State of California
Regional Water Quality Control Board
North Coast Region

Public Review Draft

Staff Report

for the

2012 Integrated Report

for the Clean Water Act
Section 305(b) Surface Water Quality Assessment
and the 303(d) List of Impaired Waters

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California Regional Water Quality Control Board
North Coast Region
5550 Skylane Boulevard, Suite A
Santa Rosa, California 95403
707-576-2220
www.waterboards.ca.gov/northcoast

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List of Abbreviations

Basin Plan	Water Quality Control Plan for the North Coast Region
CalWQA	California Water Quality Assessment Database
CCC	Criteria Continuous Concentration
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife (formerly California Department of Fish and Game)
CFR	Code of Federal Regulations
CMC	Criteria Maximum Concentration
CTR	California Toxics Rule
CWA	Clean Water Act
C	degrees Celsius
F	degrees Fahrenheit
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DHS	California Department of Health Services
DO	Dissolved oxygen
HA	Hydrologic Area
HSA	Hydrologic Sub Area
HU	Hydrologic Unit
Listing Policy	Water Quality Control Policy for Developing California's Section 303(d) List
LOE	Line of Evidence
MCL	Maximum Contaminant Level
mg/kg	milligrams per kilogram (parts per million)
mg/L	milligrams per liter (parts per million)
µg/g	micrograms per gram (parts per million)
µg/L	micrograms per liter (parts per billion)
MPN	Most Probable Number
ng/g	nanograms per gram (parts per billion)
ng/L	nanograms per liter (parts per trillion)
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
OEHHA	Office of Environmental Health Hazard Assessment
PAH	Polynuclear aromatic hydrocarbon
PCB	Polychlorinated biphenyl
pg/L	picograms per liter
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
Regional Water Board	North Coast Regional Water Quality Control Board
RWQCB	North Coast Regional Water Quality Control Board

State Water Board	State Water Resources Control Board
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
WHO	World Health Organization

Chapter 1: Introduction

The federal Clean Water Act (CWA) gives states the primary responsibility for protecting and restoring water quality. Under CWA Section 305(b), states are required to report biennially to the United States Environmental Protection Agency (USEPA) on the water quality conditions of their surface waters. The USEPA then compiles these assessments into their biennial "National Water Quality Inventory Report" to Congress. Under CWA Section 303(d), states are required to review, makes changes as necessary, and submit to the USEPA a list identifying water bodies not meeting water quality standards and identifying the water quality parameter (i.e., pollutant) not being met. Placement on this list generally triggers development of a pollution control plan called a total maximum daily load (TMDL) for each water body/pollutant pair on the list.

The USEPA issued guidance to states requiring that the 305(b) water quality assessment and the 303(d) List of impaired waters be integrated into a single report. For California, this report is called the Integrated Report, and it will satisfy both the CWA Section 305(b) and Section 303(d) requirements.

The North Coast Regional Water Quality Control Board (Regional Water Board) is responsible for developing and adopting the 2012 Integrated Report for waters within the North Coast Region of California. Following adoption by the Regional Water Board, the 2012 Integrated Report will be transmitted to the State Water Resources Control Board (State Water Board), where it will be considered by the State Water Board.

The purpose of this staff report is to describe the assessment process (the procedures utilized by State and Regional Water Board staff to analyze data and information), provide a report of surface water quality in the North Coast Region as required by 305(b), and provide Regional Water Board staff recommendations for additions, deletions, and changes to the 2010 California CWA Section 303(d) List.

The results of the staff analysis are presented as staff recommendations in the form of fact sheets that contain a decision and supporting lines of evidence for each water body/pollutant pair assessed. A summary of staff recommendations can be found in Chapter 4.

The fact sheets are available in Appendix 1 of this Staff Report, which can be found online at:

http://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/303d/

Chapter 2: Legal Requirements

This chapter provides a summary of the federal and state legal requirements for the 2012 Integrated Report.

2.1 FEDERAL REQUIREMENTS

2.1.1 CWA Section 305(b) – Water Quality Assessment

Under CWA Section 305(b), states are required to report biennially to the United States Environmental Protection Agency (USEPA) on the water quality conditions of their surface waters. The USEPA then compiles these assessments into their biennial "National Water Quality Inventory Report" to Congress.

2.1.2 CWA Section 303(d) – Impaired Waters

The 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[1]. The Section 303(d) List must include a description of the pollutants causing the violation of water quality standards (40 CFR 130.7(b)(iii)(4)) and a priority ranking of the water quality limited segments, taking into account the severity of the pollution and the uses to be made of the waters.

As defined in the CWA and federal regulations, water quality standards include the designated uses of a water body, the adopted water quality criteria, and the State's Antidegradation Policy (State Water Resources Control Board Resolution No. 68-16) (SWRCB 1968). Under state law (Porter-Cologne Water Quality Control Act, California Water Code Section 13300 et seq.), water quality standards are beneficial uses to be made of a water body, the established water quality objectives (both narrative and numeric), the State's Antidegradation Policy, and certain general strategies of implementation.

Federal regulation defines a "water quality limited segment" as "any segment [of a surface water body] where it is known that water quality does not meet applicable water quality standards, and/or is not expected to meet applicable water quality standards, even after application of technology-based effluent limitations required by CWA Sections 301(b) or 306" (40 CFR 130.2(j)). The USEPA considers Category 5 water bodies as the only category that constitutes the 303(d) List. Therefore, the USEPA will approve a 2012 Category 5 list (for more information on the Integrated Report Categories, please see Table 1 of this report).

[1] Technology-based controls are defined in CWA Section 301. They include effluent limits (primary and secondary treatment requirements) for industrial discharges and discharges from publically owned treatment works.

Table 1:
Integrated Report Categories

Category	Description
1	Evidence shows all core uses are supported.
2	Evidence shows some core uses are supported (at least one use is supported).
3	Evidence is insufficient to make use support determinations.
4a	Evidence shows at least one use is not supported, a TMDL has been developed and is reasonably expected to result in the attainment of the water quality standard within a reasonable, specified time frame, and the TMDL has been approved by the USEPA.
4b	Evidence shows at least one use is not supported, but a TMDL is not needed as an existing regulatory program is reasonably expected to result in the attainment of the water quality standard within a reasonable, specified time frame.
4c	Evidence shows at least one use is not supported, but a TMDL is not needed as the impairment is caused by non-pollutant sources.
5	Evidence shows at least one use is not supported and a TMDL is needed.

States are required to review the Section 303(d) List in even-numbered years, make changes as necessary, and submit the list to the USEPA for approval. A total maximum daily load (TMDL) is generally developed for a water quality limited segment. A TMDL is the sum of the individual waste load allocations for point sources, load allocations for nonpoint sources, and natural background (40 CFR 130.2(j)).

2.2 STATE REQUIREMENTS

On September 30, 2004, the State Water Board adopted the "Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List," also known as the Listing Policy (SWRCB 2004a) in accordance with California Water Code Section 13191.3(a). The Listing Policy identifies the process by which the State Water Board and the Regional Water Quality Control Boards will comply with the listing requirements of CWA Section 303(d). The Listing Policy became effective in December 2004. Justification of each portion of the Listing Policy is presented in the Final Functional Equivalent Document (FED) (SWRCB, 2004b) that was developed to support the provisions of the Listing Policy.

The objective of the Listing Policy is to establish a standardized approach for developing California's Section 303(d) List with the overall goal of achieving water quality standards and maintaining beneficial uses in all of California's surface waters. TMDLs will generally be developed as needed for the waters identified under the provisions of the Listing Policy.

The Listing Policy outlines a "weight of evidence" approach that provides the rules for making decisions based upon different kinds of data, an approach for analyzing data statistically, and requirements for data quality, data quantity, and the administration of the

listing process. Decision rules for listing and delisting are provided for chemical-specific water quality standards; bacterial water quality standards; health advisories; bioaccumulation of chemicals in aquatic life tissues; nuisance such as trash, odor, and foam; nutrients; water and sediment toxicity; adverse biological response; and degradation of aquatic life populations and communities. The Listing Policy also requires that situation-specific weight of evidence listing or delisting factors be used if available information indicates water quality standards are attained or not attained and the other decision rules do not support listing or delisting.

The federal requirement for setting priorities on which TMDLs will be developed first is addressed in the Listing Policy by the establishment of schedules for TMDL development.

The Listing Policy also provides direction related to:

- The definition of readily available data and information.
- Administration of the listing process including data solicitation and fact sheet preparation.
- Interpretation of narrative water quality objectives using numeric evaluation guidelines.
- Data quality assessments.
- Data quantity assessments including water body specific information, data spatial and temporal representation, aggregation of data by reach/area, quantitation of chemical concentrations, evaluation of data consistent with the expression of water quality objectives or criteria, binomial model statistical evaluation, evaluation of bioassessment data, and evaluation of temperature data.

The Listing Policy requires that *all* waters that do not meet water quality standards be placed on the Section 303(d) List. The Policy also states that the California 303(d) List includes (1) waters still requiring a TMDL, and (2) waters where the water quality limited segment is being addressed. Water bodies in the "Water Quality Limited Segments Being Addressed" category must meet either of the following conditions:

1. A TMDL has been approved by USEPA and is expected to result in full attainment of the standard within a reasonable, specified time frame.
2. It has been determined that an existing regulatory program is reasonably expected to result in the attainment of the water quality standard within a reasonable, specified time frame.

Water bodies that are impaired by a non-pollutant source (Category 4c) do not require a TMDL, however they are considered part of the 303(d) List. Monitoring should be conducted to confirm that there continues to be no pollutant-caused impairment and water quality management actions may be necessary to address the cause(s) of the impairment.

This means that, for California, waters that fall into the Integrated Report Categories 4a, 4b, 4c, and 5 are considered part of the California 303(d) List.

2.3 2010 303(d) LIST OF IMPAIRED WATERS

Until the 2012 303(d) List is approved by the USEPA, the current list is the 2010 Section 303(d) List of Impaired Waters. The 2010 List was adopted by the Regional Water Board on June 3, 2009, in Resolution No. R1-2009-0047, adopted by the State Water Board on August 4, 2010, in Resolution No. 2010-0040, and approved by the USEPA on October 11, 2011. Neither the State Water Board nor the USEPA made any changes to the 303(d) List that was approved by the Regional Water Board in June 2009.

2.4 CHANGES TO CALIFORNIA'S INTEGRATED REPORT-303(d) and 305(b) UPDATES

On June 14, 2013, State Water Board management met with USEPA Division of Water Quality management to discuss strategies to create a more efficient and successful Integrated Report process. The strategy agreed upon includes dividing California into thirds by Regional Water Board and submitting in Integrated Report for three Regional Water Boards per listing cycle. Therefore, the 2012 Integrated Report will consist of data submitted for the North Coast Regional Water Quality Control Board (Region 1), the Lahontan Regional Water Quality Control Board (Region 6), and the Colorado River Basin Regional Water Quality Control Board (Region 7). The 2014 Integrated Report will consist of data submitted for the Central Coast Regional Water Quality Control Board (Region 3), the Central Valley Regional Water Quality Control Board (Region 5), and the San Diego Regional Water Quality Control Board (Region 9). Finally, the 2016 Integrated Report will consist of data for the San Francisco Bay Regional Water Quality Control Board (Region 2), the Los Angeles Regional Water Quality Control Board (Region 4), and the Santa Ana Regional Water Quality Control Board (Region 8). The North Coast Regional Water Board will develop the next Integrated Report update in 2018. It is anticipated that the process will allow for those Regional Water Boards that are "off cycle" to still examine high priority data and make decisions related directly to listings and delistings and submit them for inclusion into the current listing cycle as appropriate.

2.5 STATE vs. FEDERAL 303(d) LIST

The State Water Board, in accordance with the Listing Policy, considers waters that fall into the Integrated Report Categories 4a, 4b, 4c, and 5 as constituting the California 303(d) List. The USEPA considers Category 5 water bodies as the only category that constitutes the 303(d) List. Therefore, the Regional and State Water Boards will review and approve all Category 4a, 4b, 4c, and 5 water bodies. The USEPA will approve a 2012 Category 5 list.

Chapter 3: Assessment Process

The basis for the 2012 Integrated Report Section 303(d) List is the 2010 Section 303(d) List, which was approved on October 11, 2011. All listings on the 2010 Section 303(d) List will remain unless a change is adopted by the Regional Water Board and the State Water Board, and approved by the USEPA. Throughout the assessment process, Regional Water Board staff complied with the requirements of the Listing Policy.

3.1 FACT SHEETS

A fact sheet is composed of a decision and the supporting lines of evidence (LOE) for each water body/pollutant pair assessed. The results of the staff analysis are presented as staff recommendations in the form of fact sheets. A summary of staff recommendations can be found in Chapter 4.

3.2 DATA & INFORMATION SOLICITATION

The water quality assessment process for Sections 305(b) and 303(d) began with the evaluation of data collected from monitoring throughout the North Coast Region. The monitoring information is critical to understanding and protecting the beneficial uses of water, developing water quality standards, and determining the effect of pollution and pollution prevention programs. Determining the exceedances of water quality standards, objectives, criteria, and guidelines forms the basis of the water quality assessments for Sections 303(d) and 305(b). Whether or not water quality objectives are exceeded determines a water body's ability to support its designated beneficial uses and also determines whether to list, or not list, the water body as impaired.

The State Water Board, on behalf of the Regional Water Boards, solicited and assembled all readily available data and information. This included data and information from the public in general and from Regional Water Board files, documents, and programs.

The public solicitation of data and information began on January 14, 2010, and concluded on August 30, 2010. State Water Board staff received numerous public requests for the review of the 2010 303(d) List for particular water bodies and/or pollutants. Many of these requests included data and information used to develop and revise fact sheets for the 2012 Integrated Report.

Data collected by the Regional and State Water Boards under the Surface Water Ambient Monitoring Program (SWAMP) were also used to develop and revise fact sheets for the 2012 Integrated Report. These data included:

- Regional trend monitoring data for pesticides, metals, nutrients, and physical chemistry parameters (e.g., temperature, pH, dissolved oxygen).

- State-wide lakes sport fish contamination study data for methyl mercury, PCBs, dieldrin, DDTs, chlordanes, and selenium in fish tissue.
- State-wide perennial streams assessment data for nutrients, physical chemistry, and bioassessments.
- State-wide stream pollution trends data for sediment toxicity and sediment contaminant concentrations.
- State-wide urban pyrethroid status data for TOC, pesticides, and DDTs.
- State-wide reference condition management plan data for nutrients and physical chemistry.

Additionally, data from ocean beach bacteria monitoring collected by coastal counties in accordance with AB411 (Chapter 765, Statutes of 1997) requirements were evaluated for this Integrated Report cycle.

3.3 DATA ASSESSMENT

State Water Board staff assessed data and information submitted by the public and from Regional and State Water Board programs. All readily available data and information were assessed using the rules described in the Listing Policy, as appropriate. State Water Board staff developed lines of evidence that summarize the available data and information.

Regional Water Board staff used the lines of evidence created by State Water Board staff to make decisions on overall beneficial use support and water quality impairment. The decisions and lines of evidence constitute the fact sheets for a particular water body/pollutant pair. Lines of evidence and decisions were input into the California Water Quality Assessment (CalWQA) database.

When developing a line of evidence, State Water Board staff's analysis began by looking at the sampling results and comparing them to the water body's beneficial uses and the pollutant's water quality standard(s). Results of this comparison, including the numbers of exceedances, are recorded in the line of evidence. State Water Board staff also reviewed the temporal, spatial, and quality characteristics of the data and information to ensure compliance with the Listing Policy.

3.3.1 Water Quality Standards Used in the Data Assessment

Water quality standards are comprised of (1) beneficial uses, (2) water quality objectives, (3) the Federal and State antidegradation policies, and (4) general policies for implementation.

The beneficial uses for waters in the North Coast Region are identified in the "Water Quality Control Plan for the North Coast Region," also known as the Basin Plan, which was last amended in May 2011. If beneficial uses were not identified for a water body in the Basin Plan but the uses existed in the water body, then waters were assessed using the existing beneficial uses of water.

The water quality objectives used in the data assessments are from existing and available State Policies and Plans including some of the following:

- The Basin Plan.
- State-wide Water Quality Control Plans (e.g., the California Ocean Plan).
- California Toxics Rule (40 CFR 131.38).
- Bacteria standards at bathing beaches (17 CCR 7958).
- Maximum Contaminant Levels to the extent applicable, such as Table 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of 22 CCR 64431, Table 64444-A (Organic Chemicals) of 22 CCR 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of 22 CCR 64449.

Comparison of data to narrative water quality objectives often required a numeric evaluation guideline to interpret the objective, as allowed by the Listing Policy. Water Board staff used evaluation guidelines that potentially represented water quality objective attainment and/or protection of beneficial uses. Depending on the beneficial use and narrative standard, the following considerations were used in the selection of evaluation guidelines:

- Applicable to the beneficial use(s).
- Protective of the beneficial use(s).
- Link to the pollutant under consideration.
- Scientifically-based and peer reviewed.
- Well described.
- Identify a range or limit above which impacts occur and below which no or few impacts are predicted.

The lines of evidences for each water body/pollutant pair describe the specific beneficial use(s), water quality objective, and evaluation guideline (if any) used to assess data.

3.4 DECISIONS

Following data assessment, Regional Water Board staff determined whether the data showed the water body was attaining water quality standards or not (i.e., if the water body was not impaired or impaired) and individual beneficial use support ratings. Decisions summarize all relevant lines of evidence for a water body/pollutant combination and, based on the Listing Policy, state if the number of exceedances constitutes non-attainment (resulting in a listing) or attainment (resulting in a delisting).

For a water body/pollutant pair that is not listed on the 2010 303(d) List as impaired, staff made a decision to either add the water body/pollutant pair to the list or not list it.

For a water body/pollutant pair that is already listed on the 2010 303(d) List as impaired, staff made a decision to either keep the water body/pollutant pair on the list or delist it.

3.4.1 Evaluation of Data on a Stream or Stream-Segment Basis

In past Integrated Report cycles, all data for a particular water body/pollutant pair were generally evaluated as a group regardless of which stream(s) within the water body they were collected in. For the current Integrated Report cycle data is generally evaluated for each individual stream or at times for a particular location or stream segment, depending on the pollutant and beneficial use being assessed. Where data were available, Regional Water Board staff have revised decisions for previous 303(d) listings to more accurately reflect the extent of impairment consistent with the available data. This will allow Regional Water Board staff to more accurately reflect the extent of impairment and focus TMDL efforts to those streams or stream-segments that are violating water quality standards.

3.4.2 Listing & Delisting Methodology

Staff recommended a water body/pollutant pair be listed as impaired for the first time or remain listed as impaired if any one of the following statements was found to be true. Staff recommended a water body/pollutant pair not be listed as impaired or be delisted if none of the following statements were found to be true, or if the original listing was based on faulty data or improper assessment methodology and listing would not have occurred in the absence of the faulty data or improper assessment methodology. These recommendations were made in compliance with the Listing Policy. Section 3 of the Listing Policy pertains to first time listing considerations and Section 4 pertains to water body/pollutant pairs that are already listed as impaired on the 2010 303(d) List. In summary,

"List" or "Keep Listed" if any one of the following statements is true.
"Delist" or "Do Not List" if none of the following statements are true.

1. Numeric data exceed the numeric objective or evaluation guideline more than a certain number of times. The number of times varies by the number of samples and the type of pollutant, and is based on a binomial distribution as described in the Listing Policy. See Sections 3.1, 3.2, 3.3, 3.5, 3.6, 4.1, 4.2, 4.3, 4.5, and 4.6 of the Listing Policy for more information. Tables 3.1, 3.2, 4.1, and 4.2 of the Listing Policy are especially useful.
2. A health advisory against the consumption of edible resident organisms or a shellfish harvest ban has been issued. See Section 3.4 of the Listing Policy for more information.
3. Nuisance conditions exist for odor, taste, excessive algae growth, foam, turbidity, oil, trash, litter, or color when compared to reference conditions. See Section 3.7 of the Listing Policy for more information.
4. Adverse biological response is measured in resident organisms as compared to referenced conditions and the impacts are associated with water or sediment concentrations of pollutants as described in Section 3.6 of the Listing Policy. See Section 3.8 of the Listing Policy for more information.

5. Significant degradation of biological populations and/or communities is exhibited as compared to reference sites. See Section 3.9 of the Listing Policy for more information.
6. A trend of declining water quality standards attainment is exhibited. See Section 3.10 of the Listing Policy for more information.
7. The weight of evidence demonstrates that a water quality standard is not attained. See Section 3.11 of the Listing Policy for more information.

3.4.3 Assessment Categories

As part of the decision, Regional Water Board staff determined whether beneficial uses are supported, and selected an appropriate beneficial use support rating category for each line of evidence. The rating categories are: fully supporting, not supporting, and insufficient information. These rating categories are recommended by the USEPA.

Also as part of the decision, staff placed each water body/pollutant pair into one of five non-overlapping categories of water quality attainment, based on the overall beneficial use support of the water body. The categories are taken from the USEPA guidance for states' integrated reports, with some modifications based on California's 303(d) Listing Policy. The categories are shown in Table 2.

Table 2:
Integrated Report Categories

Category	Description
1	Evidence shows all core uses are supported.
2	Evidence shows some core uses are supported (at least one use is supported).
3	Evidence is insufficient to make use support determinations.
4a	Evidence shows at least one use is not supported, a TMDL has been developed and is reasonably expected to result in the attainment of the water quality standard within a reasonable, specified time frame, and the TMDL has been approved by the USEPA.
4b	Evidence shows at least one use is not supported, but a TMDL is not needed as an existing regulatory program is reasonably expected to result in the attainment of the water quality standard within a reasonable, specified time frame.
4c	Evidence shows at least one use is not supported, but a TMDL is not needed as the impairment is caused by non-pollutant sources.
5	Evidence shows at least one use is not supported and a TMDL is needed.

Water body/pollutant pair fact sheets for all of the categories comprise the Section 305(b) surface water assessment. Categories 1, 2, and 3 however are informational, do not require state approval, and will be submitted as part of the 2012 Integrated Report to the USEPA for their biennial report to Congress. Categories 4a, 4b, 4c, and 5 are what California considers the Section 303(d) List of Impaired Waters and this list requires public review, approval by the Regional Water Board, and approval by the State Water Board. The status of a water bodies 303(d) listing (i.e., at what stage it is being addressed) determines whether it is a Category 4a, 4b, 4c, or 5 water body (see Table 2). A statewide Category 5

list will be submitted to the USEPA for final approval, as the USEPA only considers Category 5 water bodies for placement on the 303(d) List.

3.4.4 The Decision Process

Regional Water Board staff first determined a beneficial use support rating for each *individual use* of a water body. Staff's recommendation for the individual beneficial use support rating was done by looking at the lines of evidence in the CalWQA database for the water body/pollutant pair and applying the set of rules shown in Table 3. Then, staff determined the *overall* beneficial use support rating for the entire water body. This was done by applying the same rules in Table 3 to the collection of final individual use support ratings. See Figure 1 for an example of this process.

Table 3.
Rules for Determining Individual and Overall Beneficial Use Support Ratings

Beneficial Use Rating for Line of Evidence A		Beneficial Use Rating for Line of Evidence B		Final Beneficial Use Rating
Fully Supporting	+	Fully Supporting	=	Fully Supporting
Fully Supporting	+	Not Supporting	=	Not Supporting
Fully Supporting	+	Insufficient Information	=	Fully Supporting
Not Supporting	+	Insufficient Information	=	Not Supporting
Not Supporting	+	Not Supporting	=	Not Supporting

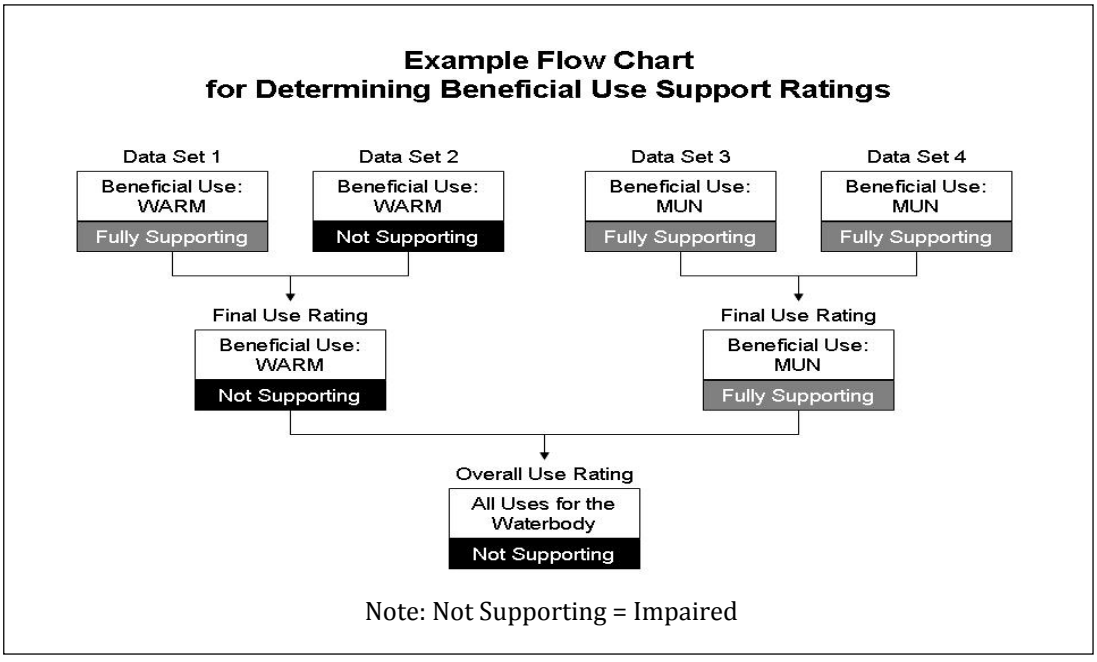

Figure 1: Example Flow Chart For Determining Beneficial Use Support Ratings

3.4.5 Original vs. Revised Decisions

All decisions in the CalWQA database are categorized as either "original" or "revised." An original decision is one that was made prior to 2012 and does not include any new data assessments or changes (with the exception of grammatical or logistical changes) during the 2012 Integrated Report cycle. A revised decision is one that is brand new for the 2012 Integrated Report, or one that is updated and changed from a previous listing cycle with new data or other information.

3.4.6 TMDL Scheduling

Regional Water Board staff developed a schedule for the completion of TMDLs for the water body/pollutant pairs listed as impaired under Section 303(d). The recommended date for TMDL completion is the year that the USEPA will approve a TMDL following Regional Water Board (and often State Water Board) adoption. For those water bodies with existing TMDLs that have been approved by the USEPA, the water body/pollutant pair was placed in the "Water Quality Limited Segments Being Addressed" category (Category 4a) of the Section 303(d) List. TMDLs with completion dates prior to the next list update already have resources dedicated to the effort. Schedules for TMDLs with completion dates after 2018 should be considered tentative. Changes to the Section 303(d) List in the future could result in substantial changes to scheduled completion dates established after 2018.

In developing the schedule, Regional Water Board staff reassessed the priorities established in the 2010 California CWA Section 303(d) List. The schedule was also developed in compliance with federal law and regulations based on the following Listing Policy provisions:

- Water body significance, such as the importance and extent of beneficial uses, threatened and endangered species concerns, and size of water body.
- Degree of impairment. The degree that water quality objectives are not met or beneficial uses are not attained or threatened, such as the severity of the pollution or the number of pollutants/stressors of concern.
- Potential threat to human health and the environment.
- Water quality benefits of activities ongoing in the watershed.
- Potential for beneficial use protection and recovery.
- Degree of public concern.
- Availability of funding.
- Availability of data and information to address the water quality problem.

Staff also relied upon guidance from the USEPA (1997), which states that schedules should be expeditious and normally extend from eight to thirteen years in length, but could be shorter or slightly longer depending on state-specific factors. Therefore, the timeline for completing TMDLs for water bodies listed for the first time as part of the 2012 Integrated

Report is estimated to be no longer than thirteen years, which equates to an estimated completion date of 2025.

3.5 WATER BODY RE-SEGMENTATION

Historically, 303(d) listings in the North Coast Region were made at a watershed scale. With the creation of the CalWQA database, which was first used for the 2006 Integrated Report cycle, the listings were translated to the water bodies created in the database. Thus, many water bodies were defined at a watershed scale (e.g., by hydrologic area or hydrologic subarea). This resulted in data from multiple streams evaluated together as a group to determine if the water body as a whole should be listed as impaired.

For the current Integrated Report cycle, data are generally evaluated for each individual stream, or at times for a particular location or stream segment, depending on the pollutant and beneficial use being assessed. Where data were available to re-segment a water body into smaller areas, Regional Water Board staff revised decisions for previous 303(d) listings to more accurately reflect the extent of impairment documented by the available data. This will also allow Regional Water Board staff to focus TMDL and other pollutant control efforts to those streams or stream-segments that are violating water quality standards. Water bodies being re-segmented this current Integrated Report cycle are listed in Table 4.

Table 4.
Water bodies re-segmented during the 2012 Integrated Report cycle

Laguna de Santa Rosa Watershed Re-segmentation	
Original Water Body	**Re-segmented Water Bodies**
Russian River HU, Middle Russian River HA, Laguna de Santa Rosa	Russian River HU, Middle Russian River HA, Laguna HSA, mainstem Laguna de Santa Rosa
	Russian River HU, Middle Russian River HA, Laguna HSA, tributaries to the Laguna de Santa Rosa (except Santa Rosa Creek and its tributaries)
Russian River HU, Middle Russian River HA, Santa Rosa Creek	Russian River HU, Middle Russian River HA, Santa Rosa HSA, mainstem Santa Rosa Creek
	Russian River HU, Middle Russian River HA, Santa Rosa HSA, tributaries to Santa Rosa Creek
Russian River HU, Middle Russian River HA, Mark West Creek HSA	Russian River HU, Middle Russian River HA, Mark West HSA, mainstem Mark West Creek downstream of the confluence with the Laguna de Santa Rosa
	Russian River HU, Middle Russian River HA, Mark West HSA, mainstem Mark West Creek upstream of the confluence with the Laguna de Santa Rosa
	Russian River HU, Middle Russian River HA, Mark West HSA, tributaries to Mark West Creek (except Windsor Creek and its tributaries)
	Russian River HU, Middle Russian River HA, Mark West HSA, Windsor Creek and its tributaries

Table 4. Water bodies re-segmented during the 2012 Integrated Report cycle	
Elk River Watershed Re-segmentation	
Original Water Body	**Re-segmented Water Bodies**
Eureka Plain HU, Elk River	Eureka Plain HU, Elk River Watershed, Lower Elk River and Martin Slough
	Eureka Plain HU, Elk River Watershed, Upper Elk River
	Eureka Plain HU, Elk River Watershed, Upper Little South Fork Elk River

Regional Water Board staff will continue the process of re-segmenting the water bodies that are in the CalWQA database so that the listings more accurately reflect the extent of impairment documented by the data. Staff plan to re-segment some portion of the water bodies in the CalWQA database each Integrated Report cycle.

3.6 EXPLANATION OF SPECIFIC ANALYSES

Some of the analyses conducted by State and Regional Water Board staff are explained in more detail in this section in order to allow for a better understanding of how data and information were evaluated.

3.6.1 Klamath National Forest Sediment Reference Water Bodies

During the 2010 Integrated Report cycle, the following streams within the Klamath National Forest (Forest) were identified as sediment impaired:

In the Iron Gate Dam to Scott River reach of the Klamath River HU:

- Beaver Creek
- Cow Creek
- Deer Creek
- Hungry Creek
- West Fork Beaver Creek

In the Scott to Trinity River reach of the Klamath River HU:

- China Creek
- Fort Goff Creek
- Grider Creek
- Portuguese Creek
- Thompson Creek
- Walker Creek

The listings were based upon interpreting the narrative Basin Plan objectives for Suspended and Settable Material with numeric evaluation guidelines from the "Klamath National Forest Land and Resource Management Plan" (USFS 1995). The evaluation guidelines used were based on literature values generally derived from watersheds underlain by the Franciscan Formation, which is not the dominate geology in the

watersheds within the Klamath National Forest. Therefore, in September 2010, the Klamath National Forest developed a new approach for assessing sediment conditions in streams within the Forest. Klamath National Forest staff followed the State of California's Surface Water Ambient Monitoring Program guidance for screening and identifying reference water bodies (Ode 2009) in order to identify sediment reference water bodies within the Forest to help select more appropriate sediment targets. Regional Water Board staff reviewed and approved the criteria for sediment reference water bodies, which are described in the "Klamath National Forest Sediment and Temperature Monitoring Plan and Quality Assurance Project Plan (USFS 2010)" and summarized as follows:

1. Road density must be less than 0.19 km/km squared (0.30 mi/mi squared) with no significant failures (this road density value also signifies low past timber harvest intensity).
2. Less than 10% of the drainage area is grazed and there are no Best Management Practices violations.
3. Mining activities have no significant sediment inputs.
4. Water bodies with natural disturbance were included in the reference pool as a component of the natural variability in conditions.

Regional Water Board staff find that water bodies that meet the above criteria for sediment reference streams are not significantly altered by anthropogenic activities and are considered to reflect natural conditions. Figure 2 presents the water bodies that meet the criteria for sediment (and temperature) reference water bodies.

The Portuguese Creek and Fort Goff Creek watersheds meet the criteria for sediment reference water bodies, and therefore are being proposed for delisting. The other sediment reference water bodies shown in Figure 2 are not currently listed as sediment impaired and Regional Water Board staff have denoted them as reference water bodies in the lines of evidence and decisions, reflecting that they meet water quality standards and recommending they not be listed in this cycle.

3.6.2 Klamath National Forest Temperature Reference Water Bodies

Every stream within the Klamath National Forest has been identified on the 303(d) list as impaired for water temperature. The Scott, Salmon, Shasta, and Klamath River TMDL load allocations for stream temperature include an allocation expressed as site potential effective shade, which is the naturally occurring stream shade condition in the absence of human disturbance.

Klamath National Forest staff identified temperature reference water bodies within the Forest following the State of California's Surface Water Ambient Monitoring Program guidance for screening and identifying reference water bodies (Ode 2009). Regional Water Board staff reviewed and approved the criteria for temperature reference water bodies, which are described in the "Klamath National Forest Sediment and Temperature Monitoring Plan and Quality Assurance Project Plan (USFS 2010)" and are summarized as follows:

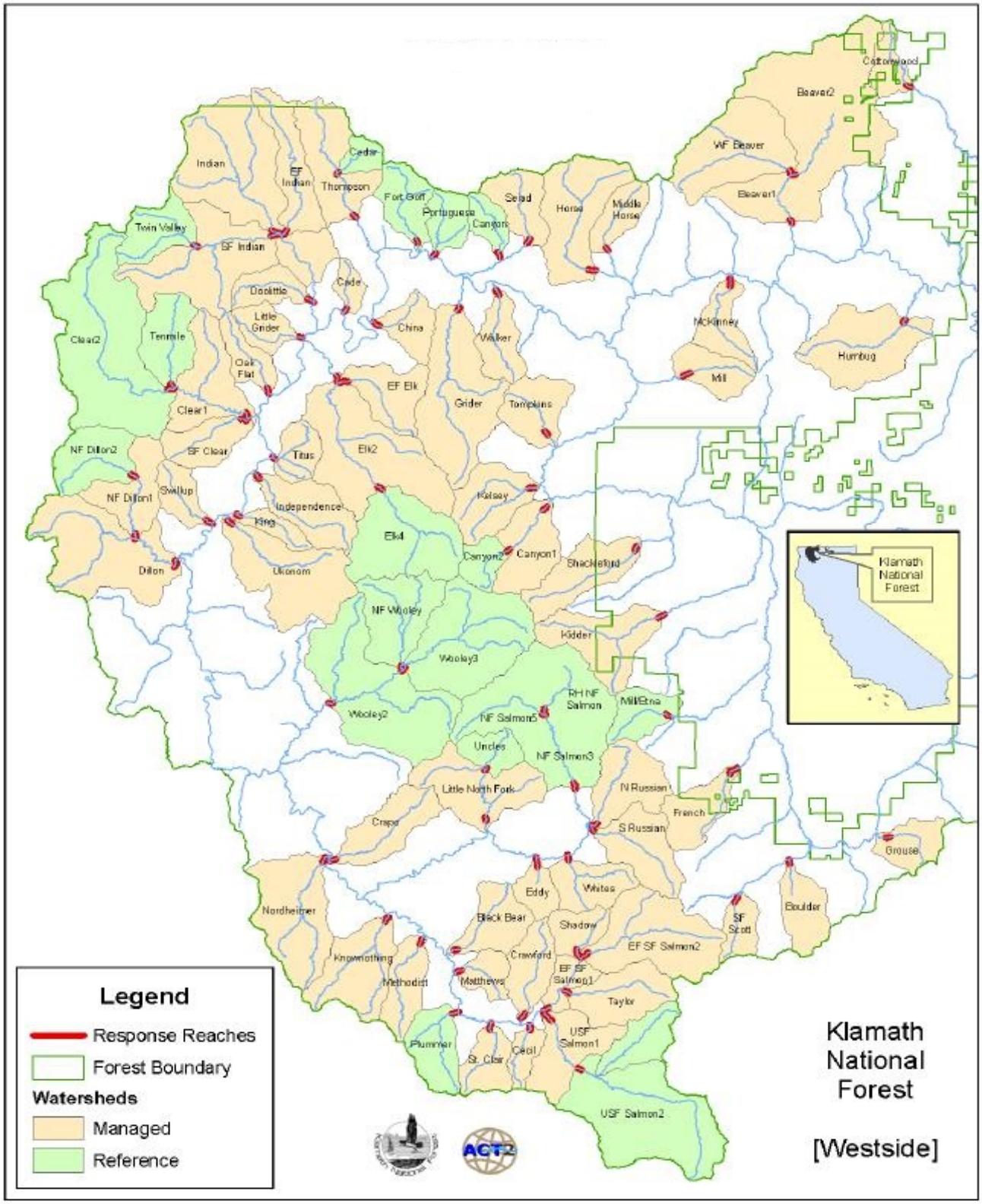

Figure 2: Sediment and Temperature Reference Watersheds within the Klamath National Forest Boundary
*Note: "Response Reaches" are the locations most likely to accumulate fine sediment in response to increased sediment supply and reflect the cumulative effect of sediment input from all sources in the watershed

1. No evidence of human-caused reduction in stream shade is apparent in aerial photos.
2. Road density must be less than 0.19 km/km squared (0.30 mi/mi squared) with no significant failures (this road density value also signifies low past timber harvest intensity).
3. Less than 10% of the drainage area is grazed and there are no best management practice violations.
4. Mining activities have no significant sediment input.
5. Water bodies with natural disturbance were included in the reference pool as a component of the natural variability in conditions.

Regional Water Board staff find that water bodies that meet the above criteria for temperature reference streams are not significantly altered by anthropogenic activities and are considered to reflect natural conditions. Figure 2, above, presents the water bodies that meet the criteria for temperature (and sediment) reference water bodies.

The following streams meet the criteria for temperature reference water bodies and therefore are being proposed for delisting:

- Klamath River HU, Middle Klamath River HA, Seiad Valley HSA, Canyon Creek and its Tributaries from the headwaters to confluence with Seiad Creek.
- Klamath River HU, Middle Klamath River HA, Happy Camp HSA, Cedar Creek and its Tributaries.
- Klamath River HU, Middle Klamath River HA, Ukonom HSA, Clear Creek and its Tributaries from the headwaters to the confluence with Tenmile Creek.
- Klamath River HU, Middle Klamath River HA, Ukonom HSA, Elk Creek and its Tributaries from the headwaters to Bear Creek.
- Klamath River HU, Middle Klamath River HA, Happy Camp HSA, Fort Goff Creek and its Tributaries.
- Klamath River HU, Middle Klamath River HA, Happy Camp HSA, Portuguese Creek and its Tributaries.
- Klamath River HU, Middle Klamath River HA, Ukonom HSA, Tenmile Creek and its Tributaries.
- Klamath River HU, Middle Klamath River HA, Happy Camp HSA, Twin Valley Creek and its Tributaries.
- Klamath River HU, Middle Klamath River HA, Ukonom HSA, North Fork Dillon Creek and its Tributaries from the headwaters to Vann Creek.
- Klamath River HU, Scott River HA, Scott Bar HSA, Canyon Creek and its Tributaries from the headwaters to the downstream boundary of the Marble Mountain Wilderness.
- Klamath River HU, Scott River HA, Scott Valley HSA, Mill Creek and its Tributaries from the headwaters to the confluence with Etna Creek.
- Klamath River HU, Salmon River HA, Sawyers Bar HSA, North Fork Salmon River and its Tributaries from the confluence with the Right Hand Fork of the North Fork to the downstream boundary of the Marble Mountain Wilderness (except the Right Hand Fork of the North Fork and its tributaries).

- Klamath River HU, Salmon River HA, Sawyers Bar HSA, North Fork Salmon River and its Tributaries from the headwaters to the confluence with the Right Hand Fork of the North Fork.
- Klamath River HU, Salmon River HA, Cecilville HSA, Plummer Creek and its Tributaries.
- Klamath River HU, Salmon River HA, Sawyers Bar HSA, Right Hand Fork of the North Fork Salmon River and its tributaries.
- Klamath River HU, Salmon River HA, Sawyers Bar HSA, Uncles Creek and its Tributaries.
- Klamath River HU, Salmon River HA, Cecilville HSA, Rush Creek and its Tributaries.
- Klamath River HU, Salmon River HA, Cecilville HSA, South Fork Salmon River from the headwaters to the confluence with Garden Gulch (except Rush Creek and its Tributaries).
- Klamath River HU, Salmon River HA, Wooley Creek HSA, North Fork Wooley Creek and its Tributaries.
- Klamath River HU, Salmon River HA, Wooley Creek HSA, Wooley Creek and its Tributaries from the confluence of the North Fork to Haypress Creek (except North Fork Wooley Creek and its tributaries).
- Klamath River HU, Salmon River HA, Wooley Creek HSA, Wooley Creek and its tributaries from the head waters to the confluence with the North Fork.

3.6.3 Fecal Indicator Bacteria Assessments

3.6.3.1 Fecal Indicator Bacteria Application in Freshwater and Saltwater

The most common fecal bacteria indicators used to assess the human health risk from recreation beneficial use exposure are total coliform, fecal coliform, *E. coli*, and *Enterococcus* bacteria. With the exception of *E. coli* bacteria, these indicators are composed of specific groups of bacteria species that share common characteristics. *E. coli* bacteria are a single species within the fecal coliform bacteria group.

Total Coliform

Total coliforms are a group of bacteria that are widespread in nature. All members of the total coliform group can occur in human feces, but some can also be present in animal manure, soil, submerged wood, and other places outside the human body. Thus, the usefulness of total coliforms as an indicator of fecal contamination depends on the extent to which the bacteria species found are fecal and human in origin. Because total coliforms can come from non-fecal sources, they are no longer recommended as an indicator for assessing the support of recreation beneficial use (USEPA 1986). However, total coliform is still recommended for use in assessing support of shellfish consumption based on criteria adopted in 1925. These criteria were based on investigations made by the Public Health Service which assessed the occurrence of typhoid fever or other enteric diseases attributed to shellfish harvesting and have been used since adoption (NSSP 2009).

Fecal Coliform

Fecal coliform bacteria are a subgroup of total coliform bacteria found mainly in the intestinal tracts of warm-blooded animals, and thus, are considered a more specific

indicator of fecal contamination of water than the total coliform group. Fecal coliform bacteria concentration criteria were initially recommended by USEPA (1976) for assessing support of recreational use. However, since 1976, several key epidemiological studies were conducted to evaluate the criteria for effectiveness at protecting public health from water contact recreation (Cabelli et al. 1982; Cabelli et al. 1983; Dufour 1983; Favero 1985; Seyfried et al. 1985a, Seyfreid et al. 1985b). The studies concluded that the USEPA (1976) recommended fecal coliform bacteria criteria had no scientific basis. As a result of the new information derived from epidemiological studies, the USEPA (1986) changed the criteria recommendation to use the pathogen bacteria indicators of *E. coli* and *Enterococcus* bacteria, instead of fecal coliform bacteria.

In addition, detection of fecal coliform bacteria in recreational waters may overestimate the level of fecal contamination because this bacteria group contains a genus, *Klebsiella*, with species that are not necessarily fecal in origin. *Klebsiella* bacteria are commonly associated with soils and the surfaces of plants, so that areas with allochthonous organic debris (organic material growing outside the water body) may show high levels of fecal coliform bacteria that do not have a fecal-specific bacteria source.

Escherichia coli (E. coli) Bacteria

E. coli is a species of fecal coliform bacteria that is specific to fecal material from humans and other warm-blooded animals. USEPA (2012) compiled numerous epidemiological studies and concluded that *E. coli* bacteria are the best indicator of human health risk from water contact in recreational freshwaters. USEPA (2012) published recommended criteria in the U.S. Federal Register for protection of contact recreation for *E. coli* bacteria.

Enterococcus Bacteria

Enterococcus bacteria are a subgroup within the fecal streptococcus bacteria group. *Enterococcus* bacteria are distinguished by their ability to survive in salt water, and therefore more closely mimic pathogens than the other indicator bacteria. Thus, they are good indicators of pathogens in marine environments. USEPA (2012) recommends enterococcus bacteria concentration as the best indicator of human health risk in salt water for recreation.

USEPA (2012) states that *Enterococcus* bacteria concentrations may also be used as an indicator of human health risk in freshwater. Similar to *E. coli* bacteria, the *Enterococcus* bacteria criteria for protection of water contact recreation were published in the U.S. Federal Register in 2012. However, concerns have been identified for application of the *Enterococcus* bacteria concentration criteria (USEPA 2012) as an indicator of fecal contamination in freshwater.

First, there is concern about applying the *Enterococcus* bacteria concentration criteria in freshwater when some *Enterococcus* bacteria can come from non-fecal sources. The criteria are based on epidemiological studies that found association between illness and *Enterococcus* bacteria concentrations in surface waters with known sources of human fecal waste, specifically *Enterococcus faecalis* and *Enterococcus faecium*. Most research finds that the bacteria species *Enterococcus faecalis* is found mostly in humans, dogs, and chickens,

and may or may not come from other warm-blooded animals (Wheeler et al. 2002). *Enterococcus faecium* is commonly found in production animals, such as chickens (Fisher and Philips 2003). *Enterococcus hirae* is frequently found to originate from domestic animals (Devriese et al. 2002). However, sources of *Enterococcus* bacteria in many surface waters may also be from non-fecal, natural sources. *Enterococcus mundtii* and *Enterococcus casseliflavus* are associated with plant sources, for example (Ferguson et al. 2005; Ferguson et al. 2011).

Second, using *Enterococcus* bacteria concentrations to assess whether there is potential for sewage and human pathogens assumes that the bacteria do not persist or regrow in the environment. Studies have shown that these bacteria persist in benthic sediment and can regrow when re-suspended into the water column. Hartel et al. (2005) found that *Enterococcus* bacteria survived desiccation and regrew in rewetted sediment. Sediment collected in riparian habitat and from naturally occurring drain surface biofilms in freshwater urban streams was found to be a significant reservoir of *Enterococcus* bacteria (Roberts 2012). Anderson et al. (1997) found that a large portion of *Enterococcus* bacteria load in urban and rural waterways came from non-human sources, including large loads from senescing algae. Urban runoff samples have been found to contain relatively higher proportions of *Enterococcus mundtii* and *Enterococcus casseliflavus*, suggesting runoff sources are associated with plant species (Ferguson et al. 2013). Bacterial growth of *Enterococcus casseliflavus* on drain surfaces have been found to serve as a chronic low-level source of *Enterococcus* bacteria measurements collected in urban runoff (Ferguson et al. 2013). These studies indicate that elevated *Enterococcus* bacteria concentrations in water samples might be due to instream conditions that lead to regrowth and not due to contributions from fecal matter.

Finally, the IDEXX Enterolert® method is reported to be subject to a high rate of false positive results from measurements in freshwater samples. It has been shown that several factors can cause interference with the test methods resulting in the over-estimation of *Enterococcus* bacteria concentrations, including suspended sediment in the water (Hartel et al. 2006). Other bacteria types (*Vibrio*, *Shewanella*, *Bacteroides* and *Clostridium*) have also been found to be enumerated as *Enterococcus* bacteria with the method (Sercu et al. 2010). Also, bacterial culture methods for *Enterococcus* (e.g., the IDEXX Enterolert® or membrane filter methods) measure all species of the genus *Enterococcus*, including species that are not of fecal origin.

Findings – Indicator Bacteria Use In Listing and Delisting Decisions

E. coli bacteria are appropriate indicators of fecal contamination in freshwater and human health risk during water contact recreation. Therefore, lines of evidence with *E. coli* data are utilized in making listing/delisting decisions for freshwater associated with recreational beneficial uses.

Total coliforms are no longer recommended as indicators for assessing the support of recreation beneficial uses in fresh and marine waters because they can come from non-fecal sources. Therefore, total coliform lines of evidence are included in the decisions for the 2012 Integrated Report, however they are not considered when making a final

listing/delisting decision. Total coliform bacteria are used in assessing support of shellfish consumption uses.

Fecal coliform bacteria are no longer recommended as indicators for assessing the support of recreation beneficial uses in fresh and marine waters because they can come from non-fecal sources. However, fecal coliform lines of evidence are utilized in making listing/delisting decisions because there is currently a numeric fecal coliform bacteria objective in the Basin Plan. The Basin Plan bacteria objective is expected to be revised before the next Integrated Report cycle to remove the fecal coliform part of the bacteria objective. Once the Basin Plan has been revised, fecal coliform will no longer be utilized in the Integrated Report assessments, and listings originally based solely on fecal coliform data will likely be delisted.

Enterococcus bacteria are not appropriate indicators of sewage and pathogens in freshwater because they can come from non-fecal sources, can regrow in the stream environment, and because there is a likelihood of false positives results in freshwater using current analytical methods. Therefore, *Enterococcus* lines of evidence are included in the decisions for freshwater bodies the 2012 Integrated Report, however they are not considered when making a final listing/delisting decision. However, *Enterococcus* lines of evidence continue to be utilized as an indicator in salt water and listing/delisting decisions are made based upon *Enterococcus* data.

3.6.3.2 Freshwater Bacteria Evaluation Guidelines

State Water Board staff determined that the 2012 USEPA Recreational Water Quality Criteria (USEPA 2012) would not be applied to data submitted for the 2012 Integrated Report cycle, as the data had already been assessed and lines of evidence developed by the time the criteria were finalized. In the interest of expedience, State Water Board staff directed the Regional Water Boards to move forward with the existing lines of evidence and to utilize the 2012 USEPA criteria for the next Integrated Report cycle. Thus, the evaluation guideline for *E. Coli* utilized to interpret the Basin Plan objective is cited from the "California Department of Health Services Draft Guidance for Fresh Water Beaches" (CA DHS 2011), which is the same as that recommended in the USEPA document "Ambient Water Quality Criteria for Bacteria-1986" (USEPA 1986).

3.6.3.3 Exceedance Frequency Selection

Section 3.3 of the Listing Policy states: "*For bacterial measurements from coastal beaches, if water quality monitoring was conducted April 1 through October 31* ***only****, a four percent exceedance percentage shall be used. For bacterial measurements from inland waters, if water quality monitoring data were collected April 1 through October 31* ***only*** *, a four percent exceedance percentage shall be used if (1) bacterial measurements are indicative of human fecal matter, and (2) there is substantial human contact in the water body. If the exceedance is due to a closure related to a sewage spill, the water segment shall not be placed on the section 303(d) list. 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.*" [emphasis added]

State Water Board staff interprets this to mean that all AB411 ocean beaches and freshwater inland surface waters designated with the Water Contact Recreation (REC -1) beneficial use that have data collected for only dry weather (April 1 – October 31) shall be evaluated based on a four percent exceedance frequency. If there are data submitted for the entire year (data outside the April 1 – October 31 date range) then all the data should be evaluated based on either a ten percent exceedance rate or some site-specific frequency.

During the 2012 Integrated Report cycle, indicator bacteria lines of evidence were created based on the interpretation above and staff made a concerted effort to indicate when water bodies only had dry weather data.

When creating decisions, Regional Water Board staff grouped data from different Integrated Report cycles (2006, 2010, and 2012) according to when it was collected so that the correct exceedance frequency could be applied to the data. Each indicator bacteria decision explains how the data were or were not grouped, and which exceedance frequency is applied to the data to determine if listing or delisting is warranted.

3.6.4 Flow Impairment Data and Information Submittals

The Regional Water Board received four data submittals which requested flow listings in the region: 1) Quartz Valley Indian Reservation flow listing request and data submittal for the Scott River, 2) Klamath Riverkeeper flow listing request and data submittal for the Shasta River, 3) Save Mark West Creek flow listing request and data submittal for Mark West Creek, and 4) a request for listings in several streams by a coalition of 26 conservation and fishing advocacy groups (the Coalition). In total, the submittals assert that ten water bodies are impaired due to consumptive use of surface water, resulting in the reduction or elimination of stream flows.

Regional Water Board staff reviewed the information submitted and a river-by-river summary is provided below. However, staff were unable to complete the assessment and make a decision to list or not list due to the absence of an objective or evaluation guideline for comparison to the information submitted. An overview of assessment criteria and next steps for evaluating potential flow impairments are also provided below.

3.6.4.1 Information Received

Eel River (see reference Coalition 2010)
The Regional Water Board received a report from the Coalition entitled "Evaluation of the Effectiveness of Potter Valley Project National Marine Fisheries Service Reasonable and Prudent Alternative (RPA): Implications for the Survival and Recovery of Eel River Coho Salmon, Chinook Salmon, and Steelhead Trout" (report), prepared by Patrick Higgins and dated February 2010. Mr. Higgins is a consulting fisheries biologist.

The report contains information describing the history of the Potter Valley Project (Project) and Eel River salmon and steelhead fishery, an analysis of Project flows in relation to salmonid recovery prospects, discussions of the invasive Pikeminnow, flow-related

impacts on salmonid migration and rearing, and the impacts of limiting salmonid migration to the Eel River below Lake Pillsbury.

The report asserts that the Federal Energy Regulatory Commission's (FERC) rules governing flow releases from the Potter Valley Project limit the ability of Chinook salmon to successfully migrate and spawn downstream of the Project. The report cites data describing historic flow releases, observed time periods of spawning activity, and a report authored by VTN Oregon, Inc. (1982) developed in support of the 1983 FERC relicensing process. The VTN Oregon report evaluated the flows necessary for Chinook salmon to pass critical riffles downstream of the Project. The report asserts that the flows recommended by VTN Oregon are not met in many years due to Project operations aimed at filling Lake Pillsbury during the time period associated with Chinook salmon migration.

The report also asserts that the operation of the Potter Valley Project results in water temperatures harmful to salmonids and favorable to invasive Pikeminnow during summer months. The report suggests that increasing Eel River flows downstream of the Project in the range of 68 to 235 cubic feet per second (cfs) during the summer months would protect salmonids against high temperatures.

The Coalition's Eel River submittal did not provide any information describing flow conditions relative to unimpaired flows or document any exceedance of water quality objectives.

The USEPA (2004) evaluated the impacts of Potter Valley Project operations on temperature conditions and found that the current summer flow schedule likely results in stream temperatures cooler or nearly equal to estimated natural stream temperatures.

Scott River (see references QVIR 2010 and Coalition 2010)

The Regional Water Board received data submittals from the Quartz Valley Indian Reservation (QVIR) and the Coalition asserting that the beneficial uses of the Scott River and its tributaries are impaired due to flow alteration. The QVIR submittal included the Regional Water Board's findings from the Scott River Sediment and Temperature TMDL (Scott TMDL), flow and water quality data collected by the Tribe, estimates of unimpaired Scott River flows, documentation of increased frequency of extreme low flows and dewatering events, a 1974 California Department of Fish and Wildlife (CDFW [formerly known as California Department of Fish and Game]) report documenting stream flow needs in the Scott River basin, a groundwater modelling analysis of stream depletion associated with groundwater pumping, and commentary on the impacts of low flows and dewatering events on beneficial uses. The Coalition's submittal also included a summary of findings from the Scott TMDL, as well as comments on the Scott TMDL and the Policy for Maintaining Instream Flows in North California Coastal Streams previously submitted by members of the Coalition.

The Scott TMDL identifies flow as a causative factor related to elevated water temperatures, but does not identify specific flow objectives necessary to attain or maintain water quality objectives.

Shasta River (see references Klamath Riverkeeper 2010 and Coalition 2010)
The Regional Water Board received data submittals from the Klamath Riverkeeper (on behalf of Klamath Riverkeeper, Pacific Coast Federation of Fisherman's Associations, the Institute for Fisheries Research, the Environmental Protection Information Center, and Klamath Forest Alliance) and the Coalition asserting that the beneficial uses of the Shasta River and its tributaries are impaired due to flow alteration.

The Klamath Riverkeeper submitted comments prepared on their behalf by consulting fisheries biologist Patrick Higgins. In his report, Mr. Higgins draws on the findings of the National Academy of Sciences, USEPA, Regional Water Board, California Department of Fish and Wildlife (CDFW), and National Marine Fisheries Service to make the case that elevated water temperature, depressed dissolved oxygen conditions, and losses of Coho salmon habitat in the Shasta River basin can only be remedied by increased stream flows. The report includes flow data spanning the low flow periods of 2001 and 2009 showing abrupt drops in flow during the irrigation season and dramatic increases in flow (approximately 80 cfs) at the end of the season.

The report identifies the near complete dewatering of fisheries habitat in the Shasta River below Dwinnell Reservoir during summer months as a case of flow impairment due solely to lack of water. Likewise, the report identifies extractions from Big Springs as having acute temperature impacts in Big Springs Creek and downstream Shasta River reaches. The report also identifies the dewatering of Parks Creek and diversions from numerous small springs hydrologically connected to the Shasta River as greatly diminishing Coho salmon habitat. Included with the report is a memo from CDFW staff documenting Coho mortality associated with spring diversions. The report concludes that the mainstem Shasta River, Dwinnell Reservoir, Big Springs Creek, Parks Creek, Willow Creek, Julien Creek, and the Little Shasta River are deserving of flow impairment listings.

The Shasta River submittal provided by the Coalition was also authored by Patrick Higgins and contains much of the same information as the Klamath Riverkeeper submittal, but in an abbreviated form.

The Shasta River Watershed Temperature and Dissolved Oxygen TMDL identifies the reduction of cold water inputs as a causative factor affecting the water quality of the Shasta River. The TMDL establishes a flow recommendation of an additional 45 cfs of dedicated cold water as a means of addressing the temperature impairment.

Gualala River(see reference Coalition 2010)
The Regional Water Board received data submitted by the Coalition asserting that the beneficial uses of the Gualala River and its tributaries are impaired due to flow alteration. The submittal consists of six comment letters submitted to the California Department of Forestry and Fire Protection by Patrick Higgins in response to timber harvest plans proposed in the Gualala River watershed, including plans for conversion of timber lands to vineyards. The comment letters are similar and discuss sediment, temperature, flow, and fisheries issues present in the Gualala River watershed. The flow issues described include a

comparison of flow conditions observed in 2001 to flows measured in the same locations during the drought of 1977. The flows were low in 1977 but absent in 2001.

None of the comment letters submitted identify a cause of reduced flow in the Gualala River, nor are any water quality objectives exceedances associated with reduced flow identified.

Mark West Creek, tributary to Russian River (see references Coalition 2010 and Friends of Mark West Creek 2010)

The Regional Water Board received data submitted by the Coalition and Friends of the Mark West Watershed asserting that the beneficial uses of Mark West Creek, tributary to the Russian River, are impaired due to flow alteration. The submittal consists of letters and reports documenting substantial changes in summer flows that coincide with rapidly increasing diversions and reduced salmonid populations.

The submittal includes a copy of a CDFW report documenting a stream survey conducted July 22-25, 1969, that documents flows of approximately 1.4 cfs near the headwaters, 1.1 cfs in a middle reach, and 4.2 cfs at the mouth. The CDFW report estimates steelhead numbers at 60 per 100 feet of stream length. The report also notes that flows were intermittent in a 2-mile reach below Calistoga Road.

The submittal includes a document titled "Mark West Creek Flow Study Report" (flow report), dated November 14, 2008. The flow report identifies six locations where flow was monitored during the summer of 2008, and presents the findings. The flow report documents that Mark West Creek flows diminished to zero at all three mainstem sites, and that the three tributary sites were either dry or had flows too low to measure throughout the summer and fall of 2008.

Finally, the submittal includes letters written in opposition to a planned vineyard and winery in the upper Mark West Creek watershed. The letters document landowners' observations that flows have drastically dropped in Mark West Creek over the last 15 years. The observations include an account of one landowner's inability to draw water from the creek after 1998, necessitating the development of a well to replace the surface water use.

Mattole River (see reference Coalition 2010)

The Regional Water Board received data submitted by the Coalition asserting that the beneficial uses of the Mattole River and its tributaries are impaired due to flow alteration. The Coalition letter asserts that lack of streamflow is a major limitation on salmonid habitat in the Mattole basin, and that stranding of juvenile salmonids in isolated pools has resulted in salmonid mortality and fish rescue operations.

The submittal includes a 2007 report authored by hydrologist Randy Klein, which documents an analysis of low flows in the Mattole River basin in the years 2004-2006. The report demonstrates that flows in the upper Mattole River watershed are lower than the rest of the watershed when flows are normalized for drainage area. Water use demands in

the area were not analyzed in the study, nor was there any comparison of current flows to historic flows.

Navarro River (see reference Coalition 2010)
The Regional Water Board received data submitted by the Coalition asserting that the beneficial uses of the Navarro River are impaired due to low flows. Two supporting documents were included in the Coalition letter: Patrick Higgins' letter providing comments on the *Policy to Maintain Instream Flows in Northern California Streams* (instream flow policy), and excerpts from the KRIS Navarro database discussing the hypothesis that "surface flows in the Navarro River basin have been diminished in recent decades, which reduces salmon and steelhead productivity."

Higgins' comment letter on the instream flow policy describes the history of a complaint filed by the Sierra Club, including their assertions that water diversions from the Navarro River and its tributaries have significantly impaired beneficial uses. The letter describes an incident when the river was pumped dry during August and September of 1992. Higgins identified Navarro River beneficial uses associated with salmonids (e.g. COLD, RARE, MIGR, SPWN) and recreation (REC-1) as being impaired. Higgins also discusses that flows on September 21, 2001 were 1.1 cfs and fish were absent at a location where, on August 12, 1962, flows of 15 cfs were measured and trout were observed.

The KRIS Navarro excerpt documents the history of the Sierra Club's complaint discussed above, and the investigation by the SWRCB's Division of Water Rights that followed. The excerpt also discusses dry reaches of the Navarro River and tributaries observed by the KRIS Navarro development team.

Redwood and Maacama Creeks, Tributaries to Russian River (see reference Coalition 2010)
The Regional Water Board received data submitted by the Coalition asserting that the beneficial uses of Redwood and Maacama Creeks, tributaries to Russian River, are impaired due to flow alteration. The Coalition submitted a letter by Patrick Higgins to the County of Sonoma commenting on an application for a winery that the County was considering. The letter describes poor salmonid habitat conditions in Maacama Creek and one of its tributaries, Redwood Creek. Higgins' letter identifies low flow conditions among the many habitat conditions limiting salmonids, and asserts that water diversions are partly responsible. The letter describes data describing fish surveys at the beginning and end of summer that indicate juvenile steelhead mortality is high during summer months.

3.6.4.2 Conclusion
The *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List* (Listing Policy) does not provide guidance for evaluation of water quality impairments related to reduced flow. The Listing Policy focuses on evaluation of impairment by *pollutants*, whereas the effects of reduced flows are considered *pollution*. The Listing Policy guidance most applicable to the effects of reduced flow is described in Section 3.11, "Situation-Specific Weight of Evidence Listing Factor." Section 3.11 states "When all other Listing Factors do not result in the listing of a water segment but information indicates non-attainment of standards, a water segment shall be evaluated to determine whether the

weight of evidence demonstrates that a water quality standard is not attained" (State Water Board 2004a, page 8).

The Basin Plan includes water quality objectives for parameters that are affected by flow, such as temperature. The Eel, Scott, Shasta, Mattole, Navarro, and Russian River watersheds are all currently listed for temperature impairment. Many of those temperature listings and accompanying TMDLs identify flow regulation/modification, upstream impoundment, or hydromodification as a factor contributing to the impairment. The flow listing submitters discussed above seek a determination that reduced flows are the cause of impairment, not just a factor. The Listing Policy provides no direction to assist in distinguishing whether a factor is the cause versus the source of impairment.

In the absence of a statewide methodology for assessing flow through the Integrated Report process, Regional Water Board staff are unable to continue any further assessment of the data. Lines of evidence and decisions were not developed.

3.6.4.3 Next Steps

Regional Water Board staff intend to work with staff from the State and Regional Water Boards to develop a state-wide scientifically defensible approach to evaluating flow impairment in order to ensure consistency and objectivity. The approach should be applicable to any stream in the state. Regional Water Board staff suggest that the State Water Board take a lead role in developing such an approach, with involvement from all Regional Water Boards.

Regional Water Board staff suggest that a methodology for evaluating flow impairment should consider the following factors: (1) whether flows are altered from natural or historic flows, (2) whether flow alterations are caused by human activities, (3) impacts to beneficial uses caused by altered flows, and (4) exceedance of water quality objectives caused by altered flows. Staff suggest that factors 1 and 2, and either 3 or 4 must be demonstrated for an affirmative flow impairment listing determination. The methodology should also include guidance for assessment of the four factors.

The CDFW has initiated instream flow studies in both the Scott and Shasta River watersheds, and the Regional Water Board is participating in these studies. Regional Water Board staff is supporting the development of instream flow studies in the Mattole, Navarro, and Eel Rivers, consistent with the proposed *Action Plans to Address Elevated Water Temperatures in the Mattole, Navarro, and Eel River Watersheds.* Regional Water Board staff will continue to support instream flow studies in the Scott, Shasta, Mattole, Navarro, and Eel River watersheds, and consider other watersheds, such as Mark West Creek, as appropriate.

3.6.5 Assessment of Data From Streams and Stream Segments Within Native American Reservations

The Regional and State Water Boards do not have the authority to list or delist water bodies within the boundaries of Native American Reservations, as only the federal

government through the USEPA has jurisdiction to list and delist water bodies on Tribal land. However, the Regional Water Board's Basin Plan applies to streams and stream segments within Native American Reservations when the Tribe does not have a USEPA-approved Basin Plan of their own. Only the Hoopa Valley Tribe has a USEPA approved Basin Plan.

State Water Board staff created lines of evidence for data collected both within and outside Native American Reservation boundaries. The objectives from the Regional Water Board's Basin Plan were applied to all data, except those data collected in water bodies on the Hoopa Valley Tribe Reservation, where the objectives from the Hoopa's Basin Plan were utilized.

All lines of evidence were associated with decisions for those water bodies, although the lines of evidence containing data collected on Tribal land were not utilized by Regional Water Board staff to make a final listing or delisting determination. Instead, staff summarized the data from Tribal land and made a recommendation within the decision for the USEPA to either list or delist the stream(s) or streams segment(s) where the data were collected on Tribal Land.

3.6.6 Assessment of Turbidity Data for the Current and Past Integrated Report cycles

The Basin Plan objective for turbidity reads: "Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof." Natural background turbidity levels have been determined for the Mad River through the Mad River TMDLs for Sediment and Turbidity. Natural background turbidity levels have not been determined for any other water body in the North Coast Region.

In previous Integrated Report cycles, turbidity data (from water bodies outside the Mad River watershed) were assessed against an evaluation guideline from a scientific paper published by the American Fisheries Society titled "Effects of Chronic Turbidity on Density and Growth of Steelheads and Coho Salmon" (Sigler et al. 1984). In early 2013, State Water Board staff and staff from the Central Valley Regional Water Quality Control Board met with staff from the California Department of Fish and Wildlife (CDFW) to determine if it was appropriate to utilize the turbidity values from the scientific paper to interpret the Basin Plan turbidity objective and determine beneficial use impairment. The outcome of this meeting was the finding that the turbidity values in the cited paper should not be used to determine if water bodies should be listed or delisted for turbidity. CDFW staff stated that the numbers in the scientific paper should not be applied to the integrated report process and the turbidity values in the paper should not be utilized to defend a decision to list or delist a water body for turbidity.

Therefore, turbidity lines of evidence from past listing cycles have been revised to remove the Sigler et al. 1984 reference as an evaluation guideline. For all water bodies, besides the Mad River, the evaluation guideline field now reads "At the present time, natural

background turbidity levels have not been determined for this watershed, and exceedance probabilities (the turbidity, associated with flow, that is exceeded X% of the time) have not been calculated. Thus, there is currently no appropriate evaluation guideline for this watershed, and no way to determine whether the objective is being exceeded." This change in the evaluation guideline did not result in any listing changes.

3.6.7 Use of MWMT and Grab Sample Temperature Data In Listing & Delisting Decisions

Two common ways to measure water temperatures are by "grab sample," which involves a point-in-time measurement of water temperature, and by continuous measurement of water temperature utilizing a water quality monitoring instrument that is deployed in a water body for a prolonged period of time and records the water temperature at set intervals.

Continuous water temperature data can be used to calculate several water temperature metrics including the maximum weekly maximum temperature (MWMT). The MWMT is also known as the seven-day average of the daily maximum temperatures (7-DADM), and is the maximum seasonal or yearly value of the daily maximum temperatures over a running seven-day consecutive period. The MWMT is useful because it describes the maximum temperatures in a stream, but is not overly influenced by the maximum temperature of a single day.

By their nature, MWMTs are a robust metric of the water temperatures in a water body, because they require a year or season's worth of continuously monitored temperature data to calculate a single MWMT. Grab sample data on the other hand, are a point-in-time measurement that only captures water temperatures at a particular date and time, and may not capture the hottest time of day or time of year.

Therefore, for water temperature listing and delisting decisions that had both MWMT and grab sample data, Regional Water Board staff deferred to the MWMT data to make listing and delisting determinations, as they are a much more robust metric of temperature conditions and capture the peak temperatures in the water body that are of the greatest concern to the protection of beneficial uses. Staff required that a minimum of 5 years of continuous temperature monitoring data (5 MWMTs) were necessary to make new listing and delisting determinations.

Chapter 4: Staff Recommendations

The results of staff's assessment of the available data and information are presented in the form of fact sheets that consists of a decision and supporting lines of evidence for each water body/pollutant pair assessed. Fact sheets are available in Appendix 1 of this Staff Report, which can be found online at:

http://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/303d/

Miscellaneous, not substantive, changes not reflected in the fact sheets are described in Appendix 2 and Appendix 3 contains a list of all references. Both appendices can be found online at the link above.

4.1 SUMMARY OF STAFF RECOMMENDATIONS

The following tables summarize Regional Water Board staff's recommended changes to the 303(d) List, summarize the waters in each 305(b) category, and present the new 2012 303(d) List.

Table 5: Presents the new delistings of water body/pollutant pairs for the 2012 303(d) List, as recommended by Regional Water Board staff.

Table 6: Presents the new listings of water body/pollutant pairs for the 2012 303(d) List, as recommended by Regional Water Board staff.

Table 7: Presents changes to the scope (refinements and additions) of existing listings of water body/pollutant pairs for the 2012 303(d) List, as recommended by Regional Water Board staff.

Table 8: Presents list and do not delist recommendations to USEPA for the portion of water bodies where new data were assessed on Tribal land.

There are no water bodies that support all core beneficial uses (Category 1).

Table 9: Presents all of the water bodies that are supporting some, but not all, core beneficial uses (Category 2), as recommended by Regional Water board staff.

Table 10: Presents all of the water bodies for which there is insufficient information available to make use support decisions (Category 3), as recommended by Regional Water board staff.

Table 11: Presents all of the impaired water bodies (Categories 4a, 4b, 4c, and 5), including impaired water bodies already listed from the 2010 List and those recommended for listing as part of the 2012 303(d) List, as recommended by Regional Water Board staff.

Note: Following approval by the Regional and State Water Boards, the 2012 303(d) List will be tabulated by State Water Board staff in the same format as the current 2010 303(d) List.

Table 5.
New Delistings for the 2012 303(d) List

Water Body Hydrologic Unit	Water Body Name	Pollutant
Klamath River HU	Butte Valley HA	Nutrients
		Temperature, water
Mendocino Coast HU	Hare Creek Beach	Indicator Bacteria
	Pudding Creek Beach	Indicator Bacteria
Russian River HU	Middle Russian River HA, Big Sulphur Creek HSA	Specific Conductivity
	Middle Russian River HA, Laguna HSA, mainstem Laguna de Santa Rosa	Indicator Bacteria
		Nitrogen
	Middle Russian River HA, Laguna HSA, tributaries to the Laguna de Santa Rosa (except Santa Rosa Creek and its tributaries)	Indicator Bacteria
		Phosphorus
		Nitrogen
	Middle Russian River HA, Santa Rosa HSA, tributaries to Santa Rosa Creek	Indicator Bacteria
Trinidad HU	Luffenholtz Beach	Indicator Bacteria
	Moonstone County Park	Indicator Bacteria
	Trinidad State Beach	Indicator Bacteria

Table 6.
New Listings for the 2012 303(d) List

Water Body Hydrologic Unit	Water Body Name	Listing Extent	Pollutant
Eureka Plain HU	Elk River Watershed, Lower Elk River and Martin Slough	Lower mainstem Elk River and Martin Slough	Indicator Bacteria[1]
	Gannon Slough	Campbell Creek	Indicator Bacteria[1]
	Jolly Giant Creek	Jolly Giant Creek	Indicator Bacteria[1]
Klamath River HU	Copco Lake	Copco 1	Mercury
	Iron Gate Reservoir	Entire water body	Mercury
	Lost River HA, Tule Lake and Mt Dome HSAs	Klamath Straits Drain	Mercury
		Entire water body	Oxygen, Dissolved[2]
			pH[2]
	Middle HA, Iron Gate Dam to Scott River	Mainstem Klamath River from Iron Gate Dam to the Scott River	Aluminum
	Scott River HA	Mainstem Scott River	Aluminum
			Biostimulatory Conditions
			Oxygen, Dissolved
		(1) Mainstem Scott River and (2) Shackleford Creek above Campbell Lake	pH
Mad River HU	Mad River	Mainstem Mad River	Aluminum
	Norton Creek	Widow White Creek	Indicator Bacteria[1]
	Ruth Lake	Entire water body	Mercury
Mendocino Coast HU	Big River HA, Berry Gulch	Little North Fork	Temperature, water
		(1) Rocky Gulch, (2) the Little North Fork, and (3) Manley Gulch	Oxygen, Dissolved
	Big River HA, Big River	(1) Cookhouse Gulch, (2) Railroad Gulch, and (3) the mainstem Big River	Oxygen, Dissolved

Table 6 (cont). New Listings for the 2012 303(d) List			
Water Body Hydrologic Unit	**Water Body Name**	**Listing Extent**	**Pollutant**
Mendocino Coast HU	Noyo River HA, Pudding Creek	Pudding Creek Lagoon	Indicator Bacteria[1]
Russian River HU	Lower Russian River HA, Guerneville HSA	Russian River at Healdsburg Memorial Beach from the Railroad bridge to Hwy 101	Specific Conductivity
		(1) Russian River at Healdsburg Memorial Beach from the Railroad bridge to Hwy 101 and (2) Russian River from Fife Creek to Dutch Bill Creek	Aluminum
	Middle Russian River HA, Geyserville HSA	Foss Creek	Diazinon
	Middle Russian River HA, Mark West HSA, mainstem Mark West Creek downstream of the confluence with the Laguna de Santa Rosa	Mainstem Mark West Creek downstream of the confluence with the Laguna de Santa Rosa	Aluminum
			Oxygen, Dissolved
			Phosphorus
			Manganese
	Upper Russian River HA, Ukiah HSA	Mainstem Russian River	Aluminum
Trinidad HU	Little River HA	(1) Little River and (2) Bullwinkle Creek	Indicator Bacteria[1]

[1] Listing based solely upon fecal coliform data.
[2] Listing results from the establishment of a nutrient TMDL to address dissolved oxygen and pH impairments.

Table 7. Changes in Scope of Previous Listings (additions and refinements to the scope of existing listings)				
Water Body Hydrologic Unit	**Water Body Name**	**Original Listing Extent**	**Revised Listing Extent**	**Pollutant**
Eel River HU	Lower Eel River HA (includes the Eel River Delta)	Entire water body	McNulty Slough	Oxygen, Dissolved
		Entire water body	All waters except McNulty Slough	Temperature
	Middle Main HA	Entire water body	Tributaries to the Middle Main Eel River	Temperature
	South Fork HA	Entire water body	All waters except (1) Dutch Charlie Creek and (2) Redwood Creek	Temperature
Klamath River HU	Lower HA, Klamath Glen HSA	Entire water body	Mainstem Klamath River	Oxygen, Dissolved
	Middle HA and Lower HA, Scott River to Trinity River	Entire water body	Mainstem Klamath River	Organic Enrichment/ Low Dissolved Oxygen

Table 7 (cont).
Changes in Scope of Previous Listings
(additions and refinements to the scope of existing listings)

Water Body Hydrologic Unit	Water Body Name	Original Listing Extent	Revised Listing Extent	Pollutant
Klamath River HU	Middle HA and Lower HA, Scott River to Trinity River	(1) China Creek, (2) Grider Creek, (3) Thompson Creek, (4) Walker Creek, (5) Fort Goff Creek, and (6) Portuguese Creek	(1) China Creek, (2) Grider Creek, (3) Thompson Creek, (4) and Walker Creek	Sediment
		Entire water body	All waters except: (1) Portuguese Creek and its Tributaries, (2) Cedar Creek and its Tributaries, (3) Twin Valley Creek and its Tributaries, (4) North Fork Dillon Creek and its Tributaries from the headwaters to Vann Creek, (5) Canyon Creek and its Tributaries from the headwaters to confluence with Seiad Creek, (6) Elk Creek and its Tributaries from the headwaters to Bear Creek, (7) Tenmile Creek and its Tributaries, (8) Clear Creek and its Tributaries from the headwaters to the confluence with Tenmile Creek, and (9) Fort Goff Creek and its Tributaries.	Temperature
	Middle HA, Iron Gate Dam to Scott River	Entire water body	Mainstem Klamath River	Organic Enrichment/ Low Dissolved Oxygen
	Middle HA, Oregon to Iron Gate	Entire water body	Mainstem Klamath River	Organic Enrichment/ Low Dissolved Oxygen
	Salmon River HA	Entire water body	All waters except: (1) Uncles Creek and its Tributaries, (2) Plummer Creek and its tributaries, (3) the North Fork Salmon River and its Tributaries from the confluence with the Right Hand Fork of the North Fork Salmon River to the downstream boundary of the Marble Mountain Wilderness, (4) Right Hand Fork of the North Fork Salmon River and its tributaries, (5) the North Fork Salmon River and its Tributaries from the headwaters to the confluence with the Right Hand Fork of the North Fork Salmon River, and (6) the South Fork Salmon River from the headwaters to the confluence with Garden Gulch.	Temperature

Table 7 (cont). Changes in Scope of Previous Listings (additions and refinements to the scope of existing listings)				
Water Body Hydrologic Unit	**Water Body Name**	**Original Listing Extent**	**Revised Listing Extent**	**Pollutant**
Klamath River HU	Salmon River HA, Wooley Creek HSA	Entire water Body	All waters except: (1) Wooley Creek and its tributaries from the head waters to the confluence with the North Fork Wooley Creek, (2) Wooley Creek and its Tributaries from the confluence of the North Fork Wooley Creek to Haypress Creek, and (3) North Fork Wooley Creek and its Tributaries.	Temperature
	Scott River HA	Entire water body	All waters except: (1) Mill Creek and its Tributaries from the headwaters to the confluence with Etna Creek and (2) Canyon Creek and its Tributaries from the headwaters to the downstream boundary of the Marble Mountain Wilderness.	Sedimentation / Siltation
				Temperature
Mendocino Coast HU	Noyo River HA, Pudding Creek	Entire water body	Mainstem Pudding Creek	Temperature
	Rockport HA, Ten Mile River HSA	Entire water body	All waters except: (1) Mill Creek, (2) Gulch 11, (3) Churchman Creek, (4) Little Bear Haven Creek, (5) Buckhorn Creek, (6) Booth Gulch, (7) Smith Creek, (8) Bear Haven Creek, and (9) the Little North Fork Ten Mile River	Temperature
Redwood Creek HU	Redwood Creek	Entire water body	All waters except Larry Dam Creek	Temperature
Russian River HU	Lower Russian River HA, Guerneville HSA	Mainstem Russian from Fife Creek to Dutch Bill Creek	(1) Mainstem Russian River from (a) Railroad bridge to Hwy 101 and (b) Fife Creek to Dutch Bill Creek and (2) Mainstem Dutch Bill Creek	Indicator Bacteria
	Lower Russian River HA, Guerneville HSA, Green Valley Creek watershed	Entire water body	Mainstem Atascadero Creek	Indicator Bacteria
	Middle Russian River HA, Geyserville HSA	(1) Mainstem Russian River from Railroad bridge to Hwy 101 and (2) Stream 1 on Fitch Mtn.	Stream 1 on Fitch Mountain	Indicator Bacteria

Table 7 (cont).
Changes in Scope of Previous Listings
(additions and refinements to the scope of existing listings)

Water Body Hydrologic Unit	Water Body Name	Original Listing Extent	Revised Listing Extent	Pollutant
Russian River HU	Middle Russian River HA, Laguna HSA, tributaries to the Laguna de Santa Rosa (except Santa Rosa Creek and its tributaries)	Laguna HSA (all tributaries)	Mainstem Colgan Creek	Oxygen, Dissolved
Trinity River HU	Lower Trinity HA	Entire water body	All waters except: (1) the New River and its tributaries, (2) Big French Creek and its tributaries, (3) the North Fork Trinity River and its tributaries, including the East Fork North Fork Trinity River and its tributaries, and (4) Manzanita Creek and its tributaries.	Sedimentation/ Siltation
	Upper Trinity HA	Entire water body	All waters except the Stuart Fork and its tributaries	Sedimentation/ Siltation

Table 8.
Recommendations To USEPA Based Upon Regional Water Board Analysis

Water Body Hydrologic Unit	Water Body Name	Water Body Extent	Pollutant	Recommendation to USEPA
Klamath River HU	Scott River HA	(1) Shackleford Creek and (2) Snicktaw Creek (portions that lie within the Quartz Valley Indian Reservation)	Indicator Bacteria	List
		Snicktaw Creek (portion that lies within the Quartz Valley Indian Reservation)	Oxygen, Dissolved	List
		The portions of the water body that lie within the Quartz Valley Indian Reservation	Temperature	Do Not Delist
	Lower HA, Klamath Glen HSA	The portions of the water body that lie within the Yurok Tribe Indian Reservation	Nutrients	Do Not Delist
		The portions of the water body that lie within the Yurok Tribe Indian Reservation	Temperature	Do Not Delist
		Mainstem Klamath River	Organic Enrichment/Low Dissolved Oxygen	Do Not Delist

Table 9. Waters Supporting Some Core Beneficial Uses (Category 2)	
Water Body Hydrologic Unit	**Water Body Name**
Bodega HU	Doran Regional Park
	Salmon Creek HA
	Salmon Creek Park (South)
Eureka Plain HU	Mad River Slough
	Salmon Creek
Klamath River HU	Campbell Lake
	Lost River HA, Clear Lake & Boles HSAs
Mad River HU	Clam Beach (near Mad River mouth)
Mendocino Coast HU	Albion River HA, Big Salmon Creek
	Big River Beach at Mendocino Bay
	Black Point
	Caspar Headlands State Beach
	Gualala Regional Park Beach
	Hare Creek Beach
	MacKerricher State Park
	MacKerricher State Park (near Virgin Creek)
	Pudding Creek Beach
	Rockport HA, Usal Creek HSA
	Stillwater Cove Regional Park Beach
	Van Damme State Park Beach
	Wages Creek HSA, Dehaven Creek
	Wages Creek HSA, Wages Creek
Russian River HU	Goat Rock State Park Beach
Smith River HU	Smith River Watershed
Trinidad HU	Luffenholtz Beach
	Moonstone County Park
	Old Home Beach
	Trinidad State Beach

Table 10. Waters with Insufficient Information to Determine Use Rating (Category 3)	
Water Body Hydrologic Unit	**Water Body Name**
All water bodies in the North Coast Region not listed in Categories 2, 4a, 4b, 4c, or 5 (Tables 9 and 11), including those listed below	
Bodega HU	Bodega Head
Cape Mendocino HU	Point Delgada Shelter Cove
Eel River HU	Howard Lake
	Plaskett Lake
Eureka Plain HU	McDaniel Slough
Klamath River HU	Butte Valley HA
	Kangaroo Lake
	Klamath River Flint Rock Head
Mendocino Coast HU	Albion River HA, Little River
	Chadbourne Gulch Beach
	Cleone, Lake
	Gerstle Cove
	Manchester State Beach

Table 10 (cont). Waters with Insufficient Information to Determine Use Rating (Category 3)	
Water Body Hydrologic Unit	**Water Body Name**
All water bodies in the North Coast Region not listed in Categories 2, 4a, 4b, 4c, or 5 (Tables 9 and 11), including those listed below	
Mendocino Coast HU	Point Arena Lighthouse
	Point Arena HA, Greenwood Creek HSA
	Sea Ranch Del Mar
	Ten Mile River HSA, coastal tributaries
	Wages Creek Beach
Smith River HU	Smith River Estuary
Trinity River HU	Lewiston Lake
Winchuck River HU	Crescent City Point St. George
	Dead Lake
	Winchuck River

Table 11. Impaired Water Bodies (Categories 4a, 4b[1], 4c[1] and 5) – The 2012 303(d) List				
Water Body Hydrologic Unit	**Water Body Name**	**Listing Extent**	**Pollutant**	**Category**
Bodega HU	Bodega Harbor HA	Entire water body	Invasive Species	5
	Campbell Cove	Entire water body	Indicator Bacteria	5
	Estero Americano HA, Estuary	Entire water body	Nutrients	5
			Sedimentation /Siltation	5
	Estero Americano HA, Americano Creek	Entire water body	Nutrients	5
	Estero de San Antonio HA, Stemple Creek & Estero de San Antonio	Entire water body	Nutrients	5
			Sediment	5
Cape Mendocino HU	Mattole River HA, Mattole River	Entire water body	Sedimentation /Siltation	4a
			Temperature	4a
Eel River HU	Lower Eel River HA (includes the Eel River Delta)	Mainstem Eel River	Aluminum	5
		McNulty Slough	Oxygen, Dissolved	5
		Entire water body except McNulty Slough	Temperature	4a
		Entire water body	Sedimentation /Siltation	4a
	Middle Fork Eel River HA, Eden Valley HSA & Round Valley HSA	Mainstem Middle Fork Eel River	Aluminum	5
		Entire water body	Sedimentation / Siltation	4a
			Temperature	4a
	Middle Fork Eel River HA, Wilderness HSA & Black Butte River HSA	Entire water body	Temperature	4a

Table 11 (cont). Impaired Water Bodies (Categories 4a, 4b[1], 4c[1] and 5) – The 2012 303(d) List				
Water Body Hydrologic Unit	**Water Body Name**	**Listing Extent**	**Pollutant**	**Category**
Eel River HU	Middle Main Eel River HA	Mainstem Eel River	Aluminum	5
		Tributaries to the Middle Main Eel River	Temperature	4a
		Entire water body	Sedimentation/ Siltation	4a
	North Fork Eel River HA, Lower North Fork Eel River Watershed	Entire water body	Sedimentation/ Siltation	4a
			Temperature	4a
	North Fork Eel River HA, Upper North Fork Eel River Watershed	Entire water body	Temperature	4a
	South Fork Eel River HA	Mainstem South Fork Eel River	Aluminum	5
		Entire water body	Sedimentation/ Siltation	4a
		Entire water body except Dutch Charlie Creek and Redwood Creek	Temperature	4a
	Upper Main Eel River HA (included Tomki Creek)	Entire water body	Sedimentation/ Siltation	4a
			Temperature	4a
	Upper Main Eel River HA, Lake Pillsbury HSA, Lake Pillsbury	Entire water body	Mercury	5
	Van Duzen River HA	Entire water body	Sedimentation/ Siltation	4a
Eureka Plain HU	Elk River Watershed, Lower Elk River and Martin Slough	Lower mainstem Elk River and Martin Slough	Indicator Bacteria[2]	5
		Entire water body	Sedimentation/ Siltation	5
	Elk River Watershed, Upper Elk River	Entire water body	Sedimentation/ Siltation	5
	Elk River Watershed, Upper Little South Fork Elk River	Entire water body	Sedimentation/ Siltation	5
	Freshwater Creek	Entire water body	Sedimentation/ Siltation	5
	Gannon Slough	Campbell Creek	Indicator Bacteria[2]	5
	Humboldt Bay	Entire water body	Dioxin Toxic Equivalents	5
			PCBs	5
	Jacoby Creek Watershed	Entire water body	Sediment	5
	Jolly Giant Creek	Jolly Giant Creek	Indicator Bacteria[2]	5
Klamath River HU	Copco Lake	Copco 1	Mercury	5
		Copco 1 and 2	Microcystin	4a
	Iron Gate Reservoir	Entire water body	Mercury	5
			Microcystin	4a

Table 11 (cont). Impaired Water Bodies (Categories 4a, 4b[1], 4c[1] and 5) – The 2012 303(d) List				
Water Body Hydrologic Unit	**Water Body Name**	**Listing Extent**	**Pollutant**	**Category**
Klamath River HU	Lost River HA, Tule Lake and Mt Dome HSAs	Klamath Straits Drain	Mercury	5
		Entire water body	Oxygen, Dissolved	4a
			pH	4a
			Nutrients	4a
	Tule Lake and Lower Klamath Lake National Wildlife Refuge	Entire water body	pH (high)	4a
	Lower HA, Klamath Glen HSA	Mainstem Klamath River	Organic Enrichment/Low Diss. Oxygen	4a
		Entire water body	Nutrients	4a
			Sedimentation/ Siltation	5
			Temperature	4a
	Middle HA and Lower HA, Scott River to Trinity River	China Creek, Grider Creek, Thompson Creek, Walker Creek	Sediment	5
		Mainstem Klamath River	Microcystin	4a
			Organic Enrichment/ Low Dissolved Oxygen	4a
		Entire water body	Nutrients	4a
		Entire water body except: (1) Portuguese Creek and its Tributaries, (2) Cedar Creek and its Tributaries, (3) Twin Valley Creek and its Tributaries, (4) North Fork Dillon Creek and its Tributaries from the headwaters to Vann Creek, (5) Canyon Creek and its Tributaries from the headwaters to confluence with Seiad Creek, (6) Elk Creek and its Tributaries from the headwaters to Bear Creek, (7) Tenmile Creek and its Tributaries, (8) Clear Creek and its Tributaries from the headwaters to the confluence with Tenmile Creek, and (9) Fort Goff Creek and its Tributaries.	Temperature	4a

Table 11 (cont). Impaired Water Bodies (Categories 4a, 4b[1], 4c[1] and 5) – The 2012 303(d) List				
Water Body Hydrologic Unit	**Water Body Name**	**Listing Extent**	**Pollutant**	**Category**
Klamath River HU	Middle HA, Iron Gate Dam to Scott River	Mainstem Klamath River	Organic Enrichment/Low Dissolved Oxygen	4a
			Microcystin	4a
			Aluminum	5
		Entire water body	Nutrients	4a
			Temperature	4a
		Beaver Creek, Cow Creek, Deer Creek, Hungry Creek, West Fork Beaver Creek	Sediment	5
	Middle HA, Oregon to Iron Gate	Mainstem Klamath River	Organic Enrichment/Low Dissolved Oxygen	4a
			Microcystin	4a
		Entire water body	Nutrients	4a
			Temperature	4a
	Salmon River HA (except the Wooley Creek HSA)	Entire water body except: (1) Uncles Creek and its Tributaries, (2) Plummer Creek and its tributaries, (3) the North Fork Salmon River and its Tributaries from the confluence with the Right Hand Fork of the North Fork Salmon River to the downstream boundary of the Marble Mountain Wilderness, (4) Right Hand Fork of the North Fork Salmon River and its tributaries, (5) the North Fork Salmon River and its Tributaries from the headwaters to the confluence with the Right Hand Fork of the North Fork Salmon River, and (6) the South Fork Salmon River from the headwaters to the confluence with Garden Gulch.	Temperature	4a
	Salmon River HA, Wooley Creek HSA	Entire water body except: (1) Wooley Creek and its tributaries from the head waters to the confluence with the North Fork Wooley Ck, (2) Wooley Creek and its Tributaries from the confluence of the North Fork Wooley Creek to Haypress Creek, and (3) North Fork Wooley Creek and its Tributaries.	Temperature	4a

Table 11 (cont). Impaired Water Bodies (Categories 4a, 4b[1], 4c[1] and 5) – The 2012 303(d) List				
Water Body Hydrologic Unit	**Water Body Name**	**Listing Extent**	**Pollutant**	**Category**
Klamath River HU	Scott River HA	Entire water body except: (1) Mill Creek and its Tributaries from the headwaters to the confluence with Etna Creek and (2) Canyon Creek and its Tributaries from the headwaters to the downstream boundary of the Marble Mountain Wilderness.	Sedimentation / Siltation	4a
			Temperature	4a
		Mainstem Scott River	Aluminum	5
			Biostimulatory Conditions	5
			Oxygen, Dissolved	5
		Mainstem Scott River and Shackleford Creek above Campbell Lake	pH	5
	Shasta River HA	Entire water body	Organic Enrichment / Low Dissolved Oxygen	4a
			Temperature	4a
	Shasta River HA, Lake Shastina	Entire water body	Mercury	5
Mad River HU	Mad River	Entire water body	Sedimentation /Siltation	4a
			Temperature	5
			Turbidity	4a
		Mainstem Mad River	Aluminum	
	Norton Creek	Widow White Creek	Indicator Bacteria[2]	5
	Ruth Lake	Entire water body	Mercury	5
Mendocino Coast HU	Albion River HA, Albion River	Entire water body	Sedimentation /Siltation	4a
			Temperature	5
	Big River HA, Berry Gulch	Little North Fork	Temperature	5
		(1) Rocky Gulch, (2) the Little North Fork, and (3) Manley Gulch	Oxygen, Dissolved	5
	Big River HA, Big River	(1) Cookhouse Gulch, (2) Railroad Gulch, and (3) the mainstem Big River	Oxygen, Dissolved	5
		Entire water body	Sedimentation /Siltation	4a
			Temperature	5

Table 11 (cont). Impaired Water Bodies (Categories 4a, 4b[1], 4c[1] and 5) – The 2012 303(d) List				
Water Body Hydrologic Unit	**Water Body Name**	**Listing Extent**	**Pollutant**	**Category**
Mendocino Coast HU	Garcia River HA, Garcia River	Entire water body	Sediment	4a
			Temperature	5
	Gualala River HA, Gualala River	Mainstem Gualala River	Aluminum	5
		Entire water body	Sedimentation /Siltation	4a
		Entire water body except: the Little North Fork Gualala River and its tributaries	Temperature	5
	Navarro River HA	Entire water body	Sedimentation /Siltation	4a
			Temperature	4a
	Navarro River HA, Delta	Entire water body	Sedimentation /Siltation	4a
	Noyo River HA, Noyo River	Entire water body	Sedimentation /Siltation	4a
		(1) Mainstem Noyo River from confluence of Duffy Gulch downstream to confluence with Hayshed Gulch; (2) South Fork Noyo River mainstem from confluence of Kass Creek downstream to confluence with Noyo River mainstem; (3) Little North Fork Noyo River, (4) Duffy Gulch, and (5) Kass Creek tributaries.	Temperature	5
	Noyo River HA, Pudding Creek	Pudding Creek Lagoon	Indicator Bacteria[2]	5
		Mainstem Pudding Creek	Temperature	5
	Rockport HA, Ten Mile River HSA	Entire water body	Sedimentation /Siltation	4a
		Entire water body except: (1) Mill Creek, (2) Gulch 11, (3) Churchman Creek, (4) Little Bear Haven Creek, (5) Buckhorn Creek, (6) Booth Gulch, (7) Smith Creek, (8) Bear Haven Creek, and (9) the Little North Fork Ten Mile River	Temperature	5
Redwood Creek HU	Redwood Creek	Entire water body	Sedimentation /Siltation	4a
		Entire water body except Larry Dam Creek	Temperature	5

Table 11 (cont). Impaired Water Bodies (Categories 4a, 4b[1], 4c[1] and 5) – The 2012 303(d) List				
Water Body Hydrologic Unit	**Water Body Name**	**Listing Extent**	**Pollutant**	**Category**
Russian River HU	Lower Russian River HA, Austin Creek HSA	Entire water body	Sedimentation /Siltation	5
			Temperature	5
	Lower Russian River HA, Guerneville HSA	Mainstem Russian River at Healdsburg Memorial Beach from the Railroad Bridge to Hwy 101	Indicator Bacteria[2]	5
			Specific Conductivity	
			Aluminum	
		Mainstem Russian River at Fife Creek to Dutch Bill Creek	Indicator Bacteria[2]	5
			Aluminum	
		Mainstem Dutch Bill Creek	Indicator Bacteria	5
		Entire water body	Sedimentation /Siltation	5
			Temperature	5
	Lower Russian River HA, Guerneville HSA, Green Valley Creek watershed	Mainstem Atascadero Creek	Indicator Bacteria	5
		Entire water body	Oxygen, Dissolved	5
	Middle Russian River HA, Big Sulphur Creek HSA	Entire water body	Sedimentation /Siltation	5
			Temperature	5
	Middle Russian River HA, Geyserville HSA	Entire water body	Sedimentation /Siltation	5
			Temperature	5
		Stream 1 on Fitch Mountain	Indicator Bacteria[2]	5
		Foss Creek	Diazinon	5
	Middle Russian River HA, Laguna HSA, mainstem Laguna de Santa Rosa	Entire water body	Oxygen, Dissolved	5
			Mercury	5
			Phosphorus	5
			Sedimentation /Siltation	5
			Temperature	5
	Middle Russian River HA, Laguna HSA, tributaries to the Laguna de Santa Rosa (except Santa Rosa Creek and its tributaries)	Mainstem Colgan Creek	Oxygen, Dissolved	5
		Entire water body	Sedimentation /Siltation	5
			Temperature	5

Table 11 (cont). Impaired Water Bodies (Categories 4a, 4b[1], 4c[1] and 5) – The 2012 303(d) List				
Water Body Hydrologic Unit	**Water Body Name**	**Listing Extent**	**Pollutant**	**Category**
Russian River HU	Middle Russian River HA, Mark West HSA, mainstem Mark West Creek downstream of the confluence with the Laguna de Santa Rosa	Entire water body	Aluminum	5
			Oxygen, Dissolved	5
			Phosphorus	5
			Manganese	5
			Sedimentation /Siltation	5
			Temperature	5
	Russian River HU, Middle Russian River HA, Mark West HSA, mainstem Mark West Creek upstream of the confluence with the Laguna de Santa Rosa	Entire water body	Sedimentation /Siltation	5
			Temperature	5
	Middle Russian River HA, Mark West HSA, tributaries to Mark West Creek (except Windsor Creek and its tributaries)	Entire water body	Sedimentation /Siltation	5
			Temperature	5
	Middle Russian River HA, Mark West HSA, Windsor Creek and its tributaries	Entire water body	Sedimentation /Siltation	5
			Temperature	5
	Middle Russian River HA, Santa Rosa HSA, mainstem Santa Rosa Creek	Entire water body	Indicator Bacteria	5
			Sedimentation /Siltation	5
			Temperature	5
	Russian River HU, Middle Russian River HA, Santa Rosa HSA, tributaries to Santa Rosa Creek	Entire water body	Sedimentation /Siltation	5
			Temperature	5
	Middle Russian River HA, Warm Springs HSA	Entire water body	Sedimentation /Siltation	5
			Temperature	5
	Middle Russian River HA, Warms Springs HSA, Lake Sonoma	Entire water body	Mercury	5
	Upper Russian River HA, Coyote Valley HSA	Entire water body	Sedimentation /Siltation	5
			Temperature	5
	Upper Russian River HA, Coyote Valley HSA, Lake Mendocino	Entire water body	Mercury	5

Table 11 (cont). Impaired Water Bodies (Categories 4a, 4b[1], 4c[1] and 5) – The 2012 303(d) List				
Water Body Hydrologic Unit	**Water Body Name**	**Listing Extent**	**Pollutant**	**Category**
Russian River HU	Upper Russian River HA, Forsythe Creek HSA	Entire water body	Sedimentation /Siltation	5
			Temperature	5
	Upper Russian River HA, Ukiah HSA	Mainstem Russian River	Aluminum	5
		Entire water body	Sedimentation /Siltation	5
			Temperature	5
Trinidad HU	Little River HA	(1) Little River and (2) Bullwinkle Creek	Indicator Bacteria[2]	5
	Clam Beach	Entire water body	Indicator Bacteria	5
Trinity River HU	Lower Trinity River HA	Entire water body except: (1) the New River and its tributaries, (2) Big French Creek and its tributaries, (3) the North Fork Trinity River and its tributaries, including the East Fork North Fork Trinity River and its tributaries, and (4) Manzanita Creek and its tributaries.	Sedimentation / Siltation	4a
	Middle Trinity River HA	Entire water body	Sedimentation /Siltation	4a
	South Fork Trinity HA	Entire water body	Sedimentation /Siltation	4a
			Temperature	5
	Trinity Lake (was Claire Engle Lake)	Entire water body	Mercury	5
	Upper Trinity River HA	Entire water body except the Stuart Fork and its tributaries	Sedimentation / Siltation	4a
	Upper Trinity HA, Trinity River, East Fork Trinity River	Entire water body	Mercury	5
			Sedimentation /Siltation	4a

[1] The North Coast Regional Water Quality Control Board does not currently have any water bodies in Category 4b or 4c.

[2] Listing based solely upon fecal coliform data.

Chapter 5: Information Management

5.1 CALIFORNIA WATER QUALITY ASSESSMENT (CALWQA) DATABASE

All data and information, lines of evidence, listing decisions, and beneficial use support ratings for assessed California water bodies are stored in the Regional and State Water Boards' California Water Quality Assessment (CalWQA) database. This database was developed in 2007 for the purpose of storing detailed water quality assessment information. The database is designed so that this information can be exported to the USEPA's Assessment Database at the end of each assessment cycle.

5.2 ADMINISTRATIVE RECORD

The administrative record contains all records used to develop the 2012 Integrated Report. Records are any documents produced, received, owned, or used by the State and Regional Water Boards regardless of media, physical form, or characteristics.

5.3 REFERENCES

Data and information used in lines of evidence come from a variety of sources. References are included to help track the sources of data and information summarized in the lines of evidence. Copies of referenced documents are included as part of the administrative record and are available at:

http://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/303d/

Chapter 6: Public Participation

Revisions to the Integrated Report Category Lists 4a, 4b, 4c, and 5 (the California 303[d] List) require public review and adoption by the Regional Water Board and then adoption by the State Water Board. Category List 1, 2, and 3 are provided as information and will be submitted by the State Water Board to the USEPA. A statewide Category 5 List will require final approval by the USEPA.

Regional Water Board staff intend to hold public workshops to receive comments on the Public Review Draft 2012 Integrated Report on April 8, 2014, in Santa Rosa, CA and on April 9, 2014, in Redding, CA. Staff will respond in writing to all written comments received during the public comment period. The staff responses will be included as a new appendix to the final Staff Report.

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