, detection limits, and other relevant factors). For GIS files, the metadata must detail all the parameters of the projection, including datum.

g. Bibliographic citations for all information provided.

h. A description of, and reference for, the quality assurance procedures and whether data quality objectives were attained (see Section 4.1 below).

i. In addition, data from citizen volunteer water quality monitoring efforts should include an indication of any training in water quality assessment completed by members of the group.

j. For photographs, the information listed for photo documentation in Section 4.1.

3.2 Documentation

Documentation types, formats, and procedures pertinent to the processes by which the Regional Boards submit their recommendations to the State Board should be defined for the public and for the Regional and State Boards so that consistent and complete documentation of the process can be maintained for the Administrative Record.

Processes that should be documented for the Administrative Record by each Regional Board include: sources and mechanisms for soliciting and obtaining readily available data and information; criteria and procedures for evaluating the data and information;

format for providing the data and information; workshop(s) particulars; recommendations to the State Board; comments received relevant to the recommendations and the Regional and State Boards' responses to the comments.

Recommendation 21: To provide statewide consistency and completeness in the formats and procedures of documentation for the List Administrative Record, each Regional Board will use, at a minimum, similar general and specific types of formats and procedures of documentation for submitting its List recommendations to the State Board for the Administrative Record.

The documentation should be provided in electronic format, as document and spreadsheet files (as appropriate), using standard file formats (e.g., Microsoft Word or Excel) as agreed upon between each Regional Board and the State Board. Documentation should include:

1) The text of the solicitation letter for existing and readily available data and information, including:
   - The date that the letter was prepared;
   - The date(s) that copies of the letter were sent out.
2) The mailing list(s) to which the solicitation letter is sent.
3) The solicitation posted on the Regional Board's website (if different from the mailed solicitation).
4) Solicitation response tracking information including:
   - A unique (to the individual Regional Board) response identifier number;
   - The name, address, telephone number, FAX number, affiliation and/or company, and any other pertinent contact information represented by the responder;
   - Date the response was received;
   - Response format (e.g., "hardcopy", "electronic cover letter spreadsheet");
   - Relevant water body(ies) and pollutant(s)/stressor(s);
   - Any specific recommendations.
5) Response and comment letters and data files.
6) Data compilation files (generated within the Regional Boards to evaluate water bodies and pollutants/stressors to relevant water quality standards).
7) A summary table specifying all of the Regional Boards recommendations for the List, including (for each water body) the pollutant/stressor, affected size, priority and whether the recommendation is for listing, de-listing, or changing existing information.

8) Fact sheets for each Regional Board recommendation for listing, de-listing, or changing existing List information. Each fact sheet will include:

A. Region

B. Type of water body (Bay and Harbors, Coastal Shoreline, Estuary, Lake/Reservoir, Ocean, Rivers/Stream, Saline Lake, Tidal Wetlands, Freshwater Wetland)

C. Name of water body segment and total size (including Calwater watershed number)

D. Pollutant or type of pollution

E. Medium (water, sediment, tissue, habitat, etc.)

F. Water quality standards (copy applicable standard from appropriate plan or regulation) including:

- Beneficial use(s) affected by impairment
- Numeric water quality objective/water quality criterion plus metric (single value threshold, mean, median, etc.) or narrative water quality objective plus summary of assessment methods used
- Antidegradation considerations (if applicable to situation)
- Any other provision of the standard used

G. Watershed Description (e.g. land use, precipitation patterns, or other relevant factors considered in the assessment)

H. Description of data quality and quantity assessment processes

- Data Quality Assessment should be documented per Figures 1 and 2
- Data Quantity Assessment should be documented per Figures 1 and 2

I. Potential source of pollutant or pollution (including point or nonpoint source discharges under permits or waste discharge requirements, natural sources, etc.)

J. Water Body Assessment should be documented per Figures 1 and 2

9) Fact sheets are also recommended for waters not proposed for listing, when some data or information indicated non-attainment of standards.

3.3 Data and Information Management and Access

The processes by which the Regional Boards compile and evaluate existing and readily available data and information, and submit their recommendations and supporting data and information to the State Board, should be defined. Data and information management should be done in a complete, consistent, and transparent manner.

Data and information types to be managed include:

- Solicitation for existing and readily available data and information;
- Schedule and process description for List preparation;
- Reponses to the solicitation;
- Tracking list of responses received/posted;
- Data compilations and source data;
- Criteria and policies against which responses will be evaluated;
- Public workshop announcements;
- Fact sheets for List recommendations prepared by each Regional Board;
- Final Regional Board recommendations for impaired waters List;
- Public comments on the Regional Board's List recommendations and fact sheets;
- State Board's recommendations for the List;
- Public comments on the State Board's recommendations for the List;
- Responses to the public comments;
- Final List of impaired waters;
- Final 303(d) list as submitted by the State Board to the USEPA.

Recommendation 22: Staff from the Regional Boards and State Board should collaborate to specify some general guidance on managing data and information.

DWQ and OIT staff of the State Board will investigate a networked data management system (e.g., utilizing ArcGIS and GeoWBS) in which the Regional Boards' data and recommendations will be compiled.

Some approach for processing, storing and retrieving data and scanned information will be required. Accessible archives of all information submitted are an increasing challenge, due to volume and variety of formats. Support, with staffing, hardware, and software, will need to be long-term and distributed among the State Board and Regional Board offices. Office of Information Technology staff should evaluate the following alternatives:

a. State Board investigates contract services, via commercial vendor, to provide a web site outside the state network, to improve access and security for public and state employees.

b. State Board and Regional Boards develop this web site using state network facilities.

At the end of the list update process, the entire contents of the web site could be transmitted to a State Board server for preservation as the Administrative Record.

4 DATA AND INFORMATION ASSESSMENT PROCESSES

This section describes a general process for evaluating compliance with water quality standards, as well as specific approaches for certain types of pollution or pollutants. These processes focus on following a specific procedure and documenting decisions at key process steps.

4.1 Determining Compliance with Water Quality Standards

In California, water quality standards include existing and designated beneficial uses, narrative and numeric water quality objectives, and the antidegradation considerations expressed in the state Nondegradation Policy (set forth in both State Board Resolution 68-16 and federal regulations at 40 C.F.R. § 131.12). Water quality standards are contained in separate water quality control plans adopted by the nine Regional Boards and the State Board. Additional federal criteria for "priority" pollutants, promulgated by the U.S. Environmental Protection Agency (USEPA) in the National Toxics Rule and California Toxics Rule, are part of California's statewide standards for surface waters.

Water quality standards, surface water conditions, and surface water quality monitoring programs vary too widely among regions and between water bodies to justify using the precisely defined mathematical assessment procedures that have been proposed (binomial model and finite list of criteria for assessment of compliance with narrative objectives). Requirements to use such procedures would not be scientifically justified, since the proposed application of the statistical methods would often allow more frequent exceedances than allowed by the applicable standards. In addition, such methods could lead to arbitrary exclusion of readily available data and information (e.g., trends in water quality, magnitude of exceedance, or knowledge of remedial activities or permit revisions) that would inform the conclusions of the assessment.

Therefore, the Regional Boards should use the following decision-tree approach that describes the general process to assess compliance with standards. The approach includes specific considerations related to quality, quantity, and representativeness of data and information. Additional considerations for assessment related to certain categories of pollutants and stressors are discussed in separate sections below. The recommended approach provides overall consistency among Regional Boards in the assessment process, but allows flexibility to deal with regional and water body differences in standards and aquatic ecosystems. The recommended approach also allows the Regional Boards to fully consider the readily available data and information.

Recommendation 23: Regional Boards should use the decision processes described below and summarized in Figures 1 and 2 (on pages 52 and 53) to evaluate the attainment of beneficial uses and narrative and numerical objectives in surface waters, and to evaluate compliance with the antidegradation component of water quality standards.

The remainder of Section 4.1, together with Figures 1 and 2, constitutes the whole of Recommendation #23. In some cases a ***rationale*** is provided for a given process step. In contrast to the convention used in other sections of this document, the rationale is highlighted by *italics*.

Decision Process for Determining Compliance with Water Quality Standards (Decision Process):

The Decision Process is composed of four main process steps – Criteria Selection, Data Quality Assessment, Data Quantity Assessment, and Water Body Assessment. Within each of those four process steps, there are a number of steps that the Regional Boards must go through. It is not critical that the process steps be conducted in a particular order. It is critical that each step is taken and that the results of each process step are documented.

The processes for assessment of compliance with numeric objectives, narrative objectives and beneficial uses, and antidegradation regulations are shown in separate flowcharts (Figures 1 and 2). Where appropriate, a discussion of the factors that should be considered for each step is provided below. The steps in the decision process are similar for evaluation of compliance with the three different components of water quality standards (i.e. objectives, uses, and antidegradation), and the Data Quality and Quantity Assessment steps are identical. Text descriptions of the process steps are given below and distinctions among flowcharts are noted where appropriate.

CRITERIA SELECTION PROCESS
(See Boxes 1-5 in Figure 1, and Boxes 1-4 in Figure 2)

Identify the pollutant/ pollution, water body & beneficial use(s) being considered

The water body and beneficial use being considered, and the water quality problem (pollutant or pollution, if known), must be clearly identified in order to adequately document the basis for the assessment. For evaluation of narrative objectives and beneficial use support, the criterion/criteria selected will be based on the pollutant/pollution being considered and in some cases may be water body specific. Numeric water quality objectives are either site specific or applicable to waters with specific beneficial uses.

Are there adopted narrative and/or numeric water quality objectives and/or water quality criteria (WQO/WQC) for the pollutant & beneficial use in that water body (Figures 1 and 2)? Has the Regional Board previously determined that degradation of water quality is allowable under federal and State anti-degradation requirements (Figure 2)?

Compliance with narrative and numeric water quality objectives should be determined using the process in Figure 1. Compliance with the antidegradation component of water quality standards should be evaluated using the process in Figure 2. This process involves assessment of attainment of water quality objectives and beneficial uses, as well as evaluation of the necessary antidegradation findings. See the discussion of antidegradation on page 25.

Identify the applicable beneficial use indicator.

The applicable beneficial use indicator should be clearly identified for the water body, pollution/pollutant, and beneficial use being considered. When possible, beneficial use support in a particular water body (particularly for aquatic life and recreational uses) should be evaluated in relation to local and regional reference conditions, in addition to state and federal criteria. The beneficial use indicator is used to determine whether a particular beneficial use is being supported when pollution is present. In many cases, the beneficial use indicator will be one or more narrative water quality objectives.

In other cases, beneficial use indicators cannot be derived through interpreting the narrative water quality objectives. Such indicators should still be applied to determine whether beneficial uses are attained. For example, flow alteration, habitat modification, or channel modification may cause beneficial uses not to be attained, but narrative water quality objectives do not exist for these potential stressors.

Rationale: *The definitions of most beneficial uses in the Basin Plans are broad, especially for aquatic life and recreational uses. Even under minimally disturbed "reference" conditions, variation in actual beneficial uses can occur. For example, because of the ecological and geographical diversity of California, the Cold Freshwater Habitat (COLD) use means support of a different aquatic life community in a Southern California reservoir than that in a natural Sierra Nevada lake. Inland saline lakes are naturally eutrophic and support a much less diverse biological community than freshwater lakes; however, each lake type has its own degree of "biological integrity." California has not specifically designated seasonal beneficial uses; the broad definitions cover summer-dry ephemeral waters and high elevation waters that freeze over during the winter.*

For numeric objectives, identify the applicable numeric WQO/WQC for the pollutant & beneficial uses in that water body.

The applicable numeric water quality objective or water quality criterion should be clearly identified. Information on the applicable averaging period and/or allowable frequency of exceedance should be described. If there is specific direction in the Basin Plan on determining compliance with an objective, that direction should be followed. If there are any Regional or statewide policies that apply to interpretation

of compliance with objectives (as adopted by the Regional or State Board), those policies should be described.

For narrative objectives and beneficial uses, identify local, State, or federal numeric criteria or guidelines or other numeric endpoints that represent attainment or protection of the beneficial use.

There are a number of different local, State, and federal criteria or guidelines that could be used to represent attainment of the narrative water quality objective, or that represent a level that is protective of a beneficial use. These criteria and guidelines should be identified, so that the public and Regional Board have a clear understanding of the metrics that could be used to interpret compliance with narrative water quality objectives. Regional Boards should also try to identify local government water quality guidelines (e.g., those used by local health departments).

For narrative objectives and beneficial uses, select criterion/criteria to assess numeric data.

Interpretation of attainment of narrative water quality objectives or determination of attainment of beneficial uses usually requires the selection of criteria, guidelines, or other numeric values. These numeric values are used to evaluate the available quantitative data and make a determination as to whether the water body is attaining standards. In selecting criteria, guidelines, or other numeric values, the Regional Board must ensure that the selected values provide a reasonable metric for determining whether standards are attained.

In selecting criteria or guidelines, the Regional Board should give preference to criteria or guidelines adopted by another California State agency, as long as a given criterion or guideline is designed to protect the beneficial use or to ensure attainment of the narrative water quality objective being considered. California State agency criteria or guidelines that have been modified to account for factors other than beneficial use protection (e.g., economics, analytical detection limits, etc.) should be used with caution, since such adjustments may produce levels that are not protective of the beneficial use and/or levels that are inconsistent with the Regional Boards' water quality objectives. Federal criteria or guidelines can be used, if no State-specific criteria or guidelines are available, and if such criteria or guidelines are designed to protect the beneficial use or attain the narrative water quality objective being considered[5]. As long as a Regional Board is following the above hierarchy for criteria selection, no water body-specific justification needs be given for selection of the criteria.

The Regional Board may select other numeric criteria (e.g., criteria from other States or countries) or other numeric endpoints (e.g., fish population levels), if no State or

[5] Criteria promulgated by the USEPA for waters in California, such as the National Toxics Rule and California Toxics Rule criteria, must be used where applicable.

federal criteria are available or if a different endpoint is appropriate for that particular water body. The Regional Board must provide a specific rationale for choosing those other criteria or numeric endpoints. The rationale should include a clear description of the relationship between the numeric endpoint, pollution, and beneficial use being assessed.

DATA QUALITY ASSESSMENT PROCESS
(See Box 6 in Figures 1 and 2)

Data supported by a Quality Assurance Project Plan (QAPP) pursuant to the requirements of 40 CFR 31.45 are acceptable for use in developing the List. The data from State or federal monitoring programs consistent with their QAPPs are considered to be of acceptable quality. The quality assurance/quality control data from such a program need not be reviewed by the Regional Board prior to the use of the data in the assessment process.

If a discharger monitoring report has been determined to be adequate for assessing compliance with waste discharge requirements, no further review of the QAPP is necessary for assessment purposes.

A local agency, citizen group, private entity, or university may also submit data. These types of data may be sufficient for determining water quality standards attainment if the Regional Board determines that their QAPP is consistent with practices identified below. Entities that have not provided a current QAPP to the Regional Board should submit their QAPP.

Numeric data are considered credible and relevant for listing purposes if the data set submitted meets the minimum quality assurance/quality control requirements outlined below. The monitoring entity must develop and submit a QAPP containing certain required elements including the following:

- methods used for sample collection,
- field and laboratory analysis,
- data management procedures, and
- personnel training.

The monitoring entity must also submit a site-specific or project-specific sampling and analysis plan for numeric data containing:

- data quality objectives of the project,
- sound rationale for the selection of sampling sites, water quality parameters, sampling frequency and methods that assure the samples are spatially and temporally representative of the surface water and representative of conditions within the targeted segment of time of sampling, and

- information to support the conclusion that results are reproducible .

Data without rigorous quality control can be useful (in combination with high quality data and information). If the data collection and analysis is not supported by a QAPP or if it is not possible to tell if the data collection and analysis was supported by a QAPP, then the data set or information cannot be used by itself to support listing or delisting of a water segment. These data may only be used to corroborate other data and information with an appropriate QAPP.

The organization submitting data should submit its entire data set for a given monitoring program in order to allow evaluation of spatial/temporal conditions for the time frame specified.

To facilitate evaluation of spatial conditions, data should be accompanied by information on sampling locations. The entity providing data should mark station locations on a general area map and either 1) mark each location on a USGS 7.5 minute quad map along with quad sheet name or 2) provide location latitude/longitude or 3) or provide other details that will allow the Regional Board to locate the specific sampling site.

For narrative and qualitative submittals, the submission must:

- describe events or conditions that indicate impairments of water quality, and that are outside the expected natural range of conditions,
- provide linkage between the measurement endpoint (e.g., a study that may have been performed for some other purpose) and the water quality standard of interest,
- be scientifically sound and defensible,
- provide author's credentials and training, and
- be verifiable by the State and Regional Board. If not verifiable, the information may still be used in planning future water quality monitoring programs.

If there is no linkage between a measurement endpoint and a water quality standard, then that study may not be used to evaluate the status of water quality standards.

For photo documentation to be utilized, the submission must:

- identify the date,
- mark location on a general area map,
- either mark location on a USGS 7.5 minute quad map along with quad sheet name or provide location latitude/longitude,
- provide a thorough description of photo,
- describe conditions that are not represented by the photo in surrounding areas,

- for photo documentation of impairment, provide linkage between photo represented condition and condition that indicates impairments of water quality that are outside the expected natural range of conditions,
- provide photographer's rationale for area photographed and camera settings utilized, and
- be verifiable by the State and Regional Board. If not verifiable, the information may still be used in planning future water quality monitoring programs.

The organization submitting photos should submit its entire photo set for a given condition in order to document spatial/temporal conditions for the time frame specified.

The Regional Boards should clearly evaluate the appropriateness of data collection and analysis practices, and should discuss them in the fact sheets. If any data quality objectives in the QAPP are not met, the reason for not meeting them and the potential impact on the overall assessment should be clearly documented.

Rationale: *The data used in the development of the List should be of sufficiently high quality to allow determinations of water quality standards attainment. The intent of the List is to identify impaired surface waters so that necessary actions can be taken. Therefore, it is critical that the listing process accurately identify when impairment exists. This means that the data and/or information should not only be of high quality, but should also accurately reflect the surface water conditions. Quantitative data are of little use unless accompanied by descriptions of sample collection, the analytical methods used, quality control protocols, and the degree to which data quality requirements are met.*

Likewise, the information used in the development of the List should be of sufficiently high quality to make water quality standard attainment determinations. Information is usually provided in scientific reports or opinions. However, information submitted is of little use unless accompanied by documentation to support the basis of the information provided.

DATA QUANTITY ASSESSMENT PROCESS (Boxes 7-9 in Figures 1 and 2)

Data Quantity Assessment

Once data and information are determined to be of adequate quality, the question of adequate quantity should be addressed. Concurrent with considering the number of samples or studies, and whether they suggest water quality impairment or attainment, the Regional Board should consider the water body setting and the spatial and temporal extent to which the data or information collected represents an indicator of beneficial use support. This consideration enables the Regional Board to determine whether a listing decision applies to all or part of a water body.

Determining adequate data quantity involves more than specifying a minimum number of samples, or a minimum number of sampling locations and events in a water body to support a decision. To support a decision on a water body segment, the data or information should represent water quality conditions throughout the water body segment that pertain to a beneficial use, including seasonal or year-to-year variations where necessary. A regular program of data or information collection can provide this representation, but even a small amount of information, coupled with knowledge of the water body setting, can support a decision on impairment or attainment. For instance, if a numeric guideline or objective is exceeded by order(s) of magnitude and the exceedance is downstream of known discharges. The Regional Board's decisions on beneficial use support and compliance with narrative or numeric objectives are always dependent on judgment of how much of the water body is represented by whatever data or information is considered.

The water body setting includes natural and anthropogenic factors that assist in the interpretation of water quality data and other information about beneficial uses. Of particular importance are the physical characteristics of the water body and land uses of the upstream watershed whose effects on surface water quality are well documented in research and practice (e.g., higher coliform counts where septic systems are failing, or higher nutrients in certain agricultural or silvicultural settings).

Data and information are collected in a water body at discrete locations and times, but the resulting assessments pertain to large reaches or areas of a water body over a period of years. In determining compliance with narrative or numeric water quality objectives, extrapolations are made to all or part of the water body based on the data and information reviewed, and what spatial or temporal extent of the water body they represent. The confidence of the Regional Board in such extrapolations is dependent on knowledge of the water body and watershed, its land uses and physical features such as dams or tributary network, probable pollution sources, and proper documentation of these factors that affect water quality. These extrapolations will always be necessary due to our inherent inability to monitor all parameters at all places and all times, and the need to make decisions to support priority-setting for the state's regulatory programs to protect water quality.

Aggregate Data by Reach/Area.

In a stream system, the Regional Boards should consider defining distinct reaches based on hydrology (e.g., stream order, tributaries, dams, or channel characteristics) and relatively homogeneous land use. These components of the stream system can be logically grouped, even at the level of the entire water body, depending on the nature of the source of the pollutant or pollution and the beneficial uses. Similarly, a lake or estuary can be divided into areas or embayments based on circulation studies, water quality data and adjacent land uses or discharges. Knowledge of land uses and the physical characteristics of the drainage network upstream of a sampling or study location can strengthen the Regional Board's ability to evaluate part or all of a water body based on what may appear to be limited water quality data. In all cases, the

Regional Boards must document the assumptions based on land uses, known water quality issues, and other factors in the administrative record for the water quality assessments.

If available data suggest that a pollutant may be impairing a water body, the Regional Boards should identify land uses, subwatersheds, tributaries, or dischargers that could be contributing the pollutant to the water body. The Regional Boards should identify stream reaches or lake/estuary areas that may have different pollutant levels based on significant differences in land use, tributary inflow, or discharge input. Based on these evaluations of the water body setting, the Regional Boards should aggregate the data by appropriate reach or area.

In some cases, Regional Board Basin Plans define distinct stream segments. Data may also be aggregated by the stream segments defined in a Regional Board Basin Plan.

Consider temporal representativeness

If older data are used to justify a listing decision, the Regional Boards should demonstrate why they represent current conditions. Preference should be given to the most current information, which was not available during the previous listing process. However, older data and information may be used for many purposes. Older data can provide context for newer data, for the purpose of characterizing trends or checking for compliance with antidegradation provisions. They can be used to represent current conditions if the water body setting has not changed significantly. Conversely, if data are available before and after a change in water body setting (e.g., a cleanup or new permit conditions), it may be more appropriate to base assessments on only the most recent data. Older data may be used in re-evaluating previous listing decisions if guidelines or numeric objectives are enacted or revised subsequent to the previous listing cycle and re-assessment based on those data yield different findings of attainment or impairment of water quality standards.

When reviewing the data used (both newer and older), the Regional Board should take into consideration temporal factors that could assist in determining whether the water quality problem is persistent or recurrent. Seasonal or year-to-year variations in the transport of the pollutant should be considered in reviewing the data. A limited water quality data set can be used to make an assessment determination, when coupled with an understanding of the discharge and pollutant transport processes.

The type of water quality data being reviewed should also be considered when determining whether the data are temporally representative. Certain water quality measurements may represent a point in time (e.g., dissolved oxygen), whereas other environmental measurements may integrate several years of information (e.g., bioaccumulatives in tissue samples).

If necessary, transform the data in a manner consistent with the expression of the water quality objective/criterion/guideline.

If the water quality objectives, criteria or guidelines state a specific averaging period and/or mathematical transformation, the data should be transformed in a consistent manner prior to conducting the assessment. The analyst may perform necessary transformations outside of the stated averaging period, if justification for doing so can be provided[6]. If sufficient data are not available for the stated averaging period, the analyst may assume that the available data are representative of the averaging period.[7] Any pollutant-specific guidance provided in these Listing policy recommendations supersedes this general guidance on transformation of data.

Rationale: *In a number of instances, individual data points must be transformed prior to using them in the assessment process. Water quality objectives, criteria or guidelines may be expressed as an arithmetic mean, geometric mean, four-day average or other mathematical expression. If the data can be transformed in a manner consistent with the criteria or guidelines, they should be transformed in order to permit appropriate assessment of the condition of the water body.*

WATER BODY ASSESSMENT PROCESS
(See Box 10 in Figures 1 and 2)

Water body assessment

After organizing the data and selecting appropriate criteria, the Regional Board must answer two fundamental questions: Does the available data set/information indicate that the applicable narrative or numeric water quality objective or other beneficial use indicator is not being attained? Does the available data set indicate that the pollutant/pollution problem is persistent or recurrent? If Regional Board Basin Plans or State Board Plans describe how compliance with water quality objectives should be determined, the applicable provisions of those Plans must be applied.

The Regional Board should consider all available data and information in answering these questions. If the data and information are inconclusive as to whether the objectives are being attained or beneficial uses are supported, then the Regional Board should indicate the type of assessment that would be required to resolve the status of the water body.

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[6] For example, a criterion may call for calculating a geometric mean for a 30-day averaging period. With justification, the analyst may apply the geometric mean to data that were not all collected within a 30-day time period.

[7] For example, daily data may not be available and a four-day average criterion is being evaluated. The analyst may compare the available data directly to the four-day average criterion.

If any data or information indicates that objectives or uses are not attained (or were not attained at some point) and the Regional Board does not suggest listing, the specific rationale for not listing should be provided.

If any data or information indicates that objectives or uses are not attained on a persistent or recurrent basis, the rationale for that conclusion should be provided.

Rationale: *Available data and information are generally highly site- and pollutant-specific. In performing an assessment, it is generally not possible to use specific decision criteria (e.g., minimum number of samples, specific exceedance rate) without ignoring critical information. The Regional Boards should consider factors such as potential pollutant sources, climatic conditions that may affect pollutant runoff, the magnitude of exceedances of criteria, the design of the monitoring plan used to collect the data, and whether similar results occur in similar settings. In lieu of using specific decision criteria, the Regional Board should make transparent the factors that were considered in making a recommendation. These factors should be clearly documented so that they can be critically evaluated.*

In some cases, a Regional Board may be able to develop specific decision rules (e.g., specific exceedance rate). Generally, this can only be done when the monitoring program is designed to answer specific assessment questions and the assessment questions are framed in a manner consistent with the numeric criteria or guideline being used.

The data and information available to assess compliance with water quality objectives and attainment of beneficial uses vary significantly from water body to water body. Rather than specific, universally applicable evaluation criteria, a universally applicable evaluation methodology is proposed. This evaluation methodology provides the opportunity for each Regional Board to describe and make transparent its assessment process.

The recommended evaluation methodology should promote consistency by requiring each Regional Board to go through the same process steps. Transparency will occur as the Regional Boards document the outcomes of each of the process steps. Documenting the basis for the decision to list or not to list will give the public the opportunity to critically evaluate the rationale used by the Regional Board.

DOCUMENTING COMPLIANCE WITH ANTIDEGRADATION REQUIREMENTS

The process for determining compliance with antidegradation requirements is outlined in Figure 2. After identifying the water body, pollutant or pollution, and beneficial uses under consideration (Step 1), Regional Boards should determine whether findings have been made (e.g., in connection with a waste discharge permit) that degradation (lowering of water quality in relation to baseline conditions) is in the

best interest of the people of the state (Step 2). If such findings have not been made, the Regional Board must determine whether data are available to determine whether degradation has actually occurred (Step 3.a.) and identify and select appropriate criteria to assess the extent of degradation. If findings to allow degradation have been made, the Regional Board should determine whether water quality objectives/criteria and beneficial uses are being attained (Step 3.b). The key to determining compliance with antidegradation provisions is to clearly describe the baseline by which degradation will be evaluated (Step 4). The baseline may be temporal (e.g., an evaluation of conditions in the past relative to current conditions) or it may be spatial (e.g., an evaluation of conditions in one part of a water body versus another). The steps involved in data quality and data quantity assessment in connection with antidegradation requirements are the same as those involved in determining compliance with water quality objectives and support of beneficial uses (Steps 6-9). The recommended Water Body Assessment process for antidegradation (Step 10) includes examples of factors that should suggest that degradation is not occurring, or factors that would suggest that further assessment is needed.

4.2 Assessment of Toxicity Test Data

This section presents an approach to determining whether toxicity is causing nonattainment of water quality standards.

Toxicity testing can be an important tool to directly measure attainment of the narrative toxicity objective. Several Regional Boards and others have used USEPA toxicity test methods to characterize water quality throughout California watersheds since the late 1980s. Monitoring objectives and study design differ among toxicity studies, past and current. Therefore, a single approach for identifying impaired water bodies using toxicity monitoring data cannot be implemented.

Recommendation 24: The following factors must be considered and documented to make management decisions using toxicity monitoring data. This decision process is outlined in the attached figure and in narrative form below.

a. Are the data of sufficient quality? (See Section 4.1 above.)

b. Do the data indicate toxicity to one or more test species? If toxicity is not observed, then there is no evidence to suggest that the narrative toxicity objective is not attained based solely on toxicity test results. No further investigation is necessary. However, if the data show toxicity, then several other factors must be considered to determine if a water body is impaired.

c. Are the duration, magnitude, frequency and spatial/temporal extent of toxicity sufficient to infer violation water quality objectives (per Regions' Basin Plans) or to infer beneficial use impairment? (See Section 4.1 above.) Numeric basin plan objectives define the duration, magnitude, and frequency of exceedances allowed to occur to protect beneficial uses. For any chemical constituent, these parameters are ultimately based on the chemical's toxicology. For toxicity, estimates of these

parameters essentially mimic instream exposure scenarios. The estimates can then be used to determine whether instream toxicity is likely to cause aquatic life impacts/beneficial use impairment.

d. Are the data representative of current conditions? (See Section 4.1 above.) How old is the data set? Does more current data suggest toxicity is no longer a problem? Is the toxicity/impairment likely to recur? Definitively answering these questions requires some knowledge of the cause and source of toxicity.

e. Do the data identify all causes of the toxicity? In many cases a toxicity identification evaluation (TIE) identifies a cause of toxicity. In such cases, regulatory efforts should focus on and listing should be for the specific cause. However, when TIEs are inconclusive or do not identify all causes of the toxicity (i.e., a chemical is identified but is not present in high enough concentrations to explain the magnitude of toxicity observed), further monitoring and assessment should be conducted. However, listing should be for unknown toxicity.

4.3 Assessment of Toxicity to Aquatic Life Using Water Column and Sediment Data

This section presents an approach to determining whether toxicity to aquatic life is causing nonattainment of water quality standards. The section applies to data and information that is available for a specific pollutant or pollutants.

Each Regional Basin Plan contains narrative objectives in a form such as "no toxic substances in amounts that impair beneficial uses." Most of the Basin Plans and the California Toxics Rule also contain numeric values designed to protect aquatic life. All of the Basin Plans contain beneficial use designations for some form of aquatic habitat (such as Cold or Warm Freshwater, Shellfish, Commercial and Sport Fishing, etc.). This section recommends a process for the use of toxic substances data from the water column and/or sediment to assess compliance with water quality objectives related to protection of aquatic life uses.

Recommendation 25: Evaluation of aquatic habitat/aquatic life-supporting beneficial uses incorporates several types of toxicity and chemical data including both water column data and sediment quality data. Each type of data may generally be evaluated independently of the others, and listing for non-attainment of the aquatic life use results when an adequate amount of data indicates impaired beneficial use. A determination of impairment should be based on an environmentally-representative number of samples collected over a timeframe reasonably representative of existing conditions. Issues of spatial and temporal representativeness are discussed in more detail in the Section 4.1. Recommendation 25 includes the remainder of Section 4.3 and Table 1.

A two-tiered approach is recommended where data are analyzed to determine whether there is:

- clear evidence of impairment (Tier 1) or,
- incomplete evidence and/or evidence of possible adverse effects or potential for future impairment (Tier 2). A Tier 2 analysis could still support listing, even though the data requirements of Tier 1 are not met.

Table 1 provides a diagram of assessment criteria for determining whether a constituent would be placed in Tier 1 or Tier 2 with respect to each data category. The two-tiered approach applies generally. Other data and information not identified in the two-tiered approach may be relevant to the assessment and should be used. Such data or information may or may not support conclusions reached based solely on data that falls into Tier 1 or Tier 2. The basis for any conclusions that conflict with what the Tier 1 or Tier 2 assessment would suggest should be clearly documented.

Table 1. Criteria for Tiered Assessment Process for Toxic Substances Data

	Water Quality	Sediment Quality
Tier 1 Impairment to Aquatic Life	>10% samples* exceed CTR, NTR, or Basin Plan objectives OR Adequate data set indicates Basin Plan toxicity objectives exceeded, water TIEs or equivalent evidence clearly demonstrate toxicant	*sediment triad or TIE studies* clearly demonstrate toxicant that is causing non-attainment of standards OR >25% samples# exceed high SQGs (or other appropriate values)
Tier 2 Possible Impairment to Aquatic Life	two or more samples* exceed applicable CTR or NTR values within six years OR Adequate data set indicates Basin Plan toxicity objectives exceeded	>10% samples above *both* low SQGs OR toxicity evident and sediment chemistry results suggest cause, but no TIEs
Comment Impairment is established by: one Tier 1 category, the two Tier 2 categories, or one Tier 2 category and Board determination of concern	see CTR for full discussion of acute and chronic values; Freshwater metals values are hardness dependent	High SQGs = PELs/ERMs/AETs; low SQGs = ERLs/TELS Acronyms: SQG= Sediment Quality Guide, PEL=Probable Effects Level, ERM= Effects Range-Median, AET= Apparent Effect Threshold, ERL= Effects Range-Low, TEL= Threshold Effects Level

Tier 1 generally consists of a minimum number of 10 samples within each category (except Basin Plan Water Quality Objectives). If insufficient data exist then assessment defaults into Tier 2 or may be inconclusive.
*10% and "two or more" from EPA 305(b) guidance (1997), section 3.2.4 on toxics in water samples.
#25% from Consolidated Assessment and Listing Methodology guidance (EPA draft report 2001b).
Sediment Quality Guide values as presented for fresh and saline waters in Buchman, 1999 (NOAA-SquiRT Tables), BPTCP (1998), or similar appropriate reference.

Rationale: *The sections below present discussion of the basis for judgments in conducting the assessment.*

Tier 1 Sufficient evidence in *one category* establishes impairment.

Water Column

Dissolved water column concentrations should be compared to acute and chronic California Toxics Rule (CTR), National Toxics Rule (NTR), pertinent Basin Plan water quality objectives, or applicable criteria or guidelines that are used to evaluate compliance with narrative water quality objectives (EPA 305b Guidance, 1997). Most aquatic life criteria allow an exceedance rate of once every three years on the average. If greater than 10% (i.e. an exceedance rate that is 100 times greater than generally allowed) of sample results exceed either acute or chronic values, then sufficient evidence generally exists that the standards designed to protect aquatic life beneficial uses are not being attained.

A Tier 1 assessment consists of a minimum of two exceedances of applicable criteria and a minimum sample size of ten. At least two exceedances must occur to confirm that the water quality problem is recurrent. Since many monitoring programs are conducted on a monthly or quarterly basis, a minimum sample size of ten generally provides sufficient temporal coverage to cover multiple seasons, if not multiple years.

If Regional Basin Plan toxicity objectives are exceeded in an adequate data set, that is also adequate evidence of impairment. If a TIE or equivalent evidence identifies a chemical cause of toxicity, that alone is adequate evidence of impairment. The process described in the "Toxicity" section should be used to determine the test species and extent of data that indicates impairment.

Sediment

Sediment TIE studies and triad studies determine if one or more chemicals are present at levels which do not support beneficial uses. Triad studies require three measurements (sediment toxicity, infaunal analysis and sediment chemistry) to evaluate sediment effects on aquatic life. If two of the three portions of a triad study indicate benthic community degradation (e.g., defined as a negative value by the Bay Protection Toxic Clean-up Program [BPTCP][8]), this is considered evidence of impairment, although additional analysis will be needed to clarify which pollutants cause the degradation.

To identify chemicals associated with impairment, sediment concentrations are compared to higher sediment quality guidelines (SQGs). Sediment Quality Guidelines are used as indicator values of narrative objectives present in most Regional Basin Plans (e.g., objectives in the form of "waters shall not contain settleable material...that...adversely affects beneficial uses"). Because higher SQGs are defined as those sediment concentrations "above which adverse effects are frequently expected" (Buchman, 1999), it is appropriate to use these as an indicator of impairment of beneficial uses. If greater than 25% of sample results exceed these higher SQGs, then sufficient evidence generally

[8] BPTCP, 1998. Chemical and Biological Measures of Sediment Quality in the Central Coast Region, Final Report. California State Water Resources Control Board, Division of Water Quality, Bay Protection and Toxic Cleanup Program, New Series No. 5, October 1998.

exists that the narrative standards designed to protect aquatic life beneficial uses are not being attained.

In addition to individual SQGs for individual chemicals, a sediment guide quotient as described in the Bay Protection Toxic Cleanup Program, or other similar value, may also be used as an appropriate indicator of impairment when described in the listing rationale.

Tier 2 Requires evidence in *two categories* or information from adjacent segments to identify impairment.

If a chemical exceeds the screening criteria in Tier 2 with respect to two or more data categories, that is considered adequate evidence that the water body is impaired with respect to that chemical. This determination is based on a conclusion that the weight of available evidence indicates applicable numeric and/or narrative water quality standards are being exceeded and that designated beneficial uses may not be fully supported. The Tier 2 analysis may also consider other evidence of impairment, such as a water body adjoining impaired water segments and some evidence of impairment present for the individual segment. For example, evidence of potential impairment in the subject segment AND impairment evidence for one or more adjacent segments that is strong (e.g., Tier 1), may be considered reasonable evidence of impairment.

Water Column

A limited amount of either chemical or toxicity data warrants the use of further other lines of evidence from another category for a finding of non-attainment of standards. If water column chemistry data do not appear sufficient, water column toxicity data, sediment chemistry, or sediment toxicity data could be used to support the assessment. The evaluation includes consideration of the frequency and magnitude of these exceedances as well as the potential analytical error for these results relative to the relevant criteria. If the exceedance rate is less than 10% but greater than once every three years on the average (e.g., the allowable rate for most aquatic life criteria and standards), the Regional Board should make a finding of nonattainment of standards if it appears that the observed exceedance rate is sufficiently representative of existing conditions in the water body.

Sediment

Sediment concentrations are compared to low sediment quality guidelines (e.g., effects range low [ERL] and threshold effect levels [TELs]), and, if greater than 10% of sample results exceed *both* of those lower SQGs then the evidence suggests the chemical may threaten the aquatic life use in that water body. Because low SQGs are defined as those sediment concentrations "below which adverse effects are expected to occur only rarely" (Buchman, 1999)[9], it is appropriate to use these as an indicator of threatened impairment of beneficial uses. If greater than 10% of sample results exceed these low SQGs, then

[9] Buchman, M.F., 1999. NOAA Screening Quick Reference Tables, NOAA HAZMAT Report 99-1, Seattle WA, Coastal Protection and Restoration Division, National Oceanic and Atmospheric Administration, 12 pages.

appropriate combination with other lines of evidence (e.g., water column data, toxicity data) is necessary to determine that the narrative standards designed to protect aquatic life beneficial uses are not being attained. In sediment triad studies (as described above in Tier 1), when only two of three legs have been completed, at least one part must be for chemistry data in order to identify the pollutant(s) of concern.

4.4 Bioaccumulative Substances

This section presents an approach to determining whether bioaccumulative substances are causing nonattainment of water quality standards. The focus of this section is on interpretation of tissue data.

We refer to trace metals such as mercury and lead, and trace organic compounds such as DDT, PCBs and PAHs, as bioaccumulative substances because biota typically take in these substances at a greater rate than they can eliminate them, causing the substance to accumulate in biota over their lifetimes.

Recommendation 26: A water body should be listed if any one of the following three criteria is met:

a. The water body has been posted with a fish or shellfish consumption advisory based on sampling in that water body. Advisories issued by the California Office of Environmental Health Hazard Assessment (OEHHA) or those issued by a local health agency based on risk assessment are appropriate. Impairment would pertain to beneficial uses related to human consumption, including, but not limited to, Commercial and Sport Fishing (COMM) or Shellfish Harvesting (SHELL).

   OEHHA advisories would be the primary criteria for listing, since these actions are based upon risk assessments, but local agency advisories can be relied upon if they are based upon similar methodologies. In some cases, it may not be appropriate to list a water body as impaired even though an advisory has been issued (e.g., where an advisory covers a large geographic region, but the sampling data were limited to certain water bodies or where an advisory pertains to migratory or highly mobile species). Also, a water body need not be listed as impaired if more recent data or information indicate that designated beneficial uses are being attained and that the advisory is no longer representative of current conditions.

b. Contaminant concentrations measured in aquatic organisms exceed appropriate standards for protection of human health. Screening values developed by the OEHHA and the USEPA are appropriate. The current values are listed in Table 2

below.[10] Impairment would pertain to beneficial uses related to human consumption, including, but not limited to, Commercial and Sport Fishing (COMM) or Shellfish Harvesting (SHELL).

These values apply to muscle tissue (e.g., fillets) or edible flesh (e.g., whole mussels or clams) samples collected in all types of waters (marine, estuarine, fresh). A water body may be deemed impaired if the median value (50th percentile) or the weighted average of the bioaccumulation data set exceeds the screening for a particular contaminant[11]. Temporal and spatial factors discussed in Section 4.1 should be considered. The number of organisms available for assessment purposes should be sufficiently representative of conditions in the water body.

The Regional Boards should review the assumptions used to develop the OEHHA and USEPA screening values and use different consumption rates or other factors based upon site-specific conditions to assess impairments if site-specific information is available.

c. Contaminant concentrations measured in aquatic organisms exceed appropriate standards for protection of wildlife. Screening values developed by the National Academy of Sciences and the United States Fish and Wildlife Service are appropriate. The current values are listed in Table 3 below. Impairment would pertain to beneficial uses related to maintenance of aquatic habitat or healthy aquatic communities, including, but not limited to, Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD), Inland Saline Water Habitat (SAL), Estuarine Habitat (EST), Wetland Habitat (WET), Marine Habitat (MAR) or Wildlife Habitat (WILD).

   The values in Table 3 apply to whole body samples collected in all types of waters (marine, estuarine, fresh). A water body may be deemed as impaired if the median value (50th percentile) or the weighted average of the bioaccumulation data set exceeds the screening for a particular contaminant[12]. Temporal and spatial factors discussed in section 4.1 should be considered. The number of organisms available for assessment purposes should be sufficiently representative of conditions in the water body.

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[10] If EPA or OEHHA change the applicable values, any new values should be used in lieu of those set forth in this document.

[11] OEHHA uses a median when performing its human health risk assessments. A weighted average may also be appropriate when using analytical results from composites with differing numbers of individuals (i.e. the average of all composite results would be weighted by the number of individuals in each composite). Fish tissue criteria are generally based on long-term consumption of fish by humans or wildlife. Therefore, the pollutant concentration of a single individual fish consumed is not as critical as exposure from all fish consumed.

Table 2. Human Health Protection Criteria for Evaluation of Bioaccumulation Monitoring Data

Contaminant	OEHHA Screening Values[12]	USEPA Screening Values[13]
Arsenic	1.0 mg/kg	
Cadmium	3.0 mg/kg	
Mercury	0.3 mg/kg	
Selenium	2.0 mg/kg	
Tributyltin		1.2 mg/kg
Total DDT	100 µg/kg	
Total PCBs	20 µg/kg	
Total PAHs		5.47 µg/kg
Chlordane (total)	30 µg/kg	
Dieldrin	2.0 µg/kg	
Endosulfan (total)	20,000 µg/kg	
Endrin	1,000 µg/kg	
Lindane (gamma hexachloro-cyclohexane)	30 µg/kg	
Heptachlor epoxide	4.0 µg/kg	
Hexachlorobenzene	20 µg/kg	
Mirex		800 µg/kg
Toxaphene	30 µg/kg	
Diazinon	300 µg/kg	
Chlorpyrifos	10,000 µg/kg	
Disulfoton	100 µg/kg	
Terbufos		80 µg/kg
Oxyfluorfen		546 µg/kg
Ethion	2,000 µg/kg	
Dioxin (TEQ)	0.3 ng/kg	

[12] Brodberg, B. and G. Pollock, 1999, Prevalence of selected target chemical contaminants in sport fish from two California lakes: public health designed screening study, CalEPA, OEHHA, EPA Assistance Agreement No. CX 825856-01-0.

[13] USEPA, 2000, Guidance for assessing contaminant data for use in advisories, Volume 1, Fish sampling and analysis, Third Edition, USEPA 823-B-00-007.

Table 3. Wildlife Protection Criteria for Evaluation of Bioaccumulation Monitoring Data

Contaminant	NAS Guidelines[14]	USFWS Guidelines
Arsenic		0.25 mg/kg
Copper		15 mg/kg
Mercury		0.3 mg/kg
Aldrin	100 µg/kg	
Total DDT	1,000 µg/kg	
Total PCBs	500 µg/kg	
Chlordane (total)	100 µg/kg	
Dieldrin	100 µg/kg	
Endosulfan (total)	100 µg/kg	
Endrin	100 µg/kg	
Lindane (gamma hexachloro-cyclohexane)	100 µg/kg	
Hexachlorocyclohexane (total)	100 µg/kg	
Heptachlor	100 µg/kg	
Heptachlor epoxide	100 µg/kg	
Toxaphene	100 µg/kg	

4.5 Determining Compliance with Numeric Bacteriological Water Quality Objectives

This section describes the process that each Regional Board should go through when assessing whether or not numeric bacteriological water quality objectives (BWQOs) set to protect Water Contact Recreation (REC-1), Non-contact Water Recreation (REC-2) (recreational uses) and Municipal and Domestic Supply (MUN) beneficial uses are attained. This section does not apply to assessment of narrative bacteriological objectives or other aspects of the water quality standards that may be impacted by bacteria.

Background:

Each Regional Board has numeric BWQOs in its Basin Plan that have been set to protect recreational and municipal water supply beneficial uses. However, these objectives are not consistent across Regional Boards. Assessing attainment of water quality standards requires comparison of analytical bacteria results to these objectives listed in the Regions' Basin Plans.

[14] National Academy of Sciences-National Academy of Engineering. 1973. Water Quality Criteria 1972 (Blue Book). USEPA Ecological Research Series. EPA-R3-73-033. U.S. Environmental Protection Agency, Washington, D.C.

The purpose of this section is to propose policy language by which Regional Boards will achieve consistency statewide in assessing inland water bodies for recreational and municipal water supply beneficial uses.

Recommendation 27: The following data requirements and processes should be used in assessment of compliance with BWQOs.

1. Data Requirements (also see data requirements in Section 4.1):

a) Information other than bacteriological water quality monitoring data such as information on postings, advisories and other observations should not be used as the basis for determining compliance with numeric BWQOs. Such information may be used to support conclusions reached through the analysis of the bacteriological data.

b) Because bacteria data must be compared to Basin Plan standards that often include a 30-day geometric mean objective using no fewer than four or five samples, the preferred frequency of sampling for bacteria is weekly. Monthly data or a limited, non-routine data set (e.g., sampling frequency is less than once per month) can be used when coupled with an understanding of the watershed, including potential sources of the bacteria, and bacteria fate and transport processes. Furthermore, if a limited data set with a small sample size is used, Regional Boards should carefully consider the assessment criteria (i.e. exceedance frequencies) to ensure that an impairment decision is made based on the water quality impairment being recurrent or persistent (see 2a. below). Year-around data from both wet and dry conditions is preferable. Where possible, water body fact sheets should indicate which samples were collected during rain events. Some variability in sampling frequency is acceptable since budget constraints and other factors can affect monitoring programs.

c) The day of the week when sampling takes place is inconsequential. However, systematic sampling is preferred, consistent with the USEPA's 1986 recommendation for ambient water quality criteria for bacteria, which states that samples should be taken at evenly spaced intervals.

2. Data Analyses:

a) The frequency of exceedance of bacteria objectives should be based on the Basin Plan objectives, or regional implementation procedures as contained in Basin Plans that are specific to bacteria objectives. Regional Boards should consider using appropriate statistical methods to determine whether applicable BWQOs are being met.

b) Data should be grouped and analyzed on an annual basis. Annual analysis should be done since bacteria levels can vary significantly depending on water year type. The seasonality of an impairment does not need to be specified unless a Basin Plan specifies a seasonal recreational use for a water body.

3. Water Quality Objectives, Permanent Postings, Extent of Application and Freshwater Beaches:

a) On the List, the pollutant listed should be "bacterial indicators" and, where appropriate, the specific analytical indicator(s) that demonstrated impairment should be listed. For example, if data indicate fecal coliform densities greater than the numeric objective, then the listing would be portrayed as bacterial indicators-fecal coliform.

b) With respect to permanent postings, posting of a water body indicates that there is a problem that may be temporary, intermittent or ongoing. If there are insufficient data to show that the problem is persistent or recurrent, these water bodies should not be listed.

c) With respect to engineered storm channels with limited public access and with potential REC-1 beneficial use designations, the numeric BWQOs set to protect REC-1 still need to be met unless a use attainability analysis is done to support removing the use designation or redesignating the water body with a conditional use.

4) Bacterial Indicators:

a) The indicator(s) used should be those used as BWQOs in the Regional Basin Plans or in statewide water quality control plans. Measurement of *E. coli* may be substituted for fecal coliform for comparison with fecal coliform objectives if local studies have been completed to determine the appropriate conversion factor to use and depending on the precision of the methods used (see Noble *et al.* 1999 for a comparison of laboratory analytical methods).

4.6 Nutrients

This section describes the factors that should be considered in evaluating compliance with nutrient-related narrative water quality objectives.

Recommendation 28: Several relevant parameters—listed in Table 4 and 5—may be useful for establishing nutrient listings. The utility of these parameters varies, based on our current state of knowledge, and on the directness of their linkage to nutrient-related beneficial use impairment. The process for listing and/or delisting water bodies for nutrient impairment is to utilize a weight of evidence approach using the parameters in Tables 4 and 5 below, as appropriate, for each beneficial use designation in combination with the decision process in the "Determining

Compliance with Water Quality Standards" flowcharts (Figures 1 and 2). Other scientifically defensible criteria may also be used.

Table 4 –Parameters To Be Used in Establishing Nutrient Impairment of a Lake or Reservoir*

Beneficial Uses	Relevant Parameters
Drinking water	• Chlorophyll a • Inorganic Nitrogen (nitrate) • Total Dissolved Solids • Total Nitrogen • Total Organic Carbon • Total Phosphorus • Transparency/ Turbidity
Aquatic life use support	• Biological Indicators (e.g., change from dominance by diatoms to dominance by blue-green algae) • Chlorophyll a • Dissolved Oxygen • Inorganic Nitrogen (ammonia) • pH • Total Nitrogen • Total Phosphorus • Transparency/ Turbidity
Recreation/Aesthetics	• Algae cover (e.g., periphyton or floating mass) • Blooms of taste/odor-causing algae • Blooms of toxin-producing algae • Chlorophyll a • Inorganic Nitrogen • Macrophyte coverage • Total Nitrogen • Total Phosphorus • Transparency/ Turbidity

* Use "Determining Compliance with Water Quality Standards" flowcharts (Figures 1 and 2) in combination with this table.

Table 5 –Parameters To Be Used in Establishing Nutrient Impairment of a River or Stream*

Beneficial Uses	Relevant Parameters
Drinking water	• Nitrate • Soluble Reactive Phosphorus • Total Nitrogen • Total Organic Carbon
Aquatic life use support	• Biological Indicators • Chlorophyll a • Dissolved Oxygen • Inorganic Nitrogen (ammonia) • Periphyton Biomass • pH • Soluble Reactive Phosphorus • Total Nitrogen
Recreation/Aesthetics	• Chlorophyll a • Inorganic Nitrogen • Periphyton Biomass (Algae cover) • Soluble Reactive Phosphorus • Taste • Total Nitrogen • Transparency/ Turbidity

* Use "Determining Compliance with Water Quality Standards" flowcharts (Figures 1 and 2) in combination with this table.

4.7 Temperature

This section presents a conceptual approach to determining whether elevated temperature levels are causing nonattainment of water quality standards.

Assessing whether a water body is meeting Regional and/or State temperature water quality objectives requires making a determination of natural receiving water temperatures. In most cases natural receiving water temperature is not defined; the Thermal Plan[15] defines natural receiving water temperature as "The temperature of the receiving water at locations, depths, and times which represent conditions unaffected by any elevated temperature waste discharge or irrigation return waters."

Determination of "natural receiving water" temperatures is limited by the availability of historic temperature monitoring data that is considered representative of unaltered (call it "natural") conditions for a given water body. When current and historic data are available that show a change from "natural" or "historic" conditions for a given water

[15] California State Water Resources Control Board, 1972, *Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California*, as amended

body in a manner or to a degree prohibited by applicable objectives, determination that temperature water quality objectives are not being met is fairly straightforward. However, when "historic" or "natural" temperature data are unavailable, alternative approaches must be considered to assess temperature impairment.

Recommendation 29: When data of sufficient quantity and quality (see Section 4.1 above) are available, a comparison of current and "historic" or "natural" water temperatures can be made to determine whether water quality objectives are being met. If the current temperature regime of COLD or WARM waters has been altered from the "natural" or "historic" temperature regime in a manner prohibited by the applicable objective, then the water quality objective is not being met and the water body shall be determined impaired by temperature. The provisions of the State Board's Thermal Plan should also be considered.

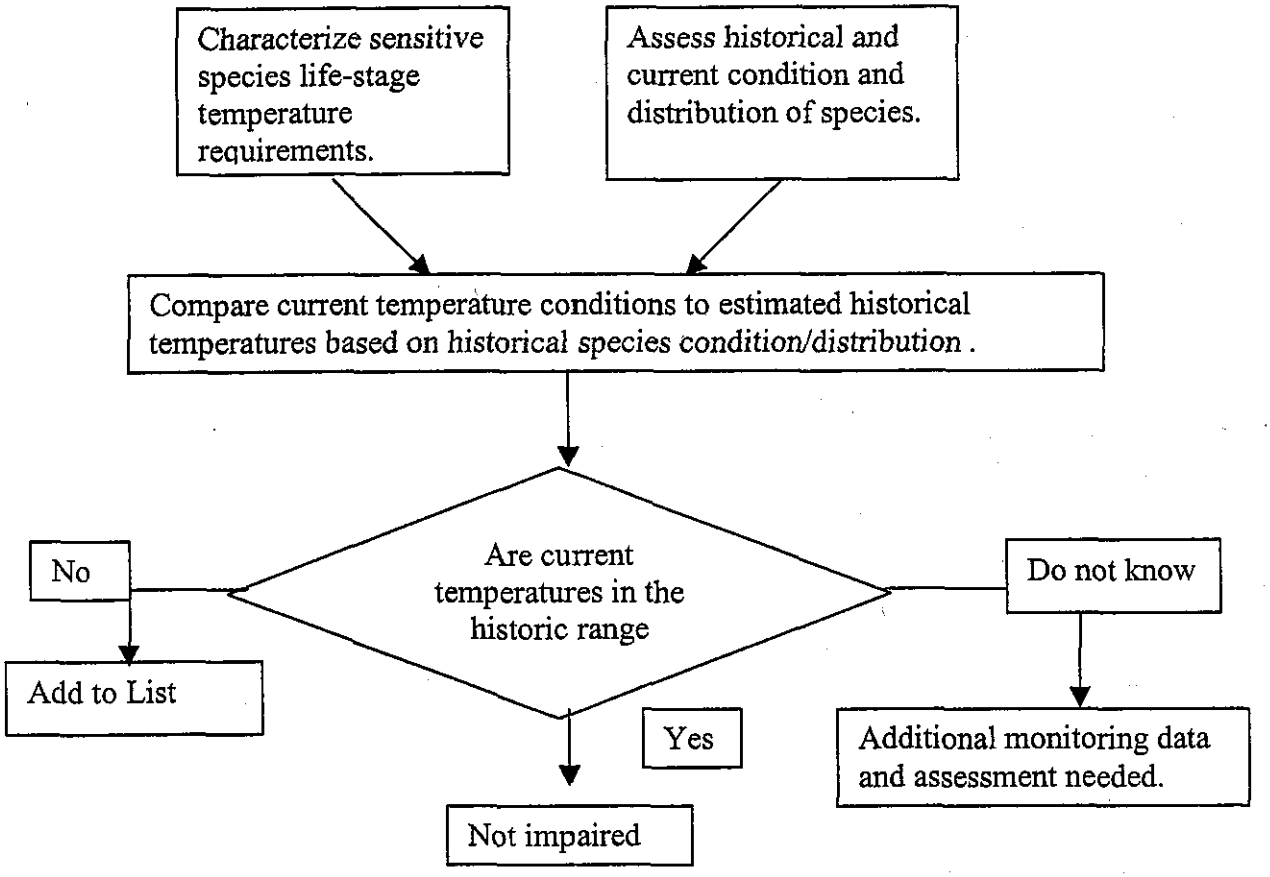
When "historic" or "natural" temperature data are not available, alternative approaches must be employed to assess temperature impairment. One such approach is presented here. This approach is based on the assumption that the beneficial uses associated with aquatic life are most sensitive to modifications to natural temperature regimes. Other beneficial uses that may also be affected by temperature include recreation and aquaculture; other approaches for assessing temperature impairment may be more appropriate for these beneficial uses.

The approach presented here involves comparing recent temperature monitoring data for a given water body to the temperature requirements of aquatic life in the water body (see the flowchart following this discussion). In many cases fisheries, particularly salmonids, represent the beneficial uses most sensitive to temperature. For this approach, some information on the current and historic condition and distribution of the sensitive beneficial uses (e.g., fishery resources) in the water body is necessary, as well as recent temperature data reflective of conditions experienced by the most sensitive life stage of the aquatic life species. If temperature data from past (historic) periods corresponding to times when the beneficial use was fully supported are not available, information about presence/absence or abundance of sensitive aquatic life species can be used to infer past (historic) temperature conditions. Therefore, this approach is based on the assumption/hypothesis that a decrease in the population and distribution of the sensitive aquatic life species compared to past levels is due, at least in part, to a change in temperature conditions.

Determination of life stage temperature requirements of sensitive aquatic life species should be based on peer-reviewed literature. Similarly, evaluation of temperature data should be based on temperature metrics reflective of the temperature requirements for the sensitive aquatic life species. For example, a common metric for assessing chronic (i.e. sub-lethal) effects on salmonids is the maximum weekly average temperature (MWAT), the highest value of the 7-day moving average of temperature. In this case, the MWAT of a particular water

body can be compared to MWAT growth requirements for salmonids[16]. Another measure of temperature requirements is the upper lethal limit, an acute temperature threshold. These thresholds vary for different species, and should be determined based on peer-reviewed literature. Other relevant temperature metrics may also be considered.

In summary, in the absence of "historic" or "natural" temperature data, a determination of temperature impairment can be made when there is a documented decrease in the population and distribution of the sensitive aquatic life species compared to past levels, coupled with current temperatures outside of the life stage temperature requirements for the sensitive species.



[16] See, for example, Sullivan, K. et al. 2000. *An Analysis of the Effects of Temperature on Salmonids of the Pacific Northwest with Implications for Selecting Temperature Criteria.* Sustainable Ecosystem Institute.

4.8 Sedimentation

This section presents an approach to determining whether increased sediment loads are causing nonattainment of water quality standards.

Increased sediment can cause nuisance, turbidity, and adverse effects on many beneficial uses. Interpreting applicable water quality objectives for sediment is difficult since these objectives are typically narrative-based on the existence of a nuisance or an adverse effect on beneficial use from increased sediment loads over natural levels. They are also expressed as numeric objectives based on turbidity (a condition that has a variety of causes).

Regional Boards face a variety of challenges when determining whether a water body is impaired by sediment. Data that characterize conditions of beneficial use impairment or of excess sediment often do not lend themselves to conventional measures of data quality. Also, given the natural variability in sediment supply and transport capacity, representativeness of data is difficult to establish. Regional Boards face additional challenges in determining cause and effect relationships for sediment, since changes in sediment supply, transport capacity and channel form can produce similar effects in a water body. Linking these effects to an impact on a beneficial use is a further complication. Sediment is often one of many pollutants or forms of pollution potentially affecting beneficial uses associated with aquatic life. In those cases, it may be more appropriate to list for biological impairment, rather than for sediment, and follow up with a limiting factor analysis.

Background:

1. Water quality objectives are narrative for suspended sediment and settleable material and based on prohibitions against adverse affects to beneficial uses or causing "nuisance." Numeric and narrative standards for turbidity also exist, with narrative standards taking the form described above, and numeric standards involving an allowable amount above "natural" background.

2. Channel form and sediment deposits reflect a dynamic balance between sediment supply and transport capacity. Transport capacity is influenced by: a) streamflow; b) channel slope and cross-section; and c) channel roughness; or elements that concentrate or disperse flow energy. Land and water use activities each may cause significant changes to sediment supply and transport capacity greatly complicating correct determination of cause(s) for sedimentation (e.g., sediment supply, channel modification, flow alteration).

3. Scientific understanding of linkage between sediment supply and specific impacts to aquatic species in a given watershed is often poor because habitat conditions in streams are shaped not just by sediment load, but also by the interactions of streamflow, sediment, and in-channel and streamside vegetation and obstructions.

Recommendation 30: Waters shall be listed based on sufficient credible data and information that indicate that water quality standards for sediment are not met, or that impacts to beneficial uses occur and are caused by sediment. A water body will be listed if any one of the following conditions is met:

1. Beneficial use impairment caused by increased sediment loads.
2. Nuisance caused by sediment loads (CWC, Section 13050).
3. Exceedance of turbidity objective, where turbidity is caused by increased suspended sediment loads.

The first condition requires a) evidence of beneficial use impacts, and b) evidence that the impacts are caused by increased sediment loads. If adverse sediment conditions are caused by changes in the flow regime, channel configuration, or reasons other than increased sediment supply, Regional Boards should list for these conditions in addition to sediment. Evidence of beneficial use impacts must include documentation of adverse biological responses, degradation of aquatic life populations or communities, or restrictions on recreation, navigation, or other beneficial uses. Comparison to reference conditions within watersheds or ecoregions would be appropriate to establish these effects, as would documented declines in aquatic organism populations and aquatic community diversity. Evidence that the beneficial use effects are caused by sediment must describe the link between the documented impact and the presence of sediment in the water, or stored in the channel. This evidence must include documented occurrence of conditions that are recognized by the scientific community as having the impacts observed. For example, the filling of a stream's pools with fine sediment has been shown through scientific research to reduce rearing opportunities for certain fish and, as a consequence, to reduce their populations. Where no single condition is compelling, multiple lines of evidence may be relied upon to support the determination that an impact has occurred, or that the impact is caused by sediment.

Nuisance conditions must be documented through visual assessment or other methods conducted in a manner consistent with quality assurance practices for reducing error and subjectivity.

Water bodies should not be listed for sediment based on turbidity unless it can be demonstrated that the cause of increased turbidity is an increased delivery of sediment. For example, increased turbidities that are related to reservoir releases should not lead to a sediment listing.

Determinations that Basin Plan turbidity objectives are exceeded due to increased delivery of sediment will be based on:

- Data collected from the waterbody over a period of time that accounts for the variable nature of sediment delivery and transport.

- Temporal representation: allow Regional Boards to establish on a case-by-case basis the temporal representativeness of the samples used to assess standards attainment. If the majority of samples are collected on a single day or during short-term natural events, the data shall not be used as the primary data set to support the listing.
- For drinking water: A documented increasing trend in turbidity-based closures of intakes to municipal supply system.

4.9 Habitat, channel, and flow modification

This section presents an approach to determining whether habitat, channel, or flow modifications are causing nonattainment of water quality standards.

Habitat, channel, or flow modification may affect attainment of water quality standards under two sets of circumstances: (1) situations where these three factors cause direct impairment of beneficial uses, and (2) situations where these three factors influence one or more water quality parameters (e.g., temperature or sediment) and these impacted water quality parameters lead to impairment of beneficial uses.

Although they may affect beneficial use attainment, habitat modification, channel modification, and flow modification are not listed in Basin Plans as water quality objectives. (In some cases waste discharge prohibitions may affect habitat and channel modification.) The central question in assessment is whether waters should be listed as impaired by these factors when beneficial uses are clearly impaired by factors other than those included as water quality objectives in the Basin Plans. Some examples relevant to habitat, channel, and flow modification would be as follows:

- watercourses which do not support beneficial uses such as COLD, REC1 and REC-2, and SPWN solely because of flow depletion from dams and diversions
- watercourses which do not support beneficial uses solely because of channel modifications such as concrete lining of the channel
- watercourses that do not support beneficial uses solely because of impacts from invasive species such as arundo, hydrilla, and *Caulerpa taxifolia*.

Recommendation 31: Water bodies that have beneficial uses that are impaired due to factors such as lack of flow, degraded aquatic habitat, and physical changes to stream channels should be identified on the List.

4.10 Biological Monitoring and Assessments

This section discusses how biological monitoring and assessment information should be considered in determining whether a surface water is attaining water quality standards.

Bioassessment provides a tool for measurement of stream community health through population diversity, population composition (% taxa pollution tolerant, % taxa pollution intolerant), and other metrics that furnish measures of the health and integrity of the population.[17] Biological assessment can include assessment of benthic macroinvertebrate, fish, and/or algal communities. The analysis of community composition can provide a direct assessment of instream biological integrity, and provides an opportunity to identify indicator species, i.e., species that respond predictably or characteristically in the presence or absence of degraded conditions.

Recommendation 32:

The assessment process below should be followed until biological standards (biocriteria) have been incorporated into a Regional Board's Basin Plan. After that time these standards would necessarily guide listing decisions for the affected geographic areas. Regional Boards (especially the larger Regions) will probably adopt biocriteria for one or a few areas at a time, not for the whole Region at once. After the biocriteria are adopted for a specific area, watershed, ecoregion or waterbody type, those established biocriteria would guide listing or delisting decisions for that area only. The remainder of the Region (for which no biocriteria have yet been adopted) would still follow the process below.

When the situation does not fit these guidelines, the situation should be assessed and the deviation from the standardized guidelines should be explained and documented.

- Identify appropriate reference sites within watersheds or ecoregions if in existence. Document methods for selection of reference sites.
- Conduct bioassessment sampling at reference sites using the most appropriate method(s) and index period(s). Document sampling methods, index periods, and Quality Assurance/Quality Control (QA/QC) procedures for the habitat being sampled and question(s) being asked. (Waters that do not have reference sites can still be sampled as baseline points for later trend analysis. Subsequent samplings can be compared to the initial sample conditions to determine trends toward further deterioration or improvement).
- Calculate biological metrics for reference sites, and develop Index of Biological Integrity (IBI) if possible.
- Conduct bioassessment sampling at other sites, and compare to reference condition or IBI if in existence. Evaluate physical habitat data and other water quality data, when available, to support any conclusion of impairment or nonimpairment. When data are available, use the "triad approach" of biologic, chemical, and toxicity testing to support conclusions inferred from biological signals.

[17] USEPA. July 1999 Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers," 2nd edition, EPA 841-B-99-002

- Consult with qualified scientists to interpret data and incorporate their professional judgement. Attempt to obtain letters of agreement or other forms of peer review for the Regional Board's conclusions about water quality impairment(s) based on bioassessment data.
- Express bioassessment data using the most appropriate metrics. This could be different for each IBI or reference condition.
- Interpret case-by-case when necessary and explain and justify any deviations from the statewide approach.

5 AB 982 PUBLIC ADVISORY GROUP RECOMMENDATIONS

This section reviews the Regional Board[18] recommendations on the Listing Policy relative to recommendations made by the AB 982 Public Advisory Group (PAG). The summaries of PAG issues below refer to issues identified in the July 2002 PAG Meeting Summary, and to comments by the PAG's "regulated" and "environmental" caucuses on State Board staff's July 2002 Concept Paper. The meeting summary and comments were included in the agenda packet for the PAG's October 22, 2002 meeting.

Scope of List and Policy

1. *PAG Issue:* The regulated caucus supports integration of the Clean Water Act Section 303(d) and 305(b) assessment processes. It supports the Concept Paper's direction for a multipart Section 303(d) list, but believes that the 303(d) list itself should only include waters for which TMDLs will be developed. The environmental caucus opposes a multipart list or separate lists and states that waters must stay on the list until they meet standards.

   Regional Board Recommendations: The Regional Board recommendations center on a single "impaired waters" List, with a supporting database. The list and database would include waters requiring TMDLs and other types of impaired waters. If USEPA's regulations change to require a more circumspect list, the proposed single list structure would be amenable to extracting whichever waters are necessary to fulfill USEPA requirements. The Section 305(b) assessment process is outside of the scope of the Regional Board recommendations. Delisting is addressed in Recommendations 5, 11, and 13.

2. *PAG Issue*: The regulated caucus supports a "watch list" and policy direction on criteria for inclusion of waters on this list. The environmental caucus opposes use of a "monitoring priority list" or "probable clean waters list." The July meeting summary implies that some PAG members support the concept of "promoting" monitoring list waters to the 303(d) list if no additional data become available.

[18] References to the Regional Board or Regional Boards are to the staff of the Regional Boards and do not reflect findings made or policies adopted by the Boards themselves.

Regional Board Recommendations: The concept of a "watch list" or "monitoring priority list" is outside of the scope of the current recommendations. The Regional Boards may provide separate recommendations on this issue at a later date.

3. *PAG Issue:* The environmental caucus states that the policy should not incorporate guidance on beneficial use dedesignation or water quality standards revisions.

   Regional Board Recommendations: The Regional Boards favor exclusion of these topics from the policy (Recommendation 2) as they are relevant to standards setting, not standards attainment.

Reassessment of the Earlier Section 303(d) List

1. *PAG Issue:* PAG members have expressed concern about revision of the current Section 303(d) list under the new policy. The regulated caucus supports a one-time reassessment of all waters on the 2002 list. The environmental caucus believes that the policy should be applied to new listings only and that current listings should be evaluated as they come up in priority order.

2. *Regional Board Recommendations:* The Regional Boards support review of waters on the current (2002) Section 303(d) list for consistency with the new policy within the first two listing cycles following adoption of the new policy. The Regional Boards believe the List should be consistent with the new policy, but that the State and Regional Boards' resources should not be unduly diverted from other important responsibilities to do so. See Recommendations 3 and 11.

Priority Ranking and Schedules

1. *PAG Issue:* The regulated caucus supports the Concept Paper's priority ranking criteria and suggests that point source TMDLs be addressed first to minimize problems with interim permit conditions. This caucus supports a connection between priority ranking and scheduling, and recommends that explanations for priority ranking be included in water body fact sheets.

   Regional Board Recommendations: The Regional Boards' recommended priority ranking criteria are somewhat different from those in the Concept Paper, and the Boards also recommend that priorities and schedules should not be connected (Recommendations 14 and 15). The Regional Boards' recommendations are for prioritized actions to address impairment. While scheduling will necessarily consider a water's priority, scheduling involves a host of other administrative and practical considerations which are not encompassed in the process of identifying which waters are impaired waters, and their importance. Section 8 of

Recommendation 21 lists information to be included in fact sheets; this list does not currently include discussion of priority ranking.

Solicitation/"Readily Available Data"/Data Screening

1. *PAG Issue:* The regulated caucus supports approval of the list by both the State and Regional Boards, but opposes restrictions on the provision of new information at each stage of the process before State Board approval. The environmental caucus supports "transparency and consistency" in the assessment process.

   Regional Board Recommendations: The Regional Boards recommend formal action on an impaired waters List by both the State and Regional Boards (Recommendations 8 and 9). The solicitation process is discussed in Section 3.1. The Regional Board recommendations are silent on whether new information/data should be accepted after the close of the solicitation process.

2. The regulated caucus supports the Concept Paper's Quality Assurance/Quality Control (QA/QC) requirements for data submittals. It suggests clarification that ambient receiving water data and information are the primary types of data to be used in the listing process. The caucus believes that "anecdotal information" should be used for listing only with additional supporting data or information. It recommends addition of local public agencies and watershed groups to the list of parties to be solicited.

   Regional Board Recommendations: Section 4.1 (Recommendation 23) outlines general considerations related to the quality, quantity, and spatial and temporal representativeness of data to be used in the assessment process. The recommendations related to specific pollutants or stressors assume that data for all media (e.g., sediment and tissue data) will be used to evaluate impairment whenever they are available and of acceptable quality/quantity for use in the assessment process. Section 4.1 states that data and information not supported by a Quality Assurance Project Plan (QAPP) cannot be used by themselves to support listing or delisting, but may only be used to corroborate other data and information with appropriate QAPPs. Recommendation 19 states that the policy should specify certain categories of stakeholders be solicited, including government agencies and the public.

3. *PAG Issue:* The environmental caucus supports use of "reasonable" QA/QC guidance. This caucus recommends that Regional Boards actively seek out data rather than considering only data provided in response to solicitation. It also supports use of all data, regardless of age, and states that Regional Boards should establish requirements for spatial and temporal representation and minimum sample numbers on a case-by-case basis.

Regional Board Recommendations: Section 4.1 includes recommendations on QA/QC and on spatial and temporal representativeness of data. Recommendation 19 states that the policy should describe the types of information and data that will, at a minimum, be considered readily available. Recommendation 17 states that data not provided in response to the solicitation will not be considered readily available.

Assessment Methodology

1. *PAG Issue:* The regulated caucus supports development of a California-specific weight of evidence approach for assessment, drawing on many elements of work done in other states.

   Regional Board Recommendations: The Regional Board recommendations encompass a "weight of evidence" approach that must be undertaken in the context of the applicable water quality standards. For example, see Recommendation 25.

2. *PAG Issue:* The regulated caucus supports the use of water body-specific information for listing as opposed to the use of modeled or projected information.

   Regional Board Recommendations: The Regional Board recommendations do allow for listing on the basis of modeled or projected information in the absence of water body-specific evidence of impairment in some circumstances.

Documentation

1. *PAG Issue:* The regulated caucus recommends that the policy require all data to be reviewed and presented in the Section 305(b) report. Data not used for assessment of impairment should be included in the report with comments on why they were not used. The regulated caucus recommends that fact sheets provide information on the degree or magnitude of exceedance of standards.

   The environmental caucus states that any documentation approach must be comprehensive enough to accommodate all types of data; the documentation approach should not have the indirect effect of excluding or making it difficult to submit a particular type of available data. The environmental caucus also recommends documentation of reasons for list deletions/rejections.

   Regional Board Recommendations: The Section 305(b) report and the use of "leftover" data and information are outside of the scope of the Regional Board recommendations on policy direction for an impaired waters List. Recommendation 21 includes procedures for tracking information received in response to solicitation, and proposes the preparation of fact sheets for all water bodies recommended for listing, delisting, or changing existing 303(d) list information. Recommendation 21 (9) also recommends that fact sheets be

prepared for waters not proposed for listing, when some data or information indicated non-attainment of standards. Recommendation 21 (8), concerning the contents of fact sheets, does not specifically address magnitude of exceedance.

2. *PAG Issue:* The environmental caucus supports "leveraging" of the SB72 statewide stormwater reporting format.

   Regional Board Recommendations: Recommendation 21 addresses the contents of fact sheets but not their format.

Listing, Delisting and "Not Listing" Factors

1. *PAG Issue:* The regulated caucus supports not listing for beneficial use impairment alone or exceedance of an objective alone (e.g., waters would not be listed if data showed no impairment of beneficial uses, even if violations of water quality objectives occurred). The environmental caucus opposes this concept. The regulated caucus supports (and the environmental caucus opposes) the Concept Paper's proposal not to list for short-term events.

   Regional Board Recommendations: Section 4.1 describes procedures for assessment of impairment in relation to water quality objectives, beneficial uses, and antidegradation considerations. California's water quality standards include all three of these factors, and nonattainment related to any one factor should be considered impairment. The Regional Boards recommend that waters should not be listed if the nonattainment of standards is not persistent or recurrent. Waters would not be listed on the basis of spills or other one-time events if such events do not create persistent impairment, however evidence of such events must be included in the evaluation process.

2. *PAG Issue:* The environmental caucus believes that the policy should make it easy to list waters and hard to delist them, and that there should be separate criteria for each process. The caucus supports delisting for clearly faulty data but also wants affirmative data/information to show that the water body is not impaired.

   Regional Board Recommendations: The Regional Boards propose using essentially the same factors and assessment process to delist (or not list) as to list (Recommendations 5 and 13). Waters would be listed if standards are not attained, and delisted or not listed if standards are attained. Considerations related to data quality/quantity and temporal/spatial representativeness would be the same for listing and delisting.

3. *PAG Issue:* The regulated caucus supports delisting when the impairment is due to natural conditions, and states that naturally impaired waters should be placed on a watch list to allow reevaluation of water quality standards. It also suggests special consideration for drought as a natural condition.

Regional Board Recommendations: The Regional Boards' recommended process for evaluating whether waters are attaining standards does not include an assessment of the source of the pollutants or pollution as a listing factor. (Recommendation 23).

Narrative Objectives

1. *PAG Issue:* The regulated caucus recommends that numeric criteria or guidelines should not be used in evaluation of narrative water quality objectives unless and until they are adopted as numeric objectives. The policy should include a process to determine when a water body is impaired based on narrative objectives, and translator mechanisms should follow the direction in Basin Plans.

   Regional Board Recommendations: Recommendation 2 opposes the inclusion of direction on revision of standards in the policy. Section 4.1 provides general direction on selection of criteria for use in assessing compliance with narrative objectives and recommends the use of any specific direction in Basin Plans on determining compliance with water quality objectives. Some of the recommendations (e.g., Recommendation 26) address the use of certain criteria in preference to others.

2. *PAG Issue:* The regulated caucus disagrees with listing solely on the basis of Toxics Release Inventory (TRI) data, exceedance of drinking water Maximum Contaminant Levels (MCLs), beach postings/closures, and fish/shellfish consumption advisories. It is opposed to the use of trend data in Section 303(d) assessment and states that the Section 305(b) assessment and the State's Continuing Planning Process are the appropriate vehicles to address trends. The caucus also recommends that toxicity and nuisance should not be used as the basis for listing and that adverse biological response should not be used as the basis for listing unless there is a connection with a specific pollutant.

   Regional Board Recommendations: The Regional Board recommendations do not address listing on the basis of TRI data alone; since the TRI provides only source data, listing would not be appropriate without water-body specific evidence of impairment. Regarding MCLs, all Basin Plans contain a "Chemical Constituents" objective that applies MCLs to ambient waters. If assessment of an ambient water body using the procedures in Section 4.1 shows violation of this objective, the water body should be considered impaired. Regarding the other listing/delisting factors mentioned in the regulated caucus comments, the Regional Boards support their use under specific circumstances. The use of consumption advisories is discussed in Recommendation 26. The use of toxicity data is discussed in both Recommendations 24 and 25. Recommendations 29 and 30 discuss the use of trend analysis for temperature and sediment issues.

Numeric Objectives and Binomial Model

1. *PAG Issue:* The regulated caucus supports use of the binomial model discussed in the Concept Paper for assessment of compliance with standards. The environmental caucus believes that assessment should use a variety of factors, and that one strategy such as the binomial model should not "trump" others.

   Regional Board Recommendations: As noted in Section 1, the Regional Boards are opposed to the exclusive use of the binomial model, since its use can beinconsistent with the manner in which most of California's water quality objectives are expressed. A more flexible process for assessing compliance with standards is proposed in Section 4.1.

2. *PAG Issue:* Regarding listing for violation of bacteria objectives, the regulated caucus supports the use of a consistent trigger value that distinguishes between wet and dry weather conditions.

   Regional Board Recommendations: Section 4.5 includes direction for fact sheets to note bacteria samples that were collected during rain events. However, it recommends that data should be grouped and analyzed on an annual basis, and that the seasonality of an impairment does not need to be specified unless a Basin Plan specifies a seasonal recreational use for a water body.

6 Potential Issues for Further Discussion

[This section is reserved pending TMDL Roundtable resolution of additional issues to address.]

Figure 1. Decision Process for Determining Compliance with Numeric and Narrative Water Quality Objectives, and Attainment of Beneficial Uses

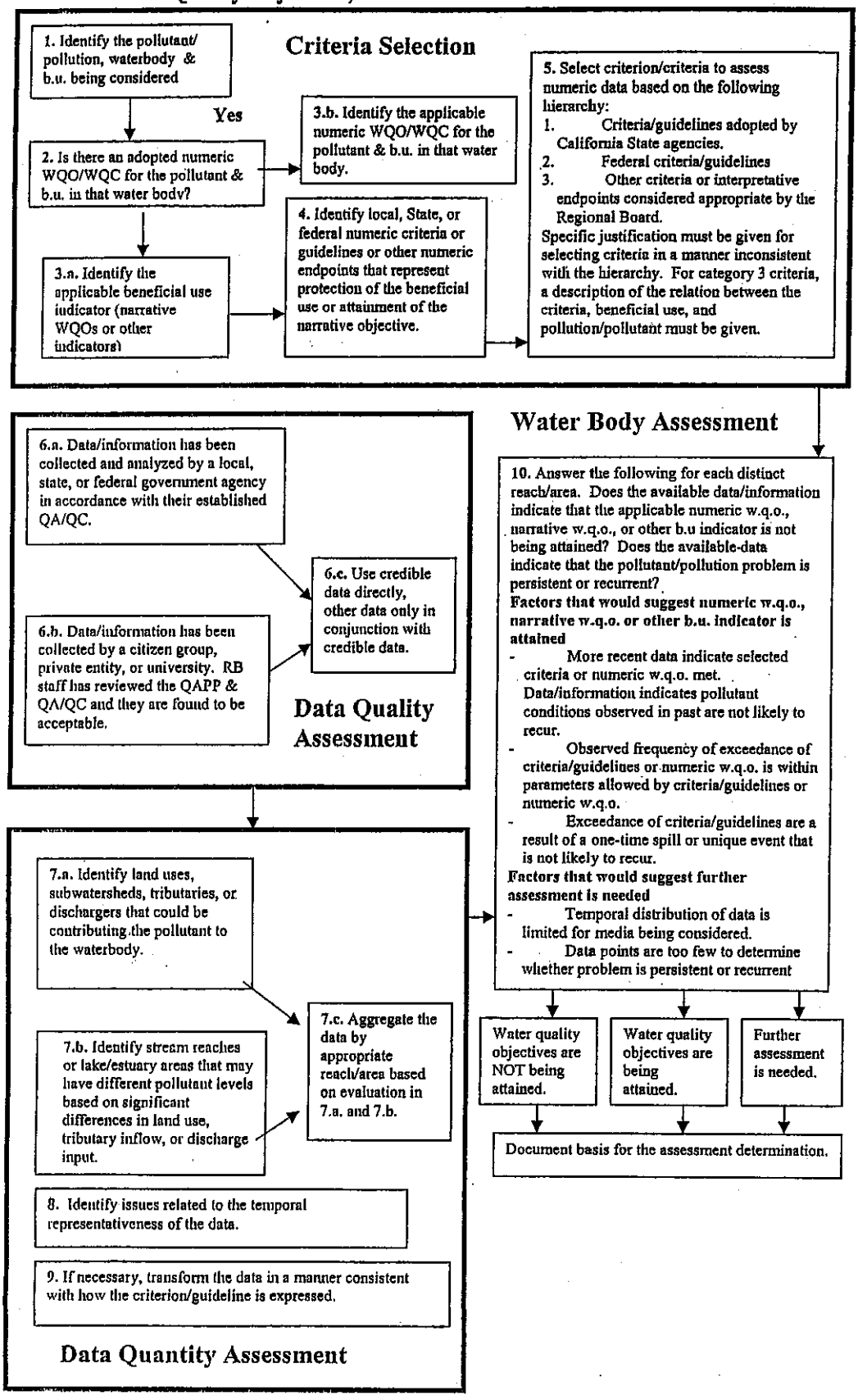
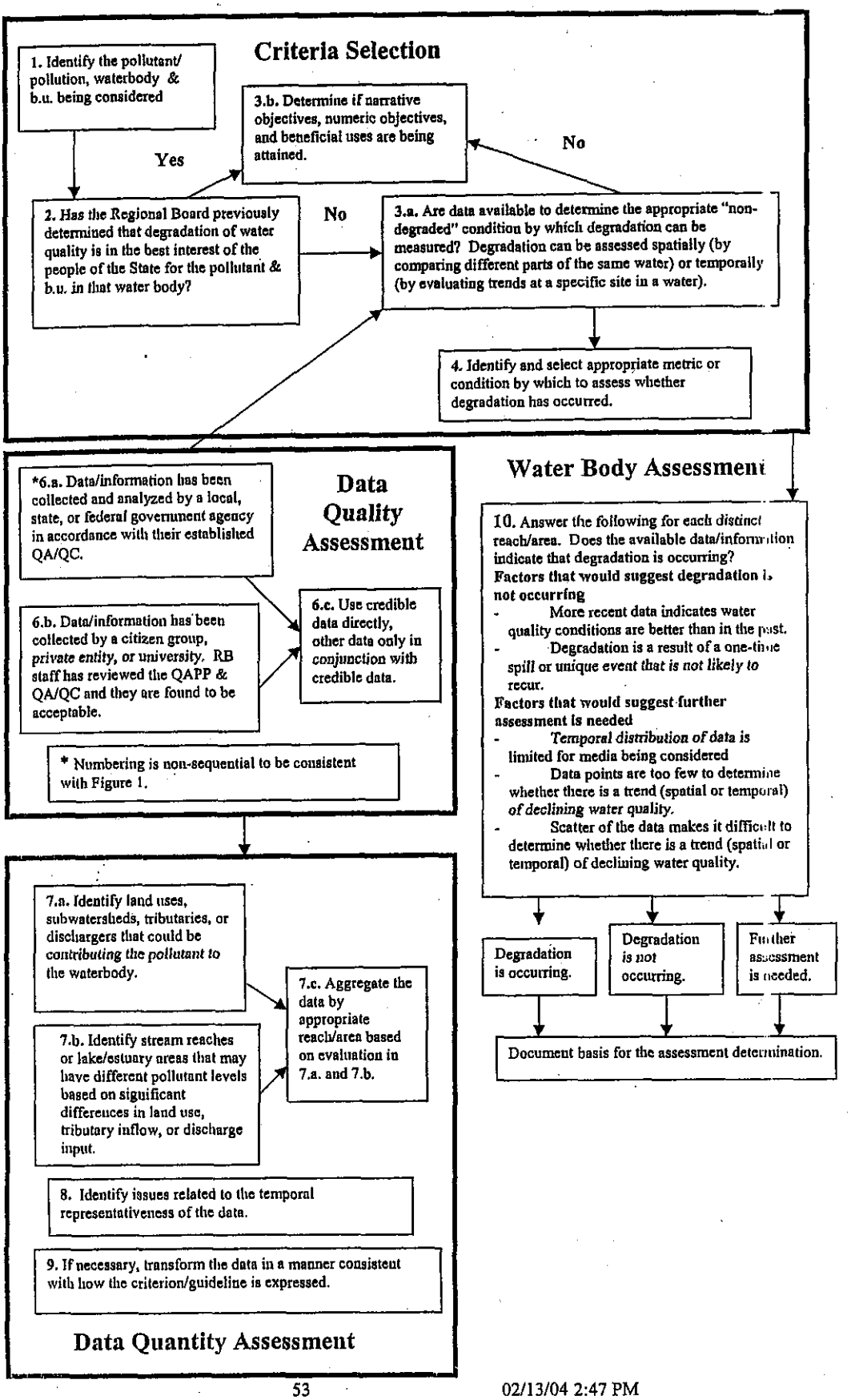


Figure 2. Decision Process for Determining Compliance with Antidegradation Requirements



March 17, 2003

Policy for the Identification of Surface Waters not Meeting Water Quality Standards

Additional[1] Recommendations from the Regional Board Representatives of the TMDL Round Table tothe Management Coordinating Committee

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Seven additional recommendations along with accompanying rationale are presented. These include:

A. **All-Inclusive List of Impaired Waters - - Not Just Those USEPA Determines Need a TMDL**
B. **All-Inclusive List of Impaired Waters Is Equivalent to Section 303(d) List**
C. **Response to an Impairment Listing Should be Consistent with Impaired Waters Guidance Policy**
D. **Structure of the List -- Section 303(d) List Should Not Pre-judge Sources of Impairment or Solutions to Impairment**
E. **Section 303(d) List Should Not Include "Threatened Waters"**
F. **Section 303(d) List Should Not Include a "Monitoring List"**
G. **Section 303(d) List Includes Priority Ranking of All Listed Waters**

Recommendation A: All-Inclusive List of Impaired Waters - - Not Just Those USEPA Determines Need a TMDL
Establish an all-inclusive list of impaired waters defined as those assessed waters not meeting water quality standards, not just those USEPA determines need a TMDL.

Rationale: Clean Water Act section 303(d)(1)(A) requires the State to list all impaired waters unless the best practicable control technology (BPT) effluent limitations (and secondary treatment for POTWs), required by 1977, are stringent enough to attain water quality standards. Since BPT effluent limitations and secondary treatment requirements for POTWs have been fully implemented, all waters not currently meeting water quality standards should be listed and considered impaired.

Attainment of water quality standards is the only factor that is used to determine if a water should be listed. If a water is not attaining water quality standards, a separate and subsequent analysis is needed to determine the most appropriate regulatory remedy to address the

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[1] The Regional Board Representatives of the TMDL Roundtable prepared an initial suite of recommendations (Version 1.2, dated December 18, 2002) for the "Policy for the Identification of Surface Waters not Meeting Water Quality Standards".

impairment. Determination of the appropriate remedy is not part of the listing process as there is typically insufficient information to do so.

This is consistent with the TMDL Roundtable recommendations contained in the Policy for the Identification of Surface Waters Not Meeting Water Quality Standards (Dec 18, 2002 - Version 1.2) (Aka, Listing Policy). The list of impaired waters is not limited to waters requiring TMDLs.

Recommendation B: All-Inclusive List of Impaired Waters Is Equivalent to Section 303(d) List

The all-inclusive list of impaired waters (defined as assessed waters not meeting water quality standards) should be submitted as the State's section 303(d) List of impaired waters. An impairment listing does not necessarily require development of a TMDL.

Rationale: As already noted, CWA section 303(d)(1)(A) requires the State to list all waters not currently meeting water quality standards, and those waters should be considered impaired. The list of impaired waters is not limited to waters requiring TMDLs. As described in Recommendation C below, establishing a TMDL may not be the appropriate response to an impairment listing. The appropriate response is determined in an analysis separate from, and subsequent to, the determination of whether standards are being met.

Recommendation C: Response to an Impairment Listing Should be Consistent with Impaired Waters Guidance Policy

The listing exercise/action may recognize that there are various responses, or remedies, to a listing, but the listing exercise will not assert which response will be exercised. The response to the listing will be separate from the listing itself. The universe of potential responses, as well as guidance on how to select the most appropriate response to a given listing, is contained in the Impaired Waters Guidance Policy (aka, TMDL Guidance) which is the companion policy to the Policy for the Identification of Surface Waters Not Meeting Water Quality Standards (Aka, Listing Policy). The Listing Policy describes how to determine if a water should be included on the section 303(d) List; the TMDL Guidance describes how to address waters already on the section 303(d) List.

The response to a listing may include any one or combination of the following responses:

- Delisting, if the water is no longer impaired;
- Additional monitoring, if additional monitoring is needed to determine an appropriate response;
- Standards reassessment and possible modification, if the applicable standards are overbroad, in need of clarification, or inappropriate (e.g., Use Attainability Analysis (UAA), Site Specific Objective (SSO), establishing use sub-categories or seasonal uses, or a policy to clarify how a standard applies or should be implemented);
- Regional Board adoption of a plan to correct the impairment (e.g., Basin Plan amendment, permit modification, or enforcement order);
- Approval of a plan being implemented by another entity to correct the impairment (e.g., an alternative enforceable program by a local, state, or federal agency, or a voluntary program by a non-regulatory entity).

The response to the listing will be determined through the 8 phase process described in the Impaired Waters Guidance Policy (i.e., defining a project, preparing a project plan, implementing the plan, etc.). This includes indicating how and when the decision to calculate a TMDL will be made and documented. TMDLs will not necessarily be established (i.e., a Loading Capacity will be not calculated) for all waters, but at a minimum, will be where required by federal law (e.g., where a pollutant is the cause of impairment). Where waters are impaired, but federal law does not require a TMDL (e.g., where a pollutant is not the cause of impairment), the Regional Boards can address these listed impairments in the manner described above, consistent with their existing regulatory authority.

Rationale: This recommendation is related to the recommendation that the section 303(d) List should be an impaired-waters list, as opposed to a "TMDLs-need-to-be-established list". CWA section 303(d)(1)(A) requires the State to list all impaired waters unless BPT effluent limitations (and secondary treatment for POTWs) are stringent enough to attain water quality standards. Federal regulations authorize not listing waters for a variety of different reasons, suggesting that the section 303(d) List should not be an impaired-waters list, but a "TMDLs-need-to-be-established list". This is a dramatic departure from the historic structure of the section 303(d) List, and is not entirely consistent with section 303(d).

Federal regulations do not prohibit California from listing impaired waters even if USEPA does not require it, and USEPA has never disapproved such listings in the past. USEPA cannot require California to establish a TMDL where federal law does not require one. Given the lack of available water quality resources, if California accepts USEPA's invitation to treat the impaired waters list as a "TMDLs-need-to-be-established list", California's remediation resources will be used primarily on those waters that USEPA determines need a TMDL. Certainly federal money will be directed to that purpose. USEPA, and not California, will set California's impaired waters priorities, if the section 303(d) List is a "TMDLs-need-to-be established list". The CWA established the national goal of eliminating the need for the NPDES program by 1985. By socio-economic necessity, discharges to the nation's waters will continue for a long time to come. Like the NPDES program, the TMDL program is here to stay. It is a key part of the structure of section 303 which, in series, requires (1) adoption of water quality standards for all federal waters (section 303(c)); (2) assessment of whether the standards are attained in those waters (section 303(d)); and (3) maintenance of an ongoing continuing planning process of strategies to attain those standards when they are not attained (section 303(e)). By maintaining California's section 303(d) List as its impaired waters list, consistent with the requirements of section 303(d)(1)(A), California retains discretion over which of its federal waters merit attention in accordance with each Region's priorities. A list with a narrow purpose will make the listed waters the resource priority to the exclusion of all other waters in the Region.

Most fear surrounding section 303(d) listing stems from the incorrect assumption that all listed waters require a "TMDL". In this context, the term "TMDL" is not the legal definition (establishing the Loading Capacity for USEPA specified pollutants), but connotes a burdensome regulation that will require draconian and possibly inappropriate pollution controls. Contrary to this misinformation, a TMDL does not clean up water. It is a calculation. In reality, listed waters do not require a TMDL calculation in numerous circumstances, such as when pollutants

are not the cause of impairment or when the impairment is resolved. Further, many waters that do require a TMDL calculation can be implemented with relatively benign and unobtrusive regulatory controls, and even voluntary efforts, so long as the Regional Board determines those efforts will result in attainment of standards.

Moreover, TMDLs give the Regional Boards freedom to craft the most appropriate solutions to violations of standards. For instance, refusing to list a water that does not meet standards does not obviate the need to ratchet down permit requirements. Without a TMDL calculation, point sources face the possibility of being required to meet water quality standards end-of-pipe for concentration-based impairments, and the possibility of being required to even eliminate discharges in waters impaired by bioaccumulative constituents. This is because the CWA contains a provision that generally makes it unlawful to "backslide" or relax an existing permit effluent limitation. The antibacksliding rule says that permits cannot have less stringent limits than previous limits in the permit, except in compliance with a TMDL. If there is no TMDL, the Regional Boards must still find that the discharge has a reasonable potential to contribute to a violation of the standards and must therefore impose water-quality based effluent limitations (WQBELs) that assure the discharge will not contribute to the violation. TMDLs, however, provide an exception to the antibacksliding rule. They authorize the Regional Boards to determine that attaining standards can best be accomplished through means other than requiring strict compliance with point source WQBELs. Thus, with a TMDL, WQBELs can be relaxed. For the reasonable regulation of point sources, therefore, a TMDL may clearly be a preferable approach.

In all cases, the Regional Boards must employ reasonable and appropriate mechanisms to fulfill their mission of protecting the quality of all waters of the State—not merely those waters that USEPA determines need a TMDL. Explaining the numerous possible responses to a listing in the Policy for the Identification of Surface Waters Not Meeting Water Quality Standards will help dispel the myths and politics associated with determining which waters should be listed. The listing debate would be limited to the technical inquiry: "Is the water attaining standards?" Marrying the Impaired Waters Guidance Policy and the Policy for the Identification of Surface Waters Not Meeting Water Quality Standards will make these facts unambiguous.

Recommendation D: Structure of the List -- Section 303(d) List Should Not Pre-judge Sources of Impairment or Solutions to Impairment

Determination of impairment sources and appropriate regulatory responses should not be part of the section 303(d) List, i.e., should not be pre-determined. These determinations require rigorous analyses and should be made separate from, and subsequent to, the assessment of whether standards are attained in a water. Accordingly, information regarding potential sources and recommended solutions will not be part of the section 303(d) List. This information can and should be documented and tracked in a data management system that stores basic data attributes of surface waters not attaining standards. However, this information will not be submitted for regulatory action.

Rationale: The public and USEPA have found information on sources of, and solutions proposed for, impairment useful. This information should continue to be available, however, it should not be part of the section 303(d) List because sources and solutions should not be pre-

determined. Identifying sources and evaluating solutions to impairments requires additional analysis and information beyond the scope of the analysis necessary, and data available, to determine if a water is not meeting standards, and hence is impaired. These determinations should be addressed with more rigorous data collection and analysis and, perhaps, stakeholder involvement. There are no state or federal requirements to include such information as part of the section 303(d) List or that necessitate regulatory action at the time impaired waters are identified. The listing process should not lock Regional Boards into unalterable (and perhaps inappropriate) paths to resolution.

Although not part of the section 303(d) List per se, the use of available data management tools, with some modifications, to track the quality of surface waters in California may provide the appropriate structure for the List. Inclusion of basic attributes will give the public information on surface waters not attaining standards. One existing example of such a data management tool includes USEPA's water body system (WBS) database, structured for producing the section 305(b) report, in conjunction with the State Board's geographical interface for the WBS, called GeoWBS, which allows users to spatially define and relate database information. Additional attributes could be added, if tracking of recommended solutions is desired (e.g., TMDL development, further assessment, or other control actions). By maintaining the basic water body attributes in a database, various reports can be produced in response to legal requirements or public information needs. There is no need to create and maintain separate "lists" of water bodies, which would inevitably contain similar data attributes and would lead to greater potential for error as the same data are entered in multiple documents.

Recommendation E: Section 303(d) List Should Not Include "Threatened Waters"
A water should not be listed on the section 303(d) List when readily available data and information indicate that existing water quality standards (which include narrative criteria, numeric criteria, beneficial uses, and anti-degradation considerations) are currently attained, but readily available data and information indicate that water quality standards may not be attained in the future (e.g., because a land use change such as a new treatment plant discharge is underway). However, such waters should be identified as "threatened" in the section 305(b) report, and dischargers of the pollutant and/or responsible parties for pollution (existing, potential, and future) to the water, should be notified that pollution prevention measures should be implemented to prevent further degradation of water quality and non-attainment of water quality standards. Threatened means that a land use change (such as a new sewage treatment discharge, a dam, a flood control project) may cause non-attainment of standards in the future.

Rationale: The primary focus of the List is to identify for the public those surface waters that are not attaining water quality standards and to identify for the Regional Boards pollution problems that must be addressed. Simultaneously, pursuant to CWA section 305(b), the State Water Resources Control Board is required to submit a report on the status of the State's water quality in all waters of the State, including those that are threatened, to USEPA every two years. Assessment information used for compiling and reporting the section 305(b) report is contained in USEPA's water body system (WBS) database, structured for producing the section 305(b) report. The State Board has also developed a geographical interface for the WBS, called GeoWBS, which allows users to spatially define and relate database information. A specific feature of the database allows the Regional Boards to designate a water's beneficial use as

"threatened". Information on potential causes and potential sources of the threat may also be documented. Use of the section 303(d) List to identify and track waters of the State that are threatened but currently attaining water quality standards is duplicative and generates unnecessary administrative burden for tracking and reporting.

Recommendation F: Section 303(d) List Should Not Include a "Monitoring List"
A water should not be listed on the section 303(d) List when readily available data and information are insufficient to determine if water quality standards are being attained. However, such waters should be identified as needing further monitoring and assessment in the section 305(b) report, and should be considered by each Region for further assessment via the State's various monitoring programs.

The State's Surface Water Ambient Monitoring Program's (SWAMP's) primary objective is to assess and report on the ambient water quality conditions of all of the State's waters. Each Region's response to any waters identified on the section 305(b) report as needing further monitoring, will have to be considered along with the Region's existing SWAMP priorities. This is especially true in light of extremely limited SWAMP resources and recent budget cuts. Interested parties should work with each Regional Board to promote and implement monitoring and assessment of these waters.

Rationale: The primary focus of the List is to identify for the public those surface waters that are not attaining water quality standards and to identify for the Regional Boards pollution problems that must be addressed. Simultaneously, pursuant to CWA section 305(b), the State Water Resources Control Board is required to submit a report to USEPA every two years on the status of the State's water quality in all waters of the State, including those that have not been assessed or are in need of further assessment. Assessment information used for compiling and reporting the section 305(b) report is contained in USEPA's water body system (WBS) database, structured for producing the section 305(b) report. The State Board has also developed a geographical interface for the WBS, called GeoWBS, which allows users to spatially define and relate database information. A specific feature of the database allows the Regional Board's to designate a water's beneficial use as "has not been assessed". Adding a component for waters in need of further monitoring and assessment to the section 303(d) List would be duplicative. Additionally, it would generate unnecessary administrative burden for tracking and reporting, given that CWA section 305(b) already requires the State to compile this information and that it is being done through GeoWBS.

Recommendation G: Section 303(d) List Includes Priority Ranking of All Listed Waters

Clean Water Act section 303(d)(1)(A) directs each state to establish a priority ranking for waters on its section 303(d) List "taking into account the severity of the pollution and the uses to be made of such waters". Accordingly, each water on the section 303(d) List will be assigned a priority ranking of "high", "medium", or "low" based upon (1) the severity of the pollution (i.e., the degree and frequency of water quality standards violations, extent of beneficial use impairment, number of pollutants/stressors); (2) the beneficial uses of each water (i.e., the importance, sensitivity, extent, and number of beneficial uses); and (3) other factors that the Regional Boards may deem appropriate (e.g., water body significance, public concern,

waterbody size, threat to public health, presence of endangered or threatened species, potential for beneficial use recovery, social or political considerations, etc.).

Clean Water Act section 303(d)(1)(A) directs each state to establish a priority ranking for waters on its section 303(d) List "taking into account the severity of the pollution and the uses to be made of such waters". Accordingly, each water on the section 303(d) List will be assigned a priority ranking of "high", "medium", or "low" based upon (1) the severity of the pollution (i.e., the degree and frequency of water quality standards violations, extent of beneficial use impairment, number of pollutants/stressors); (2) the beneficial uses of each water (i.e., the importance, sensitivity, extent, and number of beneficial uses); and (3) other factors that the Regional Boards may deem appropriate (e.g., water body significance, public concern, waterbody size, threat to public health, presence of endangered or threatened species, potential for beneficial use recovery, social or political considerations, etc.).

It is important to note that priority rankings may, but do not necessarily, translate into the order in which waters are addressed. In other words, a Regional Board may decide to address a "low" or "medium" priority water before addressing a "high" priority water due to a variety of reasons. The rationale supporting each priority ranking will be documented as part of the section 303(d) listing process.

Clean Water Act section 303(d)(1)(C) directs states to establish TMDLs for waters on its section 303(d) List "in accordance with the priority ranking". Furthermore, the federal regulations (40 CFR 130.7) direct states to identify waters "targeted for TMDL development in the next two years". Accordingly, the Regional Boards will identify "two-year targeted waters", i.e., those waters that the Regional Board plans to address within the next two years. However, two-year targeted waters will not be identified as part of the section 303(d) listing process, but rather as part of the Regional Board's internal work planning process. As required by federal regulations, the two-year targeted waters will nonetheless be submitted to USEPA with the section 303(d) List during each submittal. Factors to be considered in identifying such waters may include priority rankings, availability of funding, availability of data and information, Triennial Review priorities, WDR/NPDES permit renewal schedules, Watershed Management Initiative (WMI) Chapter priorities, and other administrative constraints. Similarly, specific schedules for addressing impaired waters will not be established as part of the section 303(d) listing process, but rather as part of the Regional Board's internal work planning process. The same factors considered in identifying waters to be addressed within two years may also be considered in establishing internal work planning schedules for addressing impaired waters.

Review of State Board's December 2003 Draft Listing Policy Relative to *TMDL Roundtable Recommendations*

The following provides a review of the State Board's draft "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List" dated December 2003 (Draft Listing Policy). The Draft Listing Policy is evaluated relative to the recommendations developed by the TMDL Roundtable staff and provided to State Board staff in December 2002.

The TMDL Roundtable recommendations are numbered and can be found in the document titled "Policy for the Identification of Surface Waters not Meeting Water Quality Standards; Recommendations from the Regional Board Representatives of the TMDL Round Table to the Management Coordinating Committee" dated December 18, 2002. The recommendations were developed based on contributions from 50 Regional Board staff and the Office of Chief Counsel's TMDL/303(d) expert. Those recommendations were developed over the course of several months with the intent of providing a solid technical and legal foundation for State Board's Listing Policy.

In summary, Regional Board staff and OCC prepared thirty-two recommendations. Seven of the recommendations are wholly or substantially incorporated into the Draft Listing Policy. Thirteen of the recommendations have been incorporated into the Draft Listing Policy in part, but significant portions of the Draft Listing Policy are inconsistent with those recommendations or do not include key components of the recommendations. The Draft Listing Policy is substantially in conflict with the remaining twelve recommendations or does not address the recommendation at all.

The basis for the discrepancies between the Regional Board staff and OCC recommendations and the Draft Listing Policy come from two fundamental issues:

1. Regional Board staff viewed the Listing Policy as a tool to guide the process of assessing attainment of water quality standards. This approach was based on the assumption that the TMDL Guidance (currently being developed with Tetra Tech as the lead) would define the types of actions that could be taken when a water is not attaining standards. State Board staff view the Listing Policy as a guide to both assessment and planning. Therefore, parts of the Draft Listing Policy suggest what action will be taken (and when) depending on factors other than whether standards are attained.
2. Regional Board staff believed that the great variability in how standards and criteria are expressed combined with even greater variations in data quality and quantity from water body to water body precludes the development of a "one size fits all" analytical method. The Regional Board staff, therefore, recommended a consistent assessment process that would allow for any necessary changes in analytical approach based on differences in criteria and data availability. State Board staff generally requires the use of a single analytical method and allowable exceedance rate for all waters, pollutants, and standards.

Recommendation 1: The listing policy should address all assessed surface waters not attaining water quality standards. Water quality standards include numeric criteria, narrative criteria, beneficial uses, and antidegradation considerations.

Draft Listing Policy: The Draft Listing Policy is not consistent with this recommendation. The Draft Listing Policy would fail to identify water quality problems related to invasive species, habitat degradation, flow modification, or other "non-pollutant" sources. Only those waters not meeting standards due to "pollutants" (e.g. pesticides, nutrients, sediment, etc) would be identified.

Recommendation 2: The listing process should not describe a process for determining whether water quality standards are appropriate.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation, since there is no step requiring review of uses and standards.

Recommendation 3: The policy should be applied retroactively within time and resource constraints. Approaches for applying this policy to currently listed waters should be described.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. Existing listings must be reevaluated if new data and information are available; otherwise, reevaluation appears to be discretionary and based primarily on whether an interested party requests such an evaluation.

Recommendation 4: The policy should not describe the actions to be taken as a consequence of listing.

Draft Listing Policy: The Draft Listing Policy is not consistent with this recommendation. The 303(d) list would include priorities and schedules for the development of TMDLs for all listed waters. The Enforceable Programs Category specifies the types of actions that must take place for waters to be considered an "Enforceable Program". These required actions may be in conflict with the Impaired Waters Guidance being developed.

Recommendation 5: The policy should describe how waters are removed from the List. Waters should be removed from the List when the data and information indicate that water quality standards are being attained.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. Section 4 describes how waters can be removed from the 303(d) List. Waters can be delisted if fewer then 10% of the samples are not exceeding standards. The Policy, therefore, allows waters in non-attainment of standards to be delisted.

Recommendation 6: The policy should address how water bodies are identified on the List. To the extent practicable, water body segments not meeting standards should be identified in a consistent manner.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation. Section 6.2.5.6 describes how data should be aggregated by reach/area and presumably how such reaches should be defined. There is an apparent inconsistency between sections 6.2.5.3 and 6.2.5.6. Section 6.2.5.3 (Spatial Representation) implies that data from a given station can only represent 200 meters of a stream section, whereas, section 6.2.5.6 suggests a number of factors be used to define stream or waterbody segment.

Recommendation 7: The effect of listing is to target the water body for a thorough evaluation of the nature and extent of a problem and implementation of an appropriate response. The process that the Regional Boards will use to identify an appropriate response will be addressed in the Impaired Waters Guidance. The response could be anything from permitting actions, enforcement actions, voluntary actions, revisions of the standards if appropriate, or another appropriate response to address the impairment.[1] A TMDL may or may not be required.

Draft Listing Policy: The Draft Listing Policy is <u>not</u> consistent with this recommendation. Also see Recommendation 4. The Draft Listing Policy requires that specific actions take place for waters on certain lists. The Regional Board recommended an acknowledgement that data may be sufficient to determine non-attainment of standards, but may not be sufficient to determine a course of action.

[1] A decision tree flow chart should be developed to clearly describe the appropriate course of action to follow for listed waters.

Recommendation 8: Solicitation: Each Regional Board should be responsible for soliciting information from interested parties within its Region. The State Board should be responsible for requesting information from agencies/entities that are likely to have information relevant to multiple regions (e.g., from federal/State agencies or from the State university systems). The solicitation process should take place during the same period of time in each Region.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation. The Draft Listing Policy should explicitly state that the solicitation process will take place concurrently at the State Board and Regions.

Recommendation 9: Assessment Process: The Regional Boards should be responsible for assessing the existing and readily available information, including information received during the solicitation process. The Regional Boards should also be responsible for identifying waters on the List. The Regional Boards may hold a workshop and/or public hearing to take comments on staff recommendations. The Regional Boards should then take formal action to adopt recommended changes to the List. The Regional Boards will be responsible for submitting to the State Board the administrative record which supports their recommendations. The State Board should review each Regional Board's recommendations for consistency with the Listing policy. The State Board should accept Regional Board recommendations, unless they are inconsistent with the Listing policy or applicable law. The State Board should then adopt the statewide List through a formal action.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation. The Draft Listing Policy also makes it clear that only issues raised before the Regional Boards will be considered. The Listing Policy may also need to explicitly limit the time period for submission of data and information.

Recommendation 10: Frequency of Updates to the List: A solicitation for data and information and assessment of the need for changes to the List should take place every four years. The Regional Board may, on its own motion, recommend changes to the List between periodic updates. Any such changes must go through the same process as the periodic updates (e.g., Regional Board adoption of the recommended change, State Board approval, and USEPA approval for Section 303(d) listed waters).

Draft Listing Policy: The Draft Listing Policy is <u>not</u> consistent with this recommendation. The Draft Listing Policy makes no mention of the frequency of the assessment process. Currently annual 305(b) reports are required and biennial 303(d) lists. Without a defined State policy on the frequency of assessment, the State will likely be conducting continual and possibly overlapping assessment processes.

Recommendation 11: Waters Currently on the Section 303(d) List: All waters currently on the Section 303(d) list (as of 2002) should be reviewed for consistency with this listing policy within the first two listing cycles following adoption of the listing policy. Recommendations per this Listing Policy should be made for these waters. Waters on the current Section 303(d) list may also be reviewed between periodic updates as described in Recommendation 10 above.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy includes provisions for reevaluating currently listed waters, but does not give a timeline for completing the reevaulation.

Recommendation 12: Listing Factors: A water should be listed when readily available data and information indicate that existing water quality standards (which include narrative criteria, numeric criteria, beneficial uses, and anti-degradation considerations) are not attained on a persistent or recurrent basis.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy seems to rely primarily on the application of a binomial distribution to evaluation of the data. Although a universal acceptable exceedance rate is established (10%), the approach does not distinguish between exceedances that are grouped in time or distributed. The "Alternate Data Evaluation" (3.1.11) allows the use of other methods, but may not result in identification of all waters not attaining standards.

Recommendation 13: Delisting or Not Listing Factors:

a) Readily available data and information indicates that water quality standards are being attained.

b) Some data and information indicate past non-attainment of water quality standards, but other information or data indicates that the water quality problem is not recurrent or persistent. Overall, the available information indicates that water quality standards are currently being attained.

c) New data or information indicates that faulty data led to the original listing. Assessment of remaining (credible and non-faulty) data **either** indicates that water quality standards are attained or is inconclusive. Faulty data include, but are not limited to, typographical errors, improper quality assurance/quality control procedures, or limitations related to the analytical methods that would lead to improper conclusions regarding the water quality status of the segment.

d) Standards have been revised or beneficial use designations have been modified and have received all required State and federal approvals and available data and information indicate that water quality standards are being attained.

e) The Regional Board has made findings pursuant to State Board Resolution 68-16 to allow degradation of the high quality of the water body.[2] Data and information indicates that the degradation does not exceed that which is permitted in such a finding.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. Recommendations 13 c) and 13 d) have been incorporated. A binomial distribution method is used to determine attainment, rather then Recommendation 13 a). Recommendation 13 b) is partially addressed by section 4.10 of the Draft Listing Policy, but it is unclear how section 4.10 would be applied. Recommendation 13 e) does not appear to be included in the Draft Listing Policy.

[2] For reasons similar to those described in Recommendation 2, the antidegradation finding must be made in a proceeding outside of the Listing process. Note that a finding allowing some degradation to occur does not establish a basis for allowing non-attainment of other water quality standards (i.e. numeric objectives, narrative objectives, or beneficial uses).

Recommendation 14: For waters on the List, the Regional Board should establish high, medium, and low priority categories based on the following factors: a) Water body significance (such as importance and extent of beneficial uses, threatened and endangered species concerns, and size of water body); b) Degree that water quality standards are not met or beneficial uses are not attained or threatened (such as the severity of the pollution or number of pollutants/stressors of concern; see 40 CFR 130.7(b)(4)); c) Availability of information to address the water quality problem.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation. The Draft Listing Policy (Section 5) includes the priority setting factors in Recommendation 14.

Recommendation 15: The Regional Board will not assign schedules on the List. A priority setting is not a scheduling commitment. The Regional Board will determine schedules based upon additional considerations including but not limited to available funds, Triennial Review List priorities, applicable court orders, Watershed Management Initiative (WMI) priorities, and other relevant administrative constraints.

Draft Listing Policy: The Draft Listing Policy is <u>not</u> consistent with this recommendation. The Draft Listing Policy specifically includes scheduling requirements that are directly tied to the established priorities for waters on the 303(d) list.

Recommendation 16: A data management system to store the basic data attributes of surface waters not attaining standards should be used (e.g., such as is currently done for the Section 305(b) Water Quality Assessment report through the GEOWBS data management interface). To allow queries related to surface waters not attaining standards, this database shall contain, at a minimum, the following attribute fields: Name of water body; Pollution/pollutant, if known, or indicate "unknown"; Numeric identification of water body (CU, HU, HA, HSA, etc.); County(ies); Major water body name; Standard (beneficial use not supported, objective not met, or antidegradation not attained); Overall size (acres, lineal miles, square miles); Size of impaired portion, if known; Comment/descriptor (useful language to help an individual recognize the watershed). In addition to the above attributes, the database will continue to allow the Regional Board to assign priorities (high, medium, low) for actions to be taken.

Draft Listing Policy: The Draft Listing Policy is <u>not</u> consistent with this recommendation. Although compilation, through Fact Sheets, of many of the data attributes is discussed, management of that data is not mentioned.

Recommendation 17: To provide a minimum statewide level of consistency and completeness in soliciting existing and readily available data and information, each Regional Board will solicit, and document its methods and sources for *soliciting, existing and readily available data and information.* In general, Regional Boards shall seek readily available data and information generated since the prior List evaluation period. For purposes of data and information solicitation, information is any documentation describing the current or anticipated water quality condition of a surface water body. Data are considered to be a subset of information that consists of reports detailing measurements of specific environmental characteristics. Data and information not submitted by interested parties in response to the solicitation are not considered to be readily available.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation. A requirement that each Region document its solicitation process should be added to be fully consistent with Recommendation 17.

Recommendation 18: **METHODS:** The State Board should provide a list of general methods for acquiring data and information (e.g., mailings to Basin Plan mailing lists and lists of other interested parties; website posting; direct requests to select agencies; and internal Regional Board staff requests) that the Regional Water Boards will, at a minimum, use to solicit existing and readily available data and information.

Draft Listing Policy: The Draft Listing Policy is <u>not</u> consistent with this recommendation. No description of the methods to be used to conduct the solicitation is provided.

Recommendation 19: **SOURCES:** The policy should provide a list of specific sources that the Regional Boards will, at a minimum, solicit for existing and readily available data and information produced since the prior List evaluation period. The list of sources should include:

(1) Stakeholders and interested parties, including, at least,

- Other government agencies (e.g. CDFG, CDWR, CDPR, USFWS) via direct solicitation by the State Board
- Other (previously identified) interested parties via solicitation letter
- General public via solicitation on the Regional Board's website

(2) Other sources for existing and readily available data and information produced since the prior list evaluation period such as:

- The most recent Section 305(b) Report
- CWA Section 319 non-point source assessments
- Drinking water source assessments
- Dilution calculations or predictive models for assessing the attainment of applicable water quality standards
- Water quality problems reported by local, state and federal agencies; members of the public (for example citizen monitoring groups); or academic institutions
- Data, information, and reports available internally from Regional Board projects/programs/units/groups since the prior list evaluation period.

Draft Listing Policy: The Draft Listing Policy is consistent with this recommendation.

Recommendation 20: **FORMAT:** Data and information submittals to the Regional Boards should contain the following:

a. The name of the person and/or organization providing the information.

b. The name of the person certifying the completeness and accuracy of the data and information provided.

c. The person certifying data and information may also provide a statement as to what impairment they believe is occurring.

d. Mailing address, telephone numbers, and email address of a contact person for the information provided.

e. Two hard copies and one electronic copy of all information provided. Data should be submitted in electronic form. Data may be submitted in other formats negotiated with the pertinent Region.

f. If computer model outputs or GIS files are included in the information, submitters should provide bibliographic citations and specify any calibration and quality assurance information available for the model(s) used. Metadata for the field data should be provided (i.e., when measurements were taken, locations, number of samples, detection limits, and other relevant factors). For GIS files, the metadata must detail all the parameters of the projection, including datum.

g. Bibliographic citations for all information provided.

h. A description of, and reference for, the quality assurance procedures and whether data quality objectives were attained (see Section 4.1 below).

i. In addition, data from citizen volunteer water quality monitoring efforts should include an indication of any training in water quality assessment completed by members of the group.

j. For photographs, the information listed for photo documentation in Section 4.1.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy contains most of the components of recommendation 20, but does not include a requirement to state whether data quality objectives were attained as part of the QAPP, nor does it include items b, c, or j.

Recommendation 21: To provide statewide consistency and completeness in the formats and procedures of documentation for the List Administrative Record, each Regional Board will use, at a minimum, similar general and specific types of formats and procedures of documentation for submitting its List recommendations to the State Board for the Administrative Record.

The documentation should be provided in electronic format, as document and spreadsheet files (as appropriate), using standard file formats (e.g., Microsoft Word or Excel) as agreed upon between each Regional Board and the State Board. Documentation should include (SEE DECEMBER 18, 2002 RECOMMENDATIONS FOR THE DETAILS ON THE DOCUMENTATION)

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy includes a number of the same information attributes as Recommendation 21, but also includes numerous additional data attributes that must be described for each water body. Additionally, the Draft Listing Policy does not describe the information, other than Fact Sheet information, that must be included in the Administrative Record.

Recommendation 22: Staff from the Regional Boards and State Board should collaborate to specify some general guidance on managing data and information.

DWQ and OIT staff of the State Board will investigate a networked data management system (e.g., utilizing ArcGIS and GeoWBS) in which the Regional Boards' data and recommendations will be compiled.

Some approach for processing, storing and retrieving data and scanned information will be required. Accessible archives of all information submitted are an increasing challenge, due to volume and variety of formats. Support, with staffing, hardware, and software, will need to be long-term and distributed among the State Board and Regional Board offices. Office of Information Technology staff should evaluate the following alternatives:

a. State Board investigates contract services, via commercial vendor, to provide a web site outside the state network, to improve access and security for public and state employees.

b. State Board and Regional Boards develop this web site using state network facilities.

At the end of the list update process, the entire contents of the web site could be transmitted to a State Board server for preservation as the Administrative Record.

Draft Listing Policy: The Draft Listing Policy is <u>not</u> consistent with this recommendation. The Draft Listing Policy does not discuss data management.

Recommendation 23: Regional Boards should use the decision processes described below and summarized in Figures 1 and 2 (on pages 52 and 53) to evaluate the attainment of beneficial uses and narrative and numerical objectives in surface waters, and to evaluate compliance with the antidegradation component of water quality standards. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION PROCESS.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy adopts many of the process steps contained in Recommendation 23. The Draft Listing Policy goes beyond Recommendation 23 in providing prescriptive requirements for many of the process steps in terms of how data should be evaluated, allowable age of data, minimum sample size, and limitations on the temporal and spatial representativeness of individual data points.

Recommendation 24: The following factors must be considered and documented to make management decisions using toxicity monitoring data. This decision process is outlined in the attached figure and in narrative form below. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF TOXICITY DATA.

Draft Listing Policy: The Draft Listing Policy is <u>not</u> consistent with this recommendation. The Draft Listing Policy relies solely on application of the binomial method for evaluating toxicity test results, rather than the process described in Recommendation 24.

Recommendation 25: Evaluation of aquatic habitat/aquatic life-supporting beneficial uses incorporates several types of toxicity and chemical data including both water column data and sediment quality data. Each type of data may generally be evaluated independently of the others, and listing for non-attainment of the aquatic life use results when an adequate amount of data indicates impaired beneficial use. A determination of impairment should be based on an environmentally-representative number of samples collected over a timeframe reasonably representative of existing conditions. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF TOXICITY TO AQUATIC LIFE.

Draft Listing Policy: The Draft Listing Policy is <u>not</u> consistent with this recommendation. The tiered approach for assessing toxicity to aquatic life is not reflected in the Draft Listing policy.

Recommendation 26: A water body should be listed if any one of the following three criteria is met: SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF BIOACCUMULATIVE SUBSTANCES.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy allows the use of the screening values and guidelines suggested in Recommendation 26. The Draft Listing Policy uses the binomial method with a 10% exceedance rate, rather than the mean or median as in Recommendation 26.

Recommendation 27: The following data requirements and processes should be used in assessment of compliance with numeric bacteriological water quality objectives. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF NUMERIC BACTERIOLOGICAL WATER QUALITY OBJECTIVES.

Draft Listing Policy: The Draft Listing Policy is not consistent with this recommendation. Recommendation 27 focuses on an evaluation based on the existing water quality objectives, whereas the Draft Listing Policy uses the binomial method and a 10 percent exceedance rate or a 4 percent exceedance rate for coastal beaches between April 1 and October 31.

Recommendation 28: Several relevant parameters—listed in Table 4 and 5—may be useful for establishing nutrient listings. The utility of these parameters varies, based on our current state of knowledge, and on the directness of their linkage to nutrient-related beneficial use impairment. The process for listing and/or delisting water bodies for nutrient impairment is to utilize a weight of evidence approach using the parameters in Tables 4 and 5 below, as appropriate, for each beneficial use designation in combination with the decision process in the "Determining Compliance with Water Quality Standards" flowcharts (Figures 1 and 2). Other scientifically defensible criteria may also be used. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF NUTRIENTS.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy discusses algae growth as part of a discussion of "Nuisance" conditions and dissolved oxygen under "Conventional Pollutants". A general discussion of nutrients is not included in the Draft Listing Policy. In addition, the Draft Listing Policy applies a 10% exceedance rate and the use of the binomial method to dissolved oxygen data.

Recommendation 29: When data of sufficient quantity and quality (see Section 4.1 above) are available, a comparison of current and "historic" or "natural" water temperatures can be made to determine whether water quality objectives are being met. If the current temperature regime of COLD or WARM waters has been altered from the "natural" or "historic" temperature regime in a manner prohibited by the applicable objective, then the water quality objective is not being met and the water body shall be determined impaired by temperature. The provisions of the State Board's Thermal Plan should also be considered.

When "historic" or "natural" temperature data are not available, alternative approaches must be employed to assess temperature impairment. One such approach is presented here. This approach is based on the assumption that the beneficial uses associated with aquatic life are most sensitive to modifications to natural temperature regimes. Other beneficial uses that may also be affected by temperature include recreation and aquaculture; other approaches for assessing temperature impairment may be more appropriate for these beneficial uses. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF TEMPERATURE INFORMATION.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy discusses temperature issues in a manner generally consistent with Recommendation 29 in Section 6.2.5.12, but appears to apply the binomial method in Section 3.1.2, which was not recommended by the Regions.

Recommendation 30: Waters shall be listed based on sufficient credible data and information that indicate that water quality standards for sediment are not met, or that impacts to beneficial uses occur and are caused by sediment. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON THE EVALUATION OF SEDIMENT INFORMATION.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy discusses sediment issues in a manner generally consistent with Recommendation 30, but appears to apply the binomial method in Section 3.1.8 & 3.1.9, which was not recommended by the Regions.

Recommendation 31: Water bodies that have beneficial uses that are impaired due to factors such as lack of flow, degraded aquatic habitat, and physical changes to stream channels should be identified on the List.

Draft Listing Policy: The Draft Listing Policy is not consistent with this recommendation. Such waters would not be listed.

Recommendation 32: The assessment process below should be followed until biological standards (biocriteria) have been incorporated into a Regional Board's Basin Plan. After that time these standards would necessarily guide listing decisions for the affected geographic areas. Regional Boards (especially the larger Regions) will probably adopt biocriteria for one or a few areas at a time, not for the whole Region at once. After the biocriteria are adopted for a specific area, watershed, ecoregion or waterbody type, those established biocriteria would guide listing or delisting decisions for that area only. The remainder of the Region (for which no biocriteria have yet been adopted) would still follow the process below. SEE THE DECEMBER 18, 2002 RECOMMENDATIONS FOR DETAILS ON BIOLOGICAL MONITORING AND ASSESSMENTS.

Draft Listing Policy: The Draft Listing Policy is partially consistent with this recommendation. The Draft Listing Policy discusses evaluation of bioassessment data in a manner generally consistent with Recommendation 32 in Section 6.2.5.11. The Draft Listing Policy requires that a link between specific pollutants and degraded conditions must be made before a water is listed.