Draft

Functional Equivalent Document

Appendix
Draft Water Quality Control Policy

December 2003

DIVISION OF WATER QUALITY
STATE WATER RESOURCES CONTROL BOARD
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

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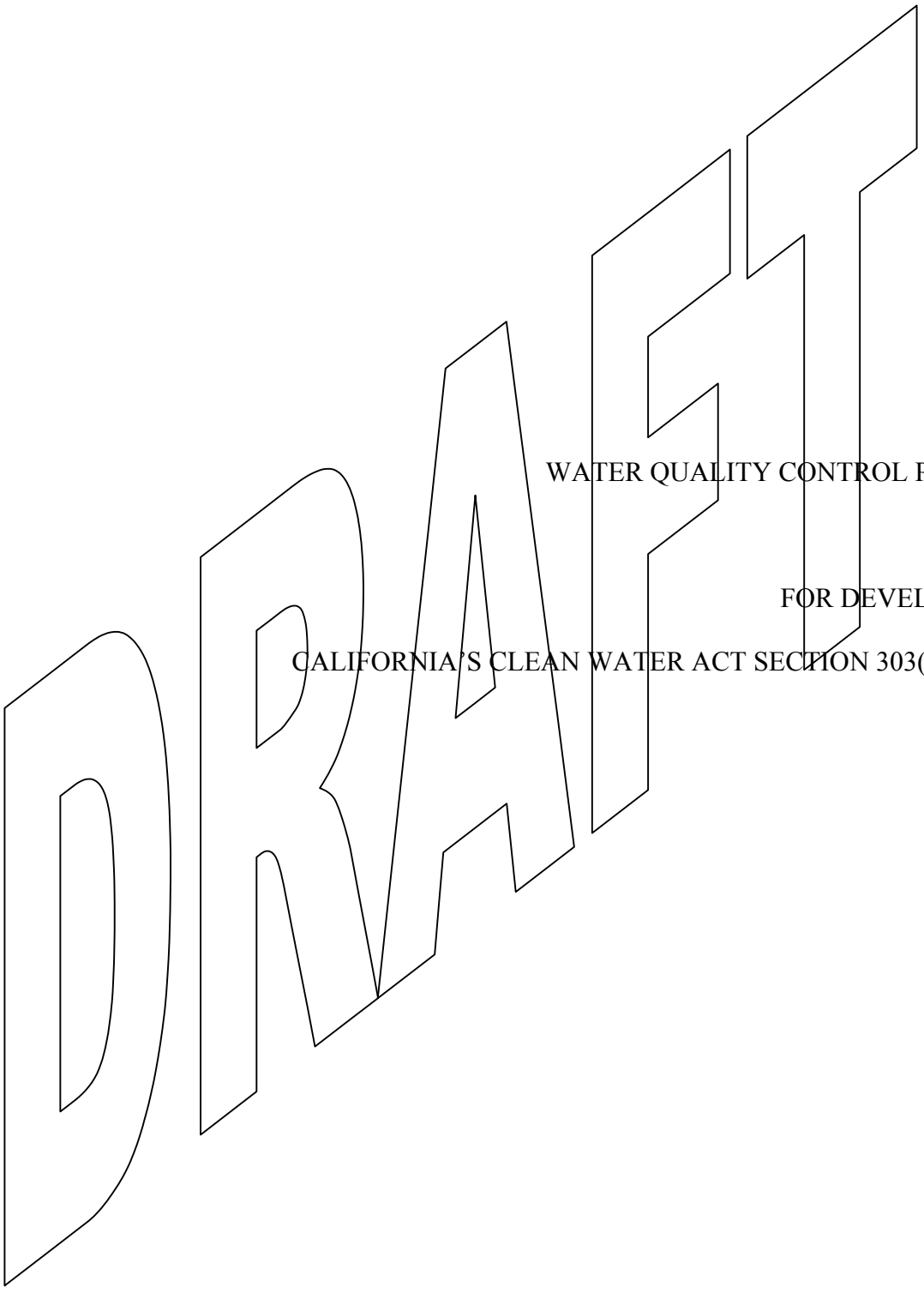
STATE WATER RESOURCES CONTROL BOARD



WATER QUALITY CONTROL POLICY

FOR DEVELOPING

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

December 2, 2003

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

1 Introduction

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). The goal of this Policy is to establish a standardized approach for developing California's section 303(d) list.

CWA section 303(d) requires states to identify waters that do not meet applicable water quality standards after the application of certain technology-based controls. The methodology to be used 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;
- the process for evaluation of readily available data and information; and
- Total Maximum Daily Load (TMDL) 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
- translate narrative water quality objectives for the purposes of regulating point sources.

2 Structure 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:

2.1 Water 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.

2.2 TMDLs 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.

2.3 Enforceable 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 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 presented below.

3.1 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 Numeric Water Quality Objectives and Criteria for Toxicants in Water

Numeric water quality objectives for toxic pollutants, including maximum contaminant levels where applicable, or California/National Toxics Rule water quality criteria 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.

3.1.2 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).

3.1.3 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. 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 to support placement of a water segment on the section 303(d) list.

3.1.4 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-specific data are available indicating the evaluation guideline for tissue is exceeded.

3.1.5 Bioaccumulation 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.

3.1.6 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 3.1) 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. 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.

3.1.7 Nuisance

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:

3.1.7.1 Nutrient-related

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

3.1.7.2 Other 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.

3.1.8 Adverse 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.

3.1.9 Degradation 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 Trends in Water Quality

A water segment exhibits concentrations of pollutants or water body conditions for any listing factor that shows a trend of declining water quality standards attainment. This section is focused on addressing the antidegradation component of water quality standards. 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 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).

3.1.11 Alternate 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 3.1: 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.

3.2 TMDLs 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.

3.3 Enforceable 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.

4 California Delisting 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:

4.1 Numeric Water Quality Objectives, Criteria, or Standards for Toxicants in Water

Numeric water quality objectives for toxic pollutants, including maximum contaminant levels where applicable, or California/National Toxics Rule water quality criteria 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.

4.2 Numeric 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.

4.3 Numeric 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.

4.4 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.

4.5 Bioaccumulation 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.

4.6 Water/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.

4.7 Nuisance

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:

4.7.1 Nutrient-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.

4.7.2 Other 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.

4.8 Adverse 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.

4.9 Degradation 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).

TABLE 4.1: 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	Sample sizes		Maximum number of exceedances allowable for delisting
From	To		From	To	
22	37	0	290	300	22
38	51	1	301	311	23
52	64	2	312	323	24
65	77	3	324	334	25
78	90	4	335	345	26
91	103	5	346	356	27
104	115	6	357	367	28
116	127	7	368	378	29
128	139	8	379	389	30
140	151	9	390	401	31
152	163	10	402	412	32
164	174	11	413	423	33
175	186	12	424	434	34
187	198	13	435	445	35
199	209	14	446	456	36
210	221	15	457	467	37
222	232	16	468	478	38
233	244	17	479	489	39
245	255	18	490	500	40
256	266	19			
267	278	20			
279	289	21			

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.

5 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. 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 of funding and information to address the water quality problem.

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.

6 Policy Implementation

This section provides SWRCB guidance on implementation of this Policy.

6.1 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. If the original listing was established using the provisions of this Policy, then the California Delisting Factors shall be used.

An interested party may request 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 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.

6.2 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.

6.2.1 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.

6.2.2 Administration of the Listing Process

6.2.2.1 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 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 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 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 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 as the data and information are already available to RWQCBs.

6.2.2.2 RWQCB Fact Sheet Preparation

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 description of the line(s) of evidence used to support each component of the weight of evidence approach. Fact sheets shall be prepared for all data and information solicited. If the data and information reviewed indicate standards are attained, a single fact sheet may address multiple water and pollutant combinations.

The fact sheets shall contain the following:

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 (including Calwater watershed)
D. Pollutant or type of pollution
E. 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. Any other provision of the standard used

G. Brief Watershed Description (e.g., land use, precipitation patterns, or other factors considered in the assessment)
H. Summary of numeric data
    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
    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
    10. Number of samples exceeding guideline or standard
    11. Source of or reference for data
I. Summary of non-numeric data and information
    1. Types of observations
    2. Spatial representation, size affected (including map)
    3. 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
    12. 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)
K. Program(s) addressing the problem, if known and any conditions of the enforceable program category met
L. Data evaluation as required by Sections 3 or 4 of this Policy
M. Recommendation
N. Priority ranking (developed only for the section 303(d) list as required by section 5 of this Policy).
O. TMDL schedule (developed only for the section 303(d) list as required by section 5 of this Policy).

6.2.3 Evaluation Guideline Selection Process

Narrative water quality objectives shall be evaluated using numerical evaluation guidelines. When evaluating narrative water quality objectives or beneficial use protection, RWQCBs and SWRCB shall identify numeric evaluation guidelines that represents standards attainment or beneficial use protection. The guidelines are not 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 SWRCB shall:

- Identify the water body, pollutants, and beneficial uses;
- Identify the narrative water quality objectives or applicable water quality criteria;
- Identify the appropriate numeric evaluation guideline that potentially represents 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 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:

    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. Evaluation Guidelines for the Protection of 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. Evaluation Guidelines for Protection of Aquatic Life from Bioaccumulation of Toxic Substances: RWQCBs may select the evaluation values for the protection of aquatic life published by the National Academy of Science.

    4. For other parameters, 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
        - 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.

6.2.4 Data Quality Assessment Process

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. 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.

The data from major monitoring programs in California are considered of adequate quality. The major programs include 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).

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.

The RWQCBs shall clearly evaluate and make a finding in the fact sheets on 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 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.

For photographic documentation, the submission must:

- identify the date;
- identify 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 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.

6.2.5 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 each water body fact sheet.

6.2.5.1 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 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.

6.2.5.2 Age of Data

Only the most recent 10-year period of data and information shall be used for listing and delisting waters. Data 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. In either case, the reason for using older data shall be described in the water body fact sheet. Older data must meet all data quality requirements presented in this Policy (Section 6.2.4).

6.2.5.3 Spatial 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.

6.2.5.4 Temporal Representation

Samples shall be collected to be representative of temporal characteristics of the water body. 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 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 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 water quality fact sheet should describe the significance of the sample timing.

6.2.5.5 Minimum 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.

6.2.5.6 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 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.

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 shall be combined provided that 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.

6.2.5.7 Natural 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(c)) can generally be ruled out where the excursions beyond objectives would occur in the absence of the human caused sources.

6.2.5.8 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 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.

6.2.5.9 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 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, 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.

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.

6.2.5.10 Binomial Model 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, all of the following steps shall be completed:

A. For each data point representing the averaging period, the RWQCB shall answer the question: Are water quality standards met?

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

C. Sum the number of samples exceeding the standard, objective, criterion, or evaluation guideline.

D. Sum the total number of measurements (sample population).

E. Compare the result to the appropriate table (i.e., Tables 3.1 or 4.1).

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

6.2.5.11 Evaluation of Bioassessment Data

When evaluating biological data and information, RWQCBs shall:

- 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 Index of Biological Integrity if possible.

6.2.5.12 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, alternative approaches shall be employed to assess temperature impacts.

In the absence of necessary data to interpret numeric 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.

6.3 RWQCB Approval

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

6.4 SWRCB Approval

SWRCB shall evaluate RWQCB-developed water body fact sheets for completeness, consistency with this Policy, and consistency with applicable law. The SWRCB shall assemble the fact sheets 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.