

LAHONTAN REGIONAL
WATER QUALITY CONTROL BOARD

**CLEAN WATER ACT
SECTIONS 305(b) AND 303(d)
INTEGRATED REPORT
FOR THE LAHONTAN REGION**

PUBLIC REVIEW DRAFT

April 2009

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

EXECUTIVE SUMMARY

This Integrated Report provides the draft recommendations of the staff of the California Regional Water Quality Control Board, Lahontan Region (Lahontan Water Board) for changes to the federal Clean Water Act (CWA) Section 303(d) list of impaired surface water bodies, and for evaluation of beneficial use support pursuant to CWA Section 305(b). The water quality assessment affects surface waters of the United States within the Lahontan Region.

Following a public participation process, the Lahontan Water Board will consider adopting recommendations to the State Water Resources Control Board (State Water Board) for inclusion in a statewide Section 303(d) list. The statewide list will be submitted to and considered for approval by the U.S. Environmental Protection Agency (USEPA). The Lahontan Water Board will not take action on staff's Section 305(b) assessment of non-impaired water bodies, but may provide direction to staff. Public comments will be accepted on Section 305(b) issues and included in the administrative record.

This staff report provides background on the assessment process and the methods used. Results and recommendations are summarized in tables in the appendices. The appendices also include "fact sheets" for specific water body-pollutant combinations that provide more detailed information and links to online data and reference documents.

The assessment focused on data from the Lahontan Region's Surface Water Ambient Monitoring Program (SWAMP), data submitted by stakeholders, and data affecting the status of current (2006) Section 303(d) listings. Additional information and data were available, but time and resource limitations precluded a broader assessment. Even with these limitations, this assessment process was more intensive than the Lahontan Water Board's previous Section 303d list updates. Over 1250 fact sheets, each assessing a unique water body-pollutant combination, were developed during this evaluation. These fact sheets contain over 1700 lines of evidence. There are 3 proposed new 303(d) listings and 13 proposed delistings. Two of the proposed new listings, for arsenic and boron, are for Mesquite Springs (Inyo County). These springs provide drinking water for a campground in Death Valley National Park. The third proposed listing is for total nitrogen (as N) in Cold Creek in the Lake Tahoe Basin. This listing is being addressed by a U.S. Forest Service restoration project. The recommended Section 303(d) list for the Lahontan Region includes 41 water bodies and 90 water body-pollutant combinations.

The Section 305(b) assessment focuses on attainment of "core" beneficial uses related to protection of aquatic life, human health, and recreation. Water bodies are placed in one of five categories depending on whether or not applicable standards are attained, and on the degree of support of core beneficial uses. One of the five categories identifies water body-pollutant combinations with insufficient information for assessment. Most of the data assessed by Lahontan Water Board staff are in the "insufficient information" category due to problems with data quality and/or data quantity.

When adopting recommendations for updated Section 303(d) Lists, Regional Water Boards are required to identify schedules for completion of Total Maximum Daily Loads (TMDLs). Most of the recommended new listings are likely to be addressed through update of water quality standards or alternative regulatory programs, rather than through TMDLs.

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INTRODUCTION

The federal Clean Water Act (CWA) gives states the primary responsibility for protecting and restoring surface water quality. In California, the State Water Resources Control Board (State Water Board) and nine Regional Water Quality Control Boards (Regional Water Boards) are the agencies with the primary responsibility for implementing CWA requirements, including developing and implementing programs to ensure attainment of water quality standards. Water quality standards include designated beneficial uses of water bodies, criteria or water quality objectives (numeric or narrative limits) which are protective of those beneficial uses, and policies to prevent or limit the degradation of water bodies.

Section 305(b) of the CWA requires each state to report biennially to the United States Environmental Protection Agency (USEPA) on the condition of its surface waters. CWA Section 303(d) requires each State to develop, update, and submit to the USEPA a list of those surface water body segments that are "impaired or threatened"- meaning not meeting, or not expected to meet, water quality standards. Impaired water bodies or segments on the 303(d) list must be addressed through the development of Total Maximum Daily Loads (TMDLs), through alternative regulatory programs, or through revisions in standards.

The requirement to develop TMDLs applies to "pollutants" as defined in the CWA. Pollutants include chemicals, sediment, and temperature. TMDLs are not required for impairment due to "pollution." Pollution includes factors such as flow alteration, hydromodification, and alterations in aquatic habitat that are not related to specific pollutants.

Under the 2004 Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List ("Listing Policy"), the nine Regional Water Boards assess information and data, conduct public participation processes and adopt recommendations to the State Water Board for inclusion of specific water body-pollutant combinations ("listings") in a statewide Section 303(d) list. Following additional participation, the State Water Board submits a statewide list to the USEPA. The USEPA may approve or disapprove specific listings, and may add water body-pollutant combinations to the list. The most recent USEPA-approved Section 303(d) List for California is for the 2006 assessment cycle.

In coordination with the Section 303(d) assessment, the State Water Board has historically prepared a statewide Section 305(b) Report with information on the total miles of streams, acres of lakes, and areas of other surface water bodies that support or do not support beneficial uses. For the 2008 cycle, the State Water Board will prepare an Integrated Report addressing both sections of the CWA.

The Section 303(d)/305(b) assessment process is not regulatory and does not require environmental analysis under the California Environmental Quality Act (CEQA). Project-specific CEQA documents will be prepared as appropriate for TMDLs and other regulatory actions used to address water body-pollutant combinations on the Section 303(d) list.

This staff report summarizes Lahontan Water Board staff's recommendations and provides background on the assessment process. The appendices to this report include more detailed "fact sheets" with recommendations for specific water body-pollutant combinations.

DATA AND INFORMATION USED FOR ASSESSMENT

Because of time and resource constraints, not all of the available data could be used in this assessment cycle. The following is a summary of the sources of information and data that were assessed with the resources available.

Solicited information and data. In December 2006 the State and Regional Water Boards solicited data from the public through a formal notification process. Information and data for the Lahontan Region were received through five submittals. Copies of stakeholder-submitted data are included in the electronic administrative record of the assessment process. They include:

- Data for streams and reservoirs in eastern Modoc and eastern Lassen Counties, submitted by the U.S. Bureau of Land Management.
- Data associated with a proposed restoration project in the High Meadows area of the Cold Creek watershed in the Lake Tahoe Basin, submitted by the U.S. Forest Service, Lake Tahoe Basin Management Unit (LTBMU).
- Data for two pools in Keough Hot Ditch, in the Owens River watershed, submitted by the Owens Valley Indian Water Commission.
- Data from the California Department of Pesticide Regulation's online pesticide database for two stations on the West Fork Carson and Upper Truckee Rivers.
- Data for Squaw Creek submitted by the Squaw Valley Public Services District.

The Lahontan Water Board also received a letter from the California Forestry Association (CFA) requesting that action on the assessment (then planned for late 2007) be postponed pending completion of a CFA-sponsored report on the habitat requirements of anadromous fish. The assessment process was subsequently delayed due to time needs for development of an electronic database. The CFA report has not been provided to Lahontan Water Board assessment staff. (Anadromous fish, by definition, migrate between marine and fresh waters, and there are technically no anadromous fish in the Lahontan Region since the Region's fresh waters are not connected to marine waters.)

SWAMP data. State Water Board staff directed the Regional Water Boards to assess all Surface Water Ambient Monitoring Program (SWAMP) data for their regions. Lahontan Region SWAMP data for 30 water bodies or water body segments, collected between 2000 and 2005, were assessed. Other available SWAMP data have not yet undergone

complete quality assurance/quality control verification, and are not included in the assessment.

Several other sources of information and data were used to supplement the data above, or to provide justification for delisting certain water body-pollutant combinations or changing their status regarding the need for TMDLs.

The individual fact sheets for each assessed water body-pollutant combination contain specific references to the data upon which each proposed 303(d) listing decision is based. The electronic versions of these fact sheets also contain Internet links to the files and documents containing the actual data and information used.

WATER QUALITY STANDARDS AND CRITERIA USED FOR ASSESSMENT

Lahontan Water Board staff assessed data using regulatory limits (when available) in preference to nonregulatory water quality criteria. Regulatory limits used include water quality objectives in the Water Quality Control Plan for the Lahontan Basin (Basin Plan), and standards for toxic chemicals promulgated by the USEPA under the California Toxics Rule (40 CFR 131.27). Water Board staff also used the USEPA's National Recommended Water Quality Criteria, and California water quality criteria developed by the Department of Health Services (and now maintained by the Department of Public Health) and the Office of Environmental Health Hazard Assessment (OEHHA). California drinking water standards (Maximum Contaminant Levels or MCLs) apply as regulatory limits to most ambient, untreated surface and ground waters under the narrative water quality objectives for "Chemical Constituents" and "Radioactivity" in the Lahontan Basin Plan. The direction to assess all SWAMP data led to preparation of fact sheets for some constituents such as caffeine that do not have any state or federal standards or criteria.

Most of the Lahontan Region is public land where natural water quality is not expected to be significantly affected by human activities. Very good water quality occurs in many of the high elevation lakes and streams of the eastern Sierra Nevada based on data and observations showing little to no pollutants. Most of the narrative and numeric water quality objectives in the Lahontan Basin Plan are based on protection of natural background water quality, rather than on state or federal criteria for protection of specific beneficial uses. The Basin Plan contains hundreds of numeric site-specific objectives (SSOs) for individual water bodies, for constituents such as Total Dissolved Solids, chloride, nitrogen, phosphorus, and sulfate. Numeric water quality objectives for specific surface water bodies apply upstream to tributaries that do not have SSOs. In many cases the Lahontan Region's SSOs are much more stringent than the state or federal criteria for the same constituents established in connection with specific beneficial uses. Violations of antidegradation-based SSOs do not necessarily indicate that beneficial uses are impaired.

Most of the current SSOs were developed using monitoring data available in the early 1970s. In some cases, individual SSOs are based on very limited data, and they probably do not reflect the full range of seasonal, annual, and interannual variability in constituent

concentrations. Due to this limitation, some Section 303(d) listings for violations of SSOs may be addressed through update of the SSOs (using more recent data to define reference conditions), rather than through TMDLs or other regulatory programs.

DEVELOPMENT OF THE PROPOSED SECTION 303(D) LIST CHANGES

Listing Policy. The State Water Board's 2004 Listing Policy can be viewed through a link on the Lahontan Water Board's web page. The Policy was developed through a stakeholder process and reflects political compromises in addition to statistical and scientific considerations. With certain exceptions, the Listing Policy mandates listing if water quality standards or criteria are violated more than 10 percent of the time. The Policy includes tables (based on a "binomial model") that summarize the numbers of allowable violations associated with specific ranges of sample numbers. The minimum sample numbers required for listing are smaller than those statistically required by the model. As few as two samples with two violations are needed to list for toxicants (defined to include nutrients), and 5 samples with 5 violations are needed to list for "conventional" pollutants. The Listing Policy is structured so as to make it more difficult to delist a water body-pollutant combination than to list it. More samples and fewer violations are required to delist.

The Listing Policy provides alternatives to use of the binomial model in certain situations. For example, data related to an antidegradation-based standard may be assessed by evaluating baseline-trend conditions. Lahontan Water Board staff used the baseline-trend provisions to evaluate compliance with antidegradation-based water quality objectives such as those for temperature, pH, and suspended sediment. The policy also allows the Water Boards to make "weight of evidence" arguments for or against listing and delisting.

For water quality standards that are expressed as annual means (or some other measurement of central tendency) the Listing Policy requires that data be transformed before being assessed. Thus annual mean "datapoints" are treated as if they were single samples when evaluating numbers of violations in relation to numbers of samples. Most of the SSOs in the Lahontan Basin Plan are expressed as annual means.

The Listing Policy allows data to be rejected for use in assessment decisions if acceptable quality assurance/quality control (QA/QC) procedures were not followed, or if the data are not spatially or temporally representative of the water body. Some of the Lahontan Region datasets assessed for 2008 had inadequate documentation of QA/QC. Some of the datasets were not temporally representative; see the discussion of sampling frequency below.

The Regional Water Boards first took action on Section 303(d) list recommendations in the 1990 assessment cycle. Some of the Lahontan Region's current listings date from that time. Assessment criteria have changed over time, and some of the older listings would not be required under the current Listing Policy. Delisting is allowed in these circumstances.

The Listing Policy requires the data assessed and staff recommendations for specific water body-pollutant combinations to be documented in water body "fact sheets." Fact sheets consist of "lines of evidence" (LOEs) summarizing the applicable standards and the data for a water body or segment in relation to a specific beneficial use, and "decisions," including staff recommendations regarding listing and beneficial use support.

Database. All of the fact sheet information and beneficial use support ratings for assessed California water bodies are stored in the Water Boards' California Water Quality Assessment (CalWQA) database. The CalWQA database was developed to store detailed water quality assessment information and to help produce the Integrated Report. The database is designed so that this information can be exported to the USEPA's Assessment Database at the end of each assessment cycle. The assessment fact sheets (contained in Appendix I), as well as the lists of water body segments in each Integrated Report category (contained in Appendices D through H), were produced directly from the CalWQA database's report functions. The electronic versions of the CalWQA fact sheets contain Internet links to the reference documents for water quality objectives and criteria and to the original water quality data being assessed.

The database has limitations which lead to some inconsistencies between the electronic data assessed and the fact sheets. For example, the chemical names in reference files may be different from those in the fact sheets. This arises from the use of chemical synonyms in database picklists.

REGION-SPECIFIC ASSESSMENT ISSUES

Sampling frequency and environmental variability. Most of the data assessed for the 2008 Integrated Report cycle come from the SWAMP program. The 2000-2005 SWAMP samples were collected quarterly due to funding limitations, with the recognition that this sampling frequency was inadequate for full characterization of ambient water quality. Budget constraints and other factors (such dry streams due to drought in the upper Mojave River watershed) resulted in collection of fewer than four SWAMP samples per year per station in many cases. Because most of the Lahontan Region's SSOs are expressed as annual means, the low sampling frequency results in averages based on only one to four samples per year.

Annual averages based on samples collected at quarterly or less frequent intervals do not adequately reflect the range of diel, seasonal and annual variation in pollutant concentrations and the environmental conditions (including streamflows) that affect pollutant concentrations.

In addition to year to year variations between wet and dry years, and normal seasonal temperature extremes, surface waters of the Lahontan Region are affected by extreme climatic and hydrologic conditions that can change over short time periods. Water

chemistry can be affected by rapid spring snowmelt, flooding from rain on snow events, severe summer thunderstorms, desert flash floods, and atmospheric deposition of smoke from wildfires. Seasonal changes in land use, such as the timing of diversions for pasture irrigation and the dates when summer livestock grazing begins and ends can have significant effects on pollutant concentrations.

Natural Sources of Pollutants. The geology and climate of the Lahontan Region lead to locally high concentrations of “pollutants” that come entirely from natural sources. These include arsenic, fluoride, boron and mercury from geothermal and volcanic sources, and radioactive elements from Sierra Nevada granitic soils. Due to evaporative concentration, salts and trace elements such as arsenic can accumulate to very high concentrations over geologic time in internally drained saline lakes and groundwater basins. Because of the undeveloped nature of most of the Lahontan Region and the consequent lack of industrial or agricultural sources of metals and trace elements, it is relatively easy to conclude that violations of standards in geothermally influenced and inland saline waters are due entirely to natural sources.

In 1989, the Lahontan Water Board adopted Basin Plan amendments designating most waters of the Lahontan Region, including waters with poor quality due to natural sources, for the Municipal and Domestic Supply (MUN) beneficial use. The Board’s rationale was that, because of the scarcity of water in much of the Region, even poor quality water might be in demand for treatment and domestic use in the future. Since the Lahontan Basin Plan applies drinking water standards (MCLs) to untreated ambient waters that are designated for the MUN use, the unforeseen result of the designation was the potential for Section 303(d) listing of “naturally impaired” waters.

The USEPA’s aquatic life criteria and California Toxics Rule (CTR) standards do not necessarily reflect the tolerance ranges of aquatic life native to the Lahontan Region. For example, the Total Dissolved Solids concentrations measured in the Amargosa River are high enough to qualify it as a saline water body under USEPA criteria. State Water Board staff directed that the CTR’s saltwater aquatic life standards be used to assess the SWAMP data for the Amargosa River. The aquatic life criteria and CTR standards for salt water were developed using toxicity tests with marine and estuarine organisms. They are probably not appropriate for the aquatic life of inland saline waters. However, unless the Lahontan Water Board adopts water-body specific standards, it must use the most relevant (freshwater or saltwater) CTR aquatic life standards in assessment of “naturally impaired” waters.

In past assessment cycles, Lahontan Water Board staff justified delisting or not listing waters with standards violations due entirely to natural sources of pollutants. The 2004 Listing Policy is silent on natural sources. For the 2008 assessment cycle, State Water Board staff’s direction is that natural sources cannot be used to justify delisting or not listing.

PROPOSED CHANGES TO THE SECTION 303(D) LIST

Appendices A through C show the proposed changes to the Section 303(d) list for the 2008 assessment cycle. The rationales for all Section 303(d) listing and delisting decisions are documented in “fact sheets” in Appendix I. Appendices A, B and C group water bodies by watershed name from north to south in the Lahontan Region. Appendices D through I, produced by the CalWQA database, list water bodies alphabetically by name.

There are three proposed new 303(d) listings (new water body segment-pollutant combinations) and there are 13 delistings proposed. The proposed new listings are for Mesquite Springs in Death Valley National Park (for arsenic and boron from natural sources) and for Cold Creek in the Lake Tahoe Basin (for total nitrogen as N). The proposed changes to the 303(d) list also include category designations to show that TMDLs have been completed since the 303(d) list was last updated in 2006, and that certain listings are being addressed by programs other than TMDLs. Three water bodies have been divided into geographic segments as shown in the “Miscellaneous Changes” list in Appendix J.

The Lahontan Water Board has adopted a sediment TMDL for the Truckee River and two of its tributaries, Bronco Creek and Gray Creek (Nevada County). This TMDL has been approved by the State Water Board. The three listings are shown in Appendix A as listings still needing TMDLs (Integrated Report Category 5A). If the TMDL is approved by the USEPA before the Lahontan Water Board takes action on the Integrated Report recommendations, staff will recommend that the Truckee River and Bronco and Gray Creeks be moved to the Integrated Report category of waters with all listings addressed by USEPA-approved TMDLs (Category 4A).

New listings are not recommended for 53 water body-pollutant combinations where standards are violated according to the statistical provisions of the Listing Policy’s binomial model, but where the data are in Lahontan Water Board staff’s opinion, not temporally representative. Additional reasons for not listing apply in some cases. These water body-pollutant combinations are shown in Appendix C.

TMDL SCHEDULING

The Listing Policy requires that schedules for completion of TMDLs be identified for all listed water body-pollutant combinations, and includes a list of criteria for determining schedules.

For water bodies that still need TMDLs, the proposed TMDL completion dates shown in the fact sheets are the years that TMDLs are expected to be brought before the Lahontan Water Board. (TMDLs are often, but not always, adopted as Basin Plan amendments.) The USEPA expects TMDLs to be completed no later than 13 years after the list update cycle when the water body-pollutant combination was first listed. The TMDLs for listings on the current (2006) 303(d) list are projected to be completed no later than 2019. TMDLs

for proposed new listings in the Lahontan Region are projected to be completed no later than 2021.

Short term priorities for Regional Water Board work on TMDLs are set through five-year workplans for the TMDL program. Priorities and estimated completion dates can change from year to year based on factors such as budget limitations and the need for additional monitoring to confirm impairment and/or provide data for use in TMDL development.

Most of the existing and new listings for the Lahontan Region are unlikely to result in TMDLs. Some of the older listings were based on limited information and data, and additional monitoring may justify delisting. Other listings are likely to be addressed through changes in water quality standards or recognition that the listings are being addressed through alternative regulatory programs.

DETERMINATION OF BENEFICIAL USE SUPPORT AND INTEGRATED REPORT WATERBODY CATEGORIES

The 2008 assessment of beneficial use support under CWA Section 305(b) focuses primarily on a group of “core” beneficial uses, related to human health, aquatic habitat, and recreation, although other beneficial uses may be assessed. For each line of evidence in the CalWQA database, Regional Water Board staff must enter a beneficial use rating of “Fully Supporting”, “Not Supporting” or “Insufficient Information.” The database does not allow the use of the “partially supporting” or “threatened” ratings used in past assessment cycles.

The database uses the beneficial use support ratings together with recommendations regarding listing to place each water body-pollutant combination into one of five Integrated Report categories. Brief descriptions of the categories are as follows:

- Category 1. Evidence shows that all core beneficial uses are supported in relation to the specific pollutants assessed.
- Category 2. Evidence shows that at least some core beneficial uses are supported in relation to the specific pollutants assessed. Other core uses either were not assessed, or the available data were rated insufficient for assessment of beneficial use support.
- Category 3. Evidence is insufficient to make use support determinations in relation to the specific pollutants assessed.
- Category 4A. Evidence shows at least one use is not supported but a TMDL has been developed and approved by the USEPA. (This category applies only to waters with all of their listings addressed by USEPA-approved TMDLs.)
- Category 4B. Evidence shows at least one use is not supported but a TMDL is not needed because an existing regulatory program is reasonably expected to result in

the attainment of the water quality standard within a reasonable, specified time frame. (This category applies only to waters with all of their listings addressed by alternative regulatory programs.)

- Category 4C. Evidence shows at least one use is not supported but a TMDL is not needed because the impairment is not caused by a “pollutant” as defined in the CWA.
- Category 5. Evidence shows at least one use is not supported (and a TMDL is needed). There are subcategories of Category 5 to recognize water bodies with some, but not all listings addressed by USEPA-approved TMDLs or alternative regulatory programs.

Categories 4A, 4B and 5 comprise the Section 303(d) list. For listings in categories 4B and 5C, the fact sheets include projected attainment dates for water quality standards.

The USEPA’s category system equates violations of water quality standards or criteria with non-support of beneficial uses. For water-pollutant combinations where standards or criteria are not violated, Regional Water Boards may use professional judgment to determine whether the available data are adequate for evaluation of use support. In the Lahontan Region, the data assessed are too limited to support conclusions that uses are “fully supported.” For example, most of the assessed waters have no biological data available to evaluate support of aquatic habitat uses. Staff used the “Insufficient Information” use rating for most lines of evidence, and most water bodies are recommended for Category 3. The water body-pollutant combinations in Category 2 are mostly the result of “Fully Supporting” use ratings assigned by State Water Board staff for water body-pollutant combinations that were delisted during the 2006 assessment cycle.

Appendices D through H are reports produced by the CalWQA database that summarize all of the recommended beneficial use category classifications. There are no water bodies recommended for Category 1 or Category 4C.