LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD CLEAN WATER ACT SECTIONS 305(b) AND 303(d) 2018 INTEGRATED REPORT FOR THE LAHONTAN REGION STAFF REPORT

LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD

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Executive Summary

This report contains staff recommendations for updates to the California Integrated Report – Clean Water Act (CWA) Section 303(d) List of Impaired Waters and CWA Section 305(b) Surface Water Quality Assessment (Integrated Report). The recommendations are based on data and information collected from Lahontan Regional Water Quality Control Board (Lahontan Water Board) surface water bodies (rivers and lakes) and submitted prior to the end of the data solicitation period for the 2018 Integrated Report cycle. It includes recommended changes to the CWA Section 303(d) List of Impaired Waters(303(d) List), and, pursuant to CWA section 305(b), analyzes the extent to which all surface waters in the region are meeting beneficial uses.

This staff report provides background on the assessment process and the methods used. Primary data sources include the California Environmental Data Exchange Network (CEDEN), the National Water Information System (NWIS), and the STOrage and RETrieval (STORET) databases (please note, STORET was decommissioned by US EPA in June 2018). Staff assessed all available data for 265 of the regions' 339 surface waters. The assessments are summarized in waterbody fact sheets (see Appendix H). Based on assessments of these data, staff recommends 110 new waterbody/pollutant combinations be listed as impaired and 10 waterbody/pollutant combinations be removed from the CWA Section 303(d) List of Impaired Waters (See Appendix A).

Following the public participation process, the Lahontan Water Board will consider adopting staff recommendations and sending them to the State Water Resources Control Board (State Water Board) for inclusion in the 2018 California Integrated Report.

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List of Acronyms and Abbreviations

Basin Plan	Regional Water Quality Control Plan for the Lahontan Region
BPTCP	Bay Protection and Toxic Cleanup Program
BMI	Benthic Macro Invertebrates
CalWQA	California Water Quality Assessment (Database)
CCAMP	Central Coast Ambient Monitoring Program
CCC	Criteria Continuous Concentration
CCR	California Code of Regulations
CDPH	California Department of Public Health
CFR	Code of Federal Regulations
CEDEN	California Environmental Data Exchange Network
CMC	Criteria Maximum Concentration
CTR	California Toxics Rule
CWA	Clean Water Act
ºC	Degrees Celsius
ºF	Degrees Fahrenheit
FED	Functional Equivalent Document
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DFW	California Department of Fish and Wildlife, formerly Department of Fish and Game (DFG)
DO	Dissolved Oxygen
dw	Dry Weight
ERM	Effects Range Median
HCH	Hexachlorocyclohexane
HSA	Hydrologic Sub Area
HU	Hydrologic Unit
IBI	Index of Biological Integrity
ILRP	Irrigated Lands Regulatory Program
IR	Integrated Report
kg	Kilogram(s)
Listing Policy	Water Quality Control Policy for Developing California's Section 303(d) List
LOE	Line of Evidence
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
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)
MTBE	Methyl Tertiary-butyl Ether
MTRL	Maximum Tissue Residue Level
NAS	National Academy of Sciences
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
NTU	Nephelometric Turbidity Unit
OC	Organic Carbon
NWIS	National Water Information System
OEHHA	California Office of Environmental Health Hazard Assessment
PAH	Polycyclic Aromatic Hydrocarbon
PBDE	Polybrominated Diphenyl Ethers
PCB	Polychlorinated Biphenyl
PEL	Probable Effects Level
pg/L	Picograms per Liter
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RBI	Relative Benthic Index
Regional Water Board	Regional Water Quality Control Board
RDC	Regional Data Center
RL	Reporting Level
SFEI	San Francisco Estuary Institute
SMWP	State Mussel Watch Program
SQG	Sediment Quality Guideline
State Water Board	State Water Resources Control Board
STORET	STOrage and RETrieval Database
SWAMP	Surface Water Ambient Monitoring Program
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TSMP	Toxic Substance Monitoring Program
TSS	Total Suspended Solids
U.S. EPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
WDR	Waste Discharge Requirement
WQO	Water Quality Objective
WQS	Water Quality Standard
ww	Wet Weight

Introduction

The Clean Water Act (CWA) gives states the primary responsibility for protecting and restoring surface water quality. The State Water Board is California's water pollution control agency for all federal purposes (Cal. Wat. Code, § 13160). The State Water Board, along with the nine Regional Water Boards (collectively, the State Water Board and the Regional Water Boards are referred to as the Water Boards) protect and enhance the quality of California's water resources through implementing the Federal Water Pollution Control Act Amendments of 1972, as amended (33 U.S.C. § 1251 et seq.; Clean Water Act, § 101 et seq.), and California's Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.).

Under the CWA, states that administer the CWA must review, make necessary changes to, and submit the CWA section 303(d) List to the U.S. Environmental Protection Agency (U.S. EPA). CWA section 305(b) requires each state to report biennially to U.S. EPA, on the condition of its surface water quality. The U.S. EPA guidance to the states recommends the two reports be integrated (U.S. EPA, 2005a). For California, this "Integrated Report" is called the California Integrated Report and combines the State Water Board's section 303(d) and 305(b) reporting requirements. The purpose of this Staff Report for the 2018 Integrated Report is to describe the assessment process, provide a report of surface water quality for the waterbody segments assessed as required by CWA section 305(b), and provide recommendations for additions, deletions, and other changes to the 303(d) List for the 2018 listing cycle.

1. Water Quality Assessment

The water quality assessment process begins with the evaluation of data collected from surface water quality monitoring activities in California. The data collected are analyzed to determine if a waterbody is meeting or exceeding water quality standards. The attainment of water quality standards is determined by comparing data to objectives, criteria, and guidelines (protective limits). This analysis forms the basis of 303(d) and 305(b) assessments. Whether or not these protective limits are exceeded determines a water segment's ability to support its assigned beneficial uses and whether to recommend listing, or not listing, the waterbody-pollutant combination on the 303(d) List.

1.1. The Listing Policy

Recommendations to place a waterbody segment on the 303(d) List are made in conformance with the Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List, commonly referred to as the Listing Policy (SWRCB, 2015). The Listing Policy establishes a standardized approach for developing California's 303(d) List.

The Listing Policy states that all readily available data and information shall be reviewed. Readily available data and information is defined as data and information that can be submitted to the California Environmental Data Exchange Network (CEDEN),

unless the data type cannot be accepted by CEDEN. Data types that CEDEN cannot accept can be submitted directly to the State Water Board following a procedure established during the data solicitation process.

The Listing Policy also establishes requirements for data quality, data quantity, and administration of the listing process. Listing and delisting factors 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; degradation of aquatic life populations and communities; trends in water quality; and weight of evidence.

The Listing Policy requires the water quality assessments and listing decisions to be documented in waterbody Fact Sheets. Fact Sheets contain Lines of Evidence (LOEs) for each data type which are used to make listing decisions for each waterbody-pollutant combination. The Fact Sheets supporting the 2018 Integrated Report for waterbodies in the Lahontan Region are provided in Appendix H.

1.2. Integrated Report Cycles

The Integrated Report is released in "cycles" with each cycle occurring every two years, on even numbered years. Each Integrated Report cycle consists primarily of assessments from the three Regional Boards that are "on-cycle" (see Table 1 below). The other six Regional Boards that are "off-cycle" may also assess new high-priority data and make new listing or delisting decisions.

Table 1: Integrated Report Schedule

Year	Regional Boards
2018	North Coast (Region 1) Lahontan (Region 6) Colorado River Basin (Region 7)
2020	Central Coast (Region 3) Central Valley (Region 5) San Diego (Region 9)
2022	San Francisco Bay (Region 2) Los Angeles (Region 4) Santa Ana (Region 8)

1.3. Data Solicitation

On November 3, 2016, the State Water Board solicited data from the public with the Notice of Public Solicitation of Water Quality Data and Information for the California Integrated Report sent to interested parties subscribed to the Integrated Report e-mail list. This Notice listed the types of data that would be accepted and described the procedure for submitting data for consideration for the Integrated Report. For the 2018

Integrated Report cycle, data were required to be submitted via the California Environmental Exchange Data Network (CEDEN), unless as otherwise noted in the solicitation. Data submitted prior to May 3, 2017, were considered for the 2018 cycle.

During the data solicitation period, data and information collected from Lahontan Water Board surface waters were received from monitoring programs including:

a. Surface Water Ambient Monitoring Program (SWAMP)
b. Alpine Watershed Group (AWG) Monitoring Program
c. Truckee River Watershed Council (TRWC) Monitoring Program
d. Tahoe Regional Planning Agency
e. U.S. Forest Service, Inyo National Forest
f. U.S. Forest Service, San Bernardino National Forest
g. Upper Owens River Water Quality Program (collected by California Trout)
h. EPA National Lakes and Streams Assessment data from the STOrage and RETrieval Database (STORET)
i. Water quality data collected by USGS from the National Water Information System (NWIS)
j. Other existing and readily available water quality data and information reported by local, state, and federal agencies (including receiving water monitoring data from discharger monitoring reports), citizen monitoring groups, academic institutions, and the public.

1.4. Data Processing

Staff from the Lahontan Water Board worked collaboratively with staff from the State Water Board to process and evaluate data and information as required by the Water Quality Control Policy for Developing California's Clean Water Act 303(d) List (Listing Policy).

All readily available data and information were considered; however, only data supported by a Quality Assurance Project Plan were used as primary lines of evidence to make determinations of water quality standards attainment. In the absence of quality assurance documentation, data were used only as supporting evidence and not the basis of a listing decision.

Data were aggregated by waterbody segments and assessments were performed by pollutant on each waterbody segment. Waterbodies were segmented to account for hydrologic features or as described in the Basin Plans. Some waterbodies may have been re-segmented, split into additional segments, or had a modification to the waterbody name since the last 303(d) List was approved. In some cases, waterbodies were re-segmented to reflect watershed land uses. Examples of such re-segmentation and the effect on 303(d) listings are described below in section 2.4 of the staff report.

Temporal representation of data was assessed using the requirements and guidance of the Listing Policy. The available data were used to represent concentrations during the averaging period associated with the particular pollutant and water quality objective, as

required by section 6.1.5.6 of the Listing Policy. For example, if only one data point was available during a 4-day period, it was used to represent the four-day average concentration for that period.

1.5. Water Quality Standards Used in Assessments

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

Beneficial uses of Lahontan waterbodies are identified in Table 2-1 of the Water Quality Control Plan for the Lahontan Region (Basin Plan).

Staff assessed data using regulatory limits when available. The most common regulatory limits used include water quality objectives in the Basin Plan or any statewide Water Quality Control Plans applicable to the waterbody, and criteria for toxic chemicals promulgated by the U.S. EPA under the California Toxics Rule (40 C.F.R §131.27). When numeric regulatory limits were not available, evaluation guidelines were used to interpret narrative water quality objectives.

Evaluation guidelines are selected in conformance with section 6.1.3 of the Listing Policy. Staff selected the appropriate USEPA or OEHHA guidelines. All guidelines are contained in the reference report in Appendix J and in the appropriate waterbody fact sheets. Depending on the beneficial use and narrative standard, the following Listing Policy considerations were used in the selection of evaluation guidelines:

1. Sediment Quality Guidelines for Marine, Estuarine, and Freshwater Sediments:
Sediment quality guidelines published in peer-reviewed literature or developed by state or federal agencies were used when applicable. Acceptable guidelines included selected values (e.g., effects range-median, probable effects level, probable effects concentration), and other sediment quality guidelines. Only those sediment guidelines that are predictive of sediment toxicity were used (i.e., those guidelines that have been shown in published studies to be predictive of sediment toxicity in 50 percent or more of the samples analyzed).

2. Evaluation Guidelines for Protection from the Consumption of Fish and Shellfish:
Staff selected evaluation guidelines published by U.S. EPA or Office of Environmental Health and Hazard Assessment (OEHHA). Maximum Tissue Residue Levels (MTRLs) and Elevated Data Levels (EDLs) were not used to evaluate fish or shellfish tissue data.

3. Evaluation Guidelines for Protection of Aquatic Life from Bioaccumulation of Toxic Substances:

Staff selected evaluation guidelines for the protection of aquatic life published by a variety of sources, including the National Academy of Science, OEHHA, U.S. EPA, and in some cases, academic studies published in scientific journals.

2. Region-Specific Issues

2.1. Lahontan Region Bacteria Assessments

There are two bacteria water quality objectives (WQO) in the Lahontan Region and staff used both to evaluate bacteria data for the 2018 Integrated Report. Fecal coliform has been the indicator of WQO impairment in Lahontan waters since 1975. For the 2018 assessment cycle, fecal coliform data were evaluated using the bacteria WQO stipulated in the Water Quality Control Plan for the Lahontan Region (Basin Plan). Fecal coliform assessments were used to determine support of the municipal and domestic supply (MUN) beneficial use. In August 2018, the State Water Board adopted a water quality objective with *Escherichia Coli* (*E. coli*) as the fecal indicator bacterium to support of the water contact recreation (REC-1) beneficial use. This standard applies to all waters designated REC-1 in California. The REC-1 *E. coli* WQO was approved by USEPA on March 22, 2019. As such, for the 2018 Integrated Report, *E. coli* data collected in the Lahontan Region have been evaluated to determine the support of the REC-1 beneficial use for the regions' surface waters. The bacteria standards applied for the 2018 Integrated Report assessments are listed in Table 2.

Table 2: Bacteria water quality standards used for the Lahontan 2018 Integrated Report

Indicator	Log-mean[1] threshold	10% exceedance threshold[2]
Fecal Coliform	20 CFU[3a]/ 100 mL	40 CFU/ 100 mL
	Geometric mean[4] threshold	**Statistical Threshold Value[5]**
E. coli	100 CFU / 100 mL	320 CFU/ 100 mL

[1] A log-mean is defined in the Basin Plan as ideally being based on a minimum of not less than five samples collected as evenly spaced as practicable during any 30-day period. However, a log mean concentration exceeding 20/100 ml for any 30-day period shall indicate violation of this objective even if fewer than five samples were collected.
[2] No more than 10 percent of all samples collected during any 30-day period can exceed the threshold
[3] Colony Forming Units (CFU)
[4] The geometric mean is defined as the nth root of the product of n numbers. The geometric mean is calculated using all samples collected in the same six-week period.
[5] There should not be greater than a 10 percent excursion frequency of the selected Statistical Threshold Value (STV) magnitude in the same 30-day interval.

Fecal coliform and *E. coli* bacteria inhabit the intestinal tract of a wide array of warm- and cold-blooded organisms, and these bacteria are shed in great numbers in the feces of the hosts which they inhabit. By and large, fecal coliform and *E. coli* are commensal bacteria which do not pose a health risk to human beings (with the notable exception of *E. coli* H7-157, which can pose a risk to human health). Detection of fecal coliform and *E. coli* in surface water can indicate the presence of numerous harmful fecal pathogens such as *Giardia*, *Salmonella*, *Shigella* and *Cryptosporidium*. Both fecal coliform and *E. coli* are detected in water samples by inexpensive and easily-repeatable tests, and because these bacteria are shed in great numbers and are easy to detect, water quality managers track concentrations of both fecal coliform and *E. coli* in surface waters to indicate potential contamination from fecal material and possible risk of human illness.

Headwater streams flowing eastward from the Sierra Nevada Crest typically have low concentrations of indicator bacteria detectable in water quality samples, although these concentrations usually increase as the waterbodies flow downgradient into the lower elevation portions of the region. Waterbodies in lower elevation areas are typically subject to greater impacts from anthropogenic activities and from natural sources, and these waters also receive proportionally more recreational activity when compared to headwater sites. At headwater sites with little or no regular anthropogenic disturbance and little bacterial impacts from local biota, the available indicator bacteria data indicates that Lahontan waters are of exceptional quality, by far attaining the statewide *E. coli* standard for the REC-1 beneficial use and also typically attaining the Basin Plan WQO for fecal coliform. The Lahontan Region thus requires a mechanism to ensure the protection of the regions' high-quality waters which is more protective than the SWRCB REC-1 promulgation.

For the 2018 Integrated Report cycle, fecal coliform bacteria data has been assessed for the protection of the MUN beneficial use in recognition of the high-quality waters found in the region and because of the use of such waters for domestic supply. All waters in the Lahontan Region are designated MUN unless the designation has been specifically removed for a waterbody.

Waters which will be newly listed for *Indicator Bacteria* based on MUN/fecal coliform beneficial use/pollutant combination are listed in Table 3. Table 4 identifies waters which will be newly listed for Indicator Bacteria based on both the REC-1/*E. coli* and MUN/fecal coliform pollutant combinations. No waterbodies will be listed based solely on the REC-1/*E. coli* beneficial use/pollutant combination, as waters with Indicator Bacteria concentrations above the REC-1 *E. coli* WQO will invariably have Indicator Bacteria concentrations above the Lahontan Basin Plan fecal coliform standard, provided data exists for both indicator bacteria.

Table 3: Decisions to 'List' a waterbody based on fecal coliform/MUN beneficial use assessments, Lahontan Region 2018 Integrated Report

Waterbody segment name	County	Decision ID	Impairment Listing Year
Bishop B-1 Drain	Inyo	102035	2018
Bishop Canal	Inyo	102033	2018
Bishop Creek Canal	Inyo	102036	2018
Carson River, East Fork	Alpine	72820	2018[1]
Cedar Creek	Modoc	70418	2018[1]
Convict Creek	Mono	101955	2018
East Tributary to Griff Creek	Placer	102570	2018
Hot Creek	Mono	103695	2018
Hot Creek (unknown tributary)	Mono	102974	2018
Horseshoe Meadow Creek	Inyo	103688	2018
Jensen Slu (aka Brockman Slu)	Lassen	102940	2018
Little Truckee River	Nevada	102771	2018
Little Walker River	Mono	102795	2018
Lone Pine Creek	Inyo	102745	2018
Long Valley Creek	Lassen	102719	2018
Mammoth Creek (Old Mammoth Road to HWY 395)	Mono	79572	2018[1]
Mid-branch Buckeye Creek	Mono	102528	2018
Milberry Creek	Alpine	102514	2018
Mill Creek (trib. to West Walker River)	Mono	102502	2018
Owens River (Upper)	Mono/Inyo	102388	2018
Reversed Creek	Mono	102318	2018
Round Valley Creek	Inyo	102305	2018
Sardine Creek	Mono	102278	2018
Topaz Lake	Mono	101649	2018
Upper Truckee River (below Christmas Valley)	El Dorado	101524	2018
Susan River (Willard Creek to Susanville)	Lassen	70389	2018[1]
Susan River (Susanville to Honey Lake)	Lassen	102590	2018
Virginia Creek	Mono	101458	2018
Wolf Creek	Alpine	101102	2018

[1] Prior to the 2018 assessment cycle these decisions were 'Do Not List'. New data has been assessed for this cycle.

Table 4: Decisions to 'List' a waterbody based on E. coli/REC-1 *and* fecal coliform/MUN beneficial use assessments, Lahontan Region 2018 Integrated Report

Waterbody segment name	County	Decision ID	Listing Year
Bishop Creek Forks (N & S Forks to bifurcation)	Inyo	102037	2018
Bridgeport Reservoir	Mono	103507	2018
Griff Creek	Placer	103204	2018
Horton Creek	Inyo	103691	2018
Hot Creek (Walker)	Mono	103703	2018
Markleeville Creek	Alpine	102648	2018
Owens River (Long HA)	Mono	102411	2018
Pine Creek	Inyo	102348	2018

The Lahontan Region Surface Water Ambient Monitoring Program (SWAMP) has been collecting fecal coliform and *E. coli* data simultaneously since 2011, and all the waters assessed for bacteria impairment during the 2018 cycle have been assessed for both fecal coliform and *E. coli* analytes.

Table 5 lists waters that were determined to be impaired for indicator bacteria during a previous assessment cycle and will remain on the 303(d) list of impaired waters as a result of the assessment of new bacteria data submitted for the 2018 cycle.

Table 5: 'Do Not Delist' indicator bacteria decisions for the Lahontan 2018 Integrated Report

Waterbody segment name (County)	Decision ID	Year first listed on 303(d) list	Indicator supporting original listing	Indicator supporting 2018 listing
Buckeye Creek (Mono Co.)	69082	2002	Fecal coliform	Fecal coliform
Carson River, West Fork (Woodfords to Stateline) (Alpine Co.)	70167	2002	Fecal coliform	Fecal coliform
East Walker River, above Bridgeport Reservoir (Mono Co.)	69501	2002	Fecal coliform	*E. coli* and fecal coliform
Indian Creek (Alpine Co.)	69066	2002	Fecal coliform	No new data

Waterbody segment name (County)	Decision ID	Year first listed on 303(d) list	Indicator supporting original listing	Indicator supporting 2018 listing
Robinson Creek (Twin Lakes to HWY 395) (Mono Co.)	76458	2002	Fecal coliform	Fecal coliform
Robinson Creek (HWY 395 to Bridgeport Reservoir) (Mono Co.)	76595	2002	Fecal coliform	Fecal coliform
Tallac Creek (below HWY 89) (El Dorado Co.)	80024	2002	Fecal coliform	No new data
Swauger Creek (Mono Co.)	76545	2002	Fecal coliform	*E. coli* and fecal coliform

Table 6 lists waters that are recommended for removal from the 303(d) list of impaired waters for indicator bacteria based on assessment of new data submitted for the 2018 cycle.

Table 6: Indicator bacteria decisions which remain 'Delist' in the Lahontan 2018 Integrated Report

Waterbody segment name (County)	Decision ID	Year waterbody removed from 303(d) list	Factors supporting delisting	2018 list status
Big Meadow Creek (Alpine Co.)	75808	2010	Fecal Coliform data indicates that applicable WQO[1] attained	Delist from 303(d) List
Carson River, West Fork (Hope Valley to Woodfords) (Alpine Co.)	79455	2018	The waterbody was remapped, and old data was reassessed using the new mapping.	Delist from 303(d) List
Trout Creek (above HWY 50) (El Dorado Co.)	75495	2018	Indicator bacteria (*E. coli* & fecal coliform) data indicates attainment of the WQO	Delist from 303(d) List
Truckee River, Upper (above Christmas Valley) (El Dorado Co.)	76608	2010	Fecal Coliform data indicates that applicable WQO[1] attained	Delist from 303(d) List

[1] Water Quality Objective (WQO)

2.2. Lahontan Interstate Waterbodies

The Lahontan Region shares a border with the states of Nevada and Oregon and there are several waterbodies that cross the CA-NV state line, the most notable of which is Lake Tahoe. No waterbodies included in the Integrated Report assessment cross the CA-OR state line. The Basin Plan contains language that addresses coordination between the Lahontan Water Board and adjoining states with respect to planning and regulatory activities for interstate waters. For example, Chapter 3 (Water Quality Objectives) includes the following statement: "The Lahontan Regional Board has a responsibility to ensure that waters leaving the state meet the water quality standards of the receiving state." Additionally, language in Chapter 4 (Implementation) emphasizes that Lahontan Water Board staff should consider the applicable water quality standards of the other state and request the opportunity to review and comment on revisions of another state's water quality control plans that impact interstate waters. This section also recognizes that many of the water quality objectives in the Basin Plan are based on historical water quality and anti-degradation considerations and should therefore be adequate to prevent the violation of another state's standards.

Lake Tahoe

Lake Tahoe is an Outstanding National Resource Water (ONRW) and an interstate waterbody. ONRWs are defined in the federal Clean Water Act as high-quality waters of the United States that are designated as an outstanding national resource and, in the Lahontan Region, this designation applies both to Lake Tahoe and Mono Lake. ONRWs are afforded the greatest protection under the Clean Water Act through implementation of the federal Antidegradation policy (40 CFR Section 131.12), which prohibits the lowering of water quality in an ONRW except to accommodate limited activities that result in temporary and short-term water quality change.

For Lake Tahoe, there is an independent bi-state agency, the Tahoe Regional Planning Agency (TRPA), that is largely responsible for managing environmental quality in the Tahoe Region while providing opportunities for growth and development. The TRPA jurisdiction includes the Lake Tahoe watershed, commonly referred as "Hydrologic Unit," except for the southernmost portion of the watershed in Alpine County, and includes a small portion of the Truckee River Hydrologic Unit. According to the Basin Plan, TRPA is directed to ensure attainment of the most stringent state or federal standards for a variety of environmental parameters in addition to water quality. TRPA works in conjunction with the Lahontan Water Board, Nevada Division of Environmental Protection, and other entities to ensure compliance with the Lake Tahoe TMDL, which was adopted by the Lahontan Water Board in 2010 and approved by the State Water Board and U.S. EPA in 2011. The Lake Tahoe TMDL addresses nutrient and fine sediment impairments identified in California as well as impairments identified in Nevada that are all linked to the deep-water clarity of the lake. The Lake Tahoe TMDL covers not only the lake itself, but also addresses the tributary streams that flow into Lake Tahoe in the surrounding watershed.

Interstate Rivers and Other Waterbodies

Major rivers that cross from California into Nevada include the Truckee River, the East and West Forks of the Carson River, and the East and West Forks of the Walker River. The Amargosa River, located to the east and south of Death Valley, originates in Nye County, Nevada and enters California in southeastern Inyo County. Additionally, Topaz Lake, located in the Walker River watershed, spans the state line, as do several other creeks including Indian Creek in Alpine County and Bodie Creek in Mono County. An important aspect of assessing these waterbodies is to consider what impairments are identified on Nevada's most recent 303(d)/305(b) Integrated Report from 2014, which provides additional context for the assessment. The Nevada Division of Environmental Protection is currently working on the 2018 rendition of the Nevada Integrated Report. Table 7 identifies the interstate waterbodies and indicates those that are, or will be, listed under Category 5 as impaired in either California or Nevada as of the 2018 list, and identifies those waterbodies that have approved TMDLs in either state near the state line. For the West Fork Carson River, only impairments in the lower Woodfords to state line segment are shown.

Table 7: List of waterbodies that cross the California-Nevada state line

Waterbody (County)	CA Impairments	NV Impairments	Notes
Smoke Creek (Lassen)	None – Limited water quality data available	Iron, Turbidity, Total Phosphorus E. coli, Temperature	None
Truckee River (Nevada, Placer & Sierra)	Nitrate (New) Sediment/siltation	Temperature	CA TMDL for Sediment/siltation
Lake Tahoe (El Dorado & Placer)	Nutrients, fine sediment	Clarity, Dissolved Oxygen, Plankton Count, Soluble Phosphorus, Inorganic Nitrogen	Bi-state CA-NV TMDL for nutrients, fine sediment for Lake Tahoe and tributaries
West Fork Carson River (Alpine)	Bacteria, Nitrogen, Nitrate, Iron, Sulfate, TDS, Total Kjeldahl Nitrogen, Turbidity	Total Phosphorus E. coli Temperature	NV TMDL for Phosphorus, TSS and Turbidity CA US EPA Vision Project
Indian Creek (Alpine)	Bacteria	Total Phosphorus, Temperature	CA TMDL for Indian Creek Reservoir for Phosphorus
East Fork Carson River (Alpine)	Boron, Bacteria, Dissolved Oxygen, Total Phosphorus, Sulfate, Turbidity	Temperature	NV TMDL for Phosphorus, TSS and Turbidity

Waterbody (County)	CA Impairments	NV Impairments	Notes
Bryant Creek (Alpine)	Metals	TDS, Temperature	NV TMDL for Iron, Nickel, TSS and Turbidity CA CERCLA Leviathan Mine
Topaz Lake (Mono)	Bacteria, Mercury	Total Phosphorus, Mercury	None
West Fork Walker River (Mono Co.)	Boron, Chloride, Total Phosphorus, TDS, Turbidity	Temperature	None
Desert Creek (Mono)	None	None	NV De-listed 2014 for Phosphorus – WQS met
Sweet Water Creek (Mono)	None	None	NV De-listed 2014 for Phosphorus – WQS met
East Fork Walker River (Mono)	Above Bridgeport Res.: Bacteria Below Bridgeport Res.: Arsenic, Dissolved Oxygen, Manganese, Total Nitrogen, Total Phosphorus, Turbidity	Temperature, Mercury, Total Phosphorus	NV TMDL for TSS Bridgeport Grazing Waiver to address impairment above Bridgeport Reservoir
Rough Creek (Mono)	None – No WQ data available	Iron, Mercury, Total Phosphorus	None
Bodie Creek (Mono)	Mercury – Based upon older fish tissue data	Mercury, Total Phosphorus	None
Amargosa River (Inyo)	Arsenic	Not assessed	No beneficial uses assigned in Nevada

There are some water quality issues in some of the Lahontan Regions' interstate waterbodies that are either being investigated, or still require additional investigation, to better understand and address the impairments. Such is the case for the East Fork Walker River and both forks of the Carson River. Lahontan Water Board staff is in the process of drafting a water quality improvement plan for the West Fork Carson River in collaboration with regional stakeholders. This project is known as the West Fork Carson Vision Project. For the East Fork Walker River, the Bridgeport Grazing Waiver has been adopted by the Lahontan Water Board to address some of bacteria and nutrient impairments in the California portion of the river, although this project is designed to address impairments upstream of the Bridgeport Reservoir in the Bridgeport Valley.

There are also waterbodies that have impairments identified in Nevada where there is very little or no water quality data available in the upstream segment in California, such as for Rough Creek and Bodie Creek in Mono County. Additional sampling efforts for these creeks would be beneficial to determine whether the California portions of the waterbodies contribute to the impairments observed in Nevada.

2.3 Bishop Creek Segmentation

Bishop Creek in Inyo County has been segmented for the 2018 assessment cycle to reflect the overarching land uses which occur in the watershed. The headwaters of the creek pass through a largely undisturbed alpine environment as they flow eastward from the Sierra Nevada crest, after which they enter a series of lakes and reservoirs. Outflow from two of these reservoirs are used to power five Southern California Edison (SCE) hydroelectric facilities located in the mid-elevation portions of the creek as it flows across National Forest lands. Once past the SCE powerhouses, Bishop Creek flows across an alluvial fan where it bifurcates into north and south forks, and each channel passes through a mixture of rural yet increasingly developed lands towards the city of Bishop. These channels of Bishop Creek are heavily diverted for agricultural and residential uses, with several active grazing allotments and associated irrigation diversions, as well as many other residential diversions for backyard irrigation, found in the area. This heavily diverted segment of the creek also passes through Bishop Paiute Tribe lands, located upstream of and adjacent to the western boundary of the city of Bishop. After passing through Paiute tribal lands and the city of Bishop, water from the respective north and south channels enters Bishop Creek Canal to be diverted for irrigation at various points to the south and east of Bishop, eventually entering the Owens River and flowing south for municipal and industrial uses in Southern California. Table 8 contains the details of the Bishop Creek segmentation. A searchable map is available on the Lahontan Integrated Report website.

Table 8: Bishop Creek segmentation information

Waterbody segment name	Segment begins	Segment ends	Land uses
Middle Fork Bishop Creek	Outlet of Lake Sabrina	Confluence with South Fork Bishop Creek	National Forest lands, recreation, rural development
South Fork Bishop Creek	Outlet of South Lake	Confluence with Middle Fork Bishop Creek	National Forest lands, recreation, rural development
Bishop Creek (Intake 2)	Confluence of Middle & South Forks of Bishop Creek	Bifurcation of Bishop Creek Forks	National Forest lands, recreation
Bishop Creek Forks (North and South Forks below bifurcation)	Bifurcation of Bishop Creek Forks	Confluence with Bishop Creek Canal – north fork @ HWY 6, south	Grazing, agricultural irrigation, rural residential, urban residential, urban

Waterbody segment name	Segment begins	Segment ends	Land uses
		fork downstream of Bishop City Park	
Bishop Creek Canal	Confluence with north fork of Bishop Creek Forks	Dissipates in agricultural land south of Warm Springs Road	Urban, urban residential, grazing, agricultural irrigation
Bishop Canal	Diversion from Owens River near Bishop Creek road	Confluence with north fork of Bishop Creek Forks near HWY's 6 & 395	Grazing, agricultural irrigation
Bishop B-1 Drain	Irrigation diversion from south fork of Bishop Creek Forks west of Sierra Street in Bishop	Confluence with north fork of Bishop Creek Forks near HWY's 6 & 395	Grazing, agricultural irrigation

The headwaters of Bishop Creek are comprised of over a dozen small high alpine creeks and lakes flowing from the Sierra Nevada crest, bounded by Mt. Humphreys to the north and Aperture Peak to the south. These headwaters flow to three lakes – North Lake, Lake Sabrina and South Lake – the latter two of which serve as water storage facilities for SCE. Water flowing from North Lake converges with the Middle Fork Bishop Creek flowing from Lake Sabrina near the hamlet of Aspendell, eventually meeting the South Fork Bishop Creek as it flows from South Lake near Highway 168 to form the main stem of Bishop Creek. The upper portions of the waterbody, including parts of the main stem Bishop Creek, are in the Inyo National forest and are subject to predominately recreational uses, enjoying only limited or no anthropogenic development for large sections of their reaches. The assessed water quality in these portions can be described as excellent. As the main stem Bishop Creek flows from National Forest lands it crosses the alluvial fan at the base of the Sierra and bifurcates into a segment called Bishop Creek Forks. Downstream of the bifurcation, the lands around Bishop Creek become increasingly used for grazing purposes, water diversion and urban development, and these land uses begin to manifest impacts to the high-quality waters of the creek. Grazing and urban development, and their associated water quality impacts, continue through the city of Bishop until the various channels and diversions meet Bishop Creek Canal and flow toward the Owens River.

As described in Table 8, waters in the Bishop Creek watershed are segmented into seven parts. Both Middle Fork Bishop Creek and South Fork Bishop Creek are segmented from their respective reservoir outlets to their confluence with one another near Highway 168, and both reaches remain predominantly in their natural state. The third segment, Bishop Creek (Intake 2), begins at the confluence of the Middle and South forks and ends at the bifurcation at the base of the alluvial fan. This reach is also

characterized by minimal land use impacts and water quality can be described as good to excellent. The fourth segment, Bishop Creek Forks, comprises the north and south forks of Bishop Creek, which flow from the bifurcation below the alluvial fan through a collection of suburban neighborhoods, Bishop Paiute tribal lands, and the city of Bishop, to their respective confluences with Bishop Creek Canal downstream of the city of Bishop. The Bishop Creek Forks segment is heavily diverted for agricultural, grazing, and residential backyard uses, and is impacted by urban nonpoint source pollution at various locations in and around the city of Bishop boundary. In many neighborhoods, the north and south forks are diverted through backyards as decorative or irrigation waters, and hobby-ranching uses also exist on some properties in these neighborhoods. Water quality data from this segment of the creek indicates increasing bacterial degradation moving downstream, and the Bishop Creek Forks segment has been delineated based on the identified land uses' impacts and potential implementation measures to improve water quality in the reach.

Bishop Creek Canal, the fifth reach in the Bishop Creek system, has been segmented based on its function as a receiving water for Bishop Creek Forks, and because this reach is the receiving water for diversions from the Owens River to the north, as well as for several other smaller irrigation ditches flowing from grazing lands around the city of Bishop. Two of these diversion channels, Bishop B-1 Drain and Bishop Canal, comprise the sixth and seventh reaches of the Bishop Creek system that have been segmented for the 2018 assessment cycle. The Bishop Canal reach has somewhat unique hydrologic connectivity to the Owens River, while the Bishop B-1 Drain is impacted by predominately grazing-related land uses.

2.4 Susan River and West Fork Carson River Re-segmentation

Prior to initiating the 2018 Integrated Report data assessment, staff developed a proposal to re-segment the Susan River and the West Fork Carson River (WFCR) to better represent the predominant land uses occurring along certain segments of these waterbodies. Both rivers were already divided into three segments for the Integrated Report and the proposed changes simply altered the locations where the segments were divided to line up most appropriately with corresponding land uses. Table 9 identifies the changes made to the segmentation for the Susan River and WFCR and denotes the predominant land use categories that apply to the resulting segments.

Table 9 Re-segmentation of the a) Susan River and b) West Fork Carson River for 2018 Integrated Report

a)

Susan River	Upper Segment	Middle Segment	Lower Segment
Before	Headwaters to Susanville	Susanville to Litchfield	Litchfield to Honey Lake
After	Headwaters to Willard Creek	Willard Creek to Susanville (Commercial St.)	Susanville to Honey Lake
Land use	National Forest, Recreation	Urban	Agriculture (ranching)

b)

West Fork Carson River	Upper Segment	Middle Segment	Lower Segment
Before	Headwaters to Woodfords	Woodfords to Paynesville	Paynesville to Nevada state line
After	Headwaters to Hope Valley	Hope Valley to Woodfords	Woodfords to Nevada state line
Land Use	Recreation	Recreation, residential	Recreation, agriculture (ranching)

The re-segmentation required that the lines of evidence associated with previous decisions needed, in some cases, to be relocated to an adjoining segment. This led to changes to several listings from previous cycles, including instances where a segment previously listed in Category 5 for a given contaminant is proposed for administrative de-listing during the 2018 cycle. A de-listing occurs when the data upon which the original listing relied is now associated with an adjoining segment and no additional data is available for that river segment. Table 10 summarizes the resulting listings for Category 5 after assessing the data based on the re-segmentation of the Susan River and WFCR.

Table 10 Listing changes associated with re-segmentation of a) Susan River and b) West Fork Carson River

a)

Susan River	Headwaters to Willard Creek	Willard Creek to Susanville (Commercial St.)	Susanville to Honey Lake
	Move to Category 3 – Mercury Delist from Category 5 – Unknown Toxicity	Move to Category 3 – Mercury	Move to Category 3 – Mercury

b)

West Fork Carson River	Headwaters to Hope Valley	Hope Valley to Woodfords	Woodfords to Nevada state line
	Delist from Category 5 – Chloride, Nitrogen, TDS, Turbidity Retain in Category 5 – Nitrate, Phosphorus, Sulfates Add to Category 5 – TKN	Retain in Category 5 – Chloride, Nitrogen, Nitrate, Sulfates, TDS, Turbidity Add to Category 5 – Phosphorus, TKN	Add to Category 5 – Iron (new data) Add to Category 5 – Nitrogen, Nitrate, [1]Sulfates, [1]TDS, [1]TKN, [1]Turbidity

[1] Indicates instances where new data, together with the re-segmenting of the WFCR, result in new Category 5 listing.

Review of Susan River Listing Changes

The listing changes for the Susan River are for mercury and toxicity decisions. The entire length of the Susan River was first listed for mercury in 2006 based on fish tissue data collected in 1999 as part of the Toxic Substances Monitoring Program. For the next Integrated Report cycle, the Susan River was split into three segments and the original mercury listing was copied to all three segments. Until the 2018 listing cycle, no additional mercury fish tissue data were available to document the extent of potential mercury impairment for the Susan River. Fish tissue sampling occurred in 2016, which resulted in new mercury data for the middle segment (Willard Creek to Susanville); however, the effort to collect fish in the upper Headwaters to Willard Creek segment and the lower Susanville to Honey Lake segment was not as successful. No fish were collected in the upper segment and only one fish was analyzed for mercury for the lower segment, which is insufficient for determining impairment, as discussed, below.

For the 2018 cycle, there are two factors that affected the assessment of mercury for the Susan River. One is the re-segmentation of the river, which resulted in two exceedances for mercury in a single segment becoming single exceedances in two adjoining segments. This occurred because two of the original fish tissue sampling locations were both initially located within a single segment, but are now located within adjoining segments due to re-segmentation. The other factor is that a new statewide water quality objective for mercury in fish tissue was adopted in 2017. State Water Board guidance regarding how to assess mercury tissue data with the new objective provides that a single exceedance that is based on less than eight fish is not sufficient to support a decision to place a waterbody into Category 5. The outcome of the Susan River mercury assessment is that there is now only one exceedance of the mercury objective in each of the three river segments and each one is based on fewer than eight fish. Consequently, for the 2018 cycle all three segments of the Susan River are proposed to be placed in Category 3 (probable impairment) due to reassessment of mercury tissue data against the new objective and the re-segmentation of the river.

In similar fashion, the re-segmentation of the Susan River changes the assessment outcome for unknown toxicity. Unknown toxicity was observed in water samples collected near Susanville in what was previously the headwater segment of the river, but what has now been re-segmented as the middle segment (Willard Creek to Susanville). The result of the re-segmentation is that the Category 5 listing for Unknown Toxicity for the 'Headwaters to Willard Creek' segment of the Susan River will be removed using an administrative delisting as there is now no data or information to show impairment due to toxicity in this portion of the river. The 303(d) listing for toxicity is retained in the two downstream segments (i.e., Willard Creek to Susanville and Susanville to Honey Lake).

Review of West Fork Carson River Changes

There are several changes to the assessment decisions for the WFCR that result from re-segmentation of the river. In general, many of the Category 5 listings are shifted from the upper and middle river segments to the middle and lower segments due to the location where the water quality data was collected. This means that the uppermost 'Headwaters to Hope Valley' segment will be administratively delisted for the analytes shown in Table 10. In the furthest downstream 'Woodfords to state line' segment of the WFCR, several of the new Category 5 listings are due to both the re-segmentation, which caused some of the lines of evidence to be moved from the middle to the lower segment, and to the availability of new water quality data for the 2018 assessment cycle. There are also new Category 5 listings for Total Kjeldahl Nitrogen (TKN) for all three segments of the WFCR which is due to re-grouping of the available data because of the re-segmentation.

Sediment Decisions affected by the re-segmentation of the Susan River and West Fork Carson River

For both the Susan River and the WFCR, there are a set of "Do not list" decisions for toxic constituents that are based on sediment samples collected at locations which are now in a different segment. The lines of evidence that correspond with this data have

been re-located to the correct river segment and new decisions based on this data are now correctly located. For the Susan River, the decisions that have been moved are based on samples collected near Litchfield, which was originally part of the middle segment, and is now included in the lower Susanville to Honey Lake segment. For the WFCR, the decisions are based on samples collected near Paynesville, which was originally part of the middle segment and is now included in the lower Woodfords to NV state line segment.

Due to the way the database used to create the Integrated Report operates, the old decisions have not yet been retired so they will still appear in the current assessment. These old decisions for both the Susan River and the WFCR located in what is now the wrong river segment will be retired during the next cycle. A list of these decisions is included in Appendix I.

2.5 Late Addition of Data for the Upper Owens River Valley

In March 2019, staff from the Water Quality Assessment Unit at the State Water Board alerted Lahontan Water Board staff that a data set collected from waterbodies tributary to the Upper Owens River in Mono County by California Trout (CalTrout) in 2012 and 2013 had been inadvertently left out of the 2018 assessments. The omission was the result of an administrative error at the Regional Data Center (RDC) responsible for uploading the data set to the California Environmental Data Exchange Network (CEDEN). The mistake was first uncovered in early 2019 when CalTrout staff queried the CEDEN database looking for the Upper Owens River data set and could not find it. CalTrout staff alerted State Water Board staff about the missing data, and the issue with the RDC was discovered during the subsequent investigation.

The data solicitation period for the 2018 Integrated Report officially closed in May of 2017. Usually, monitoring data submitted to the Water Board after the data solicitation window for an assessment cycle has already closed is not assessed during that cycle. These data would instead be assessed during the next assessment cycle. In this case, however, the stakeholder submitted their data in good faith before the solicitation period closed, and the data was not included in the initial assessments because of an administrative error. Lahontan Water Board staff decided it was important to review the contents of the CalTrout data set before deciding whether to include it in the 2018 report. Waterbody/pollutant combinations contained in the data set are listed in Table 11.

Table 11: Waterbody/pollutant combinations submitted to the Water Board by California Trout

Waterbody segment	Analyte
Coldwater Creek	Total Manganese, Total Mercury Nitate+Nitrite as N, Total Nitrogen, Total Phosphorus
Hot Creek (Mono)	Total Manganese, Total Mercury Nitate+Nitrite as N, Total Nitrogen, Total Phosphorus
Lake Mary	Total Manganese, Total Mercury Nitate+Nitrite as N, Total Nitrogen, Total Phosphorus

Waterbody segment	Analyte
Mammoth Creek (Headwaters to Twin Lakes Outlet)	Total Manganese, Total Mercury Nitate+Nitrite as N, Total Nitrogen, Total Phosphorus
Mammoth Creek (Twin Lakes Outlet to Old Mammoth Road)	Total Manganese, Total Mercury Nitate+Nitrite as N, Total Nitrogen, Total Phosphorus
Mammoth Creek (Old Mammoth Road to Highway 395)	Total Manganese, Total Mercury Nitate+Nitrite as N, Total Nitrogen, Total Phosphorus
Mill City tributary	Total Manganese, Total Mercury
Valentine tributaries (Central, North, South)	Total Manganese, Total Mercury

Upon review of the CalTrout data set, Lahontan Water Board staff decided that it was pertinent to include these data in the 2018 assessments because of previous and pending listings for mercury on Mammoth Creek and Hot Creek. The two segments of Mammoth Creek below the Twin Lakes outlet had been listed as impaired for mercury contamination during a previous assessment cycle, and for the 2018 cycle mercury fish tissue data collected by the State Water Board was submitted for Hot Creek (Mono Co.). The tissue data collected from Hot Creek indicate that the waterbody is impaired by mercury for the Commercial and Sportfishing (COMM) and Wildlife Habitat (WILD) beneficial uses. Staff decided that it would be important to include the CalTrout mercury data in the 2018 assessment cycle because of the human health and ecological risks posed by this pollutant, and because there is existing evidence that the Upper Owens River watershed is impacted by mercury contamination. Staff decided to write lines of evidence based on the CalTrout mercury data to improve the quality of the mercury decisions for Hot Creek and Mammoth Creek, and once this decision was taken staff also thought it necessary to write lines of evidence for the other pollutants contained in the data set.

Coldstream Creek, Lake Mary, Mill City tributary, and the Valentine tributaries have not yet been mapped for Integrated Report assessment purposes. Because there are technical constraints to mapping these waterbodies for the 2018 report, these waterbodies will be mapped after the 2018 cycle ends. Data submitted by CalTrout for these waterbodies will be assessed once they have been mapped in the CalWQA database. Lahontan Water Board staff also found that CalTrout had attributed mercury water-column data to Mammoth Creek (Old Mammoth Road to Highway 395), which was in fact collected from Hot Creek (Mono Co.) based on the collection location coordinates contained in the data set. Mammoth Creek is a direct tributary of Hot Creek, and the divide between the two waterbodies is found at the confluence of a minor tributary with Mammoth Creek approximately 100 meters downstream of the Highway 395 bridge crossing. Staff thus assessed these data for the Hot Creek (Mono Co.) segment. Similarly, CalTrout attributed some of their data to Twin Lakes, which are two lakes that sit in the middle of the Mammoth Creek (Headwaters to Twin Lakes Outlet) waterbody segment. Lahontan Water Board staff found that the CalTrout monitoring site in this case was in the same location as a regular SWAMP site established to monitor the Mammoth Creek waterbody segment downstream of the outlet of Twin Lakes, and

staff decided that these CalTrout data should be attributed to the Mammoth Creek (Headwaters to Twin Lakes Outlet) segment because of the monitoring location.

For Mammoth Creek and Hot Creek, all data submitted to the Water Board by CalTrout has been assessed for the 2018 report. The inclusion of these data was used to help support decisions for the waterbody/pollutant combinations listed in Table 11. Data pertaining to the other waterbodies which have yet to be mapped for assessment purposes (delineated by the absence of a waterbody ID in Table 11) will be assessed during the next assessment cycle once waterbody mapping is completed.

2.6 Crowley Lake (Mono County) Mercury Listing

Lahontan Water Board staff recommend the addition of Crowley Lake reservoir, a recreation and sport fishing destination in Mono County, to the 303(d) list of impaired waters because fish tissue data collected from the reservoir indicates that statewide WQOs for mercury are being exceeded. Staff evaluated fish tissue data to determine attainment of the Wildlife Habitat (WILD) and the Commercial and Sportfishing (COMM) beneficial uses. Tissue from fish of different size classes is used in each beneficial use evaluation. Fish of a size class considered sportfish are assessed for the COMM beneficial use. Smaller fish, of a size class considered prey fish, are assessed for the WILD beneficial use.

In May 2017 the State Water Board adopted mercury WQOs (Resolution No. 2017-0027) which were approved by U.S. EPA on July 14th, 2017. The action applies to all inland surface waters, enclosed bays and estuaries in California that have the applicable beneficial uses. The mercury WQOs that protect people who consume fish apply to waters in the Lahontan Region with the COMM beneficial use designation[6]. The mercury WQOs that protect wildlife that consume fish apply to waters with the COLD, WILD, WARM, SAL and RARE beneficial uses[7]. The mercury WQOs consist of five parts: a Sport Fish WQO, a Tribal Subsistence Fishing WQO, a Subsistence Fishing WQO, a Prey Fish WQO, and a California Least Tern Prey Fish WQO. In the Lahontan Region, two of the five WQOs currently apply to surface waters: the Sport Fish WQO for the protection of the COMM beneficial use, and the Prey Fish WQO for the protection of the WILD beneficial use. The Sport Fish WQO for the protection of the COMM beneficial use is an average concentration of methylmercury in fish tissue are not to exceed 0.2 mg/Kg ww. The Sport Fish WQO applies to either trophic level three or trophic level four fish, whichever is highest in the waterbody, and is based on total fish length. Fish length

[6] The mercury WQOs also afford protections for people who consume fish from waters with the Tribal Tradition and Culture (CUL), Tribal Subsistence Fishing (T-SUB) and Subsistence Fishing (SUB) beneficial uses, although none of these beneficial uses apply to Lahontan Region surface waters currently. During the 2018 Triennial Review, the Lahontan Water Board identified the addition of the CUL, T-SUB and SUB beneficial uses to the Basin Plan as a planning priority.

[7] The mercury WQOs also apply to waters designated MAR and EST beneficial uses, although none such designations exist in the Lahontan Region.

is determined by DFW legal size limits for the species caught. The Prey Fish WQO uses average methylmercury concentrations in fish tissue which are not to exceed 0.05 mg/Kg ww. The Prey Fish WQO applies to any species fish between 50 and 150 mm in total length collected during the breeding season. The breeding season is defined as February 1 through July 31, unless site specific information indicates another appropriate breeding period.

In addition to the mercury WQOs for the fish tissue, there are also mercury water-column WQOs and mercury sediment WQOs in effect in the Lahontan Region. The mercury water-column WQO for the protection of human health from the consumption of water is 0.050 ug/L, and is incorporated by reference into the Lahontan Basin Plan from the California Toxics Rule (CTR, 2000). The mercury sediment WQO is 1.06 mg/Kg dw and is incorporated by reference into the Lahontan Basin Plan from MacDonald et al., 2000. For Crowley Lake reservoir, no mercury water-column or mercury sediment data is available for assessment at this time.

Fish tissue data collected from Crowley Lake reservoir show that the WILD beneficial use is impaired by mercury. Mercury concentrations recovered from fish tissue exceed the applicable mercury WQOs for the protection of WILD, and therefore staff recommend that Crowley Lake Reservoir be added to the 303(d) List because of this impairment. Staff make this recommendation in accordance with section 3.1 of the Listing Policy.

Fish tissue data indicating impairment of the WILD beneficial use were collected in August 2012 by State Water Board staff performing monitoring for the SWAMP Wildlife Contamination in Lakes and Reservoirs project. Eight Rainbow Trout were collected and composited into one annual average sample, the concentration of which exceeded the Prey Fish WQO for the protection of the WILD beneficial use. Fish tissue data assessed using the Prey Fish WQO to determine compliance with the WILD beneficial use also indicate that the Sport Fish WQO is being exceeded.

For the COMM beneficial use assessment, two Rainbow trout collected in 2012 met the California DFW size regulations (>18 inches in length) for the reservoir. The individual fish were composited into one annual average sample, the concentration of which exceeded the statewide Sport Fish WQO for the COMM beneficial use. A minimum of eight individual fish per composite sample are required to make a full determination regarding the attainment or impairment of a beneficial use. Because there are only two fish meeting the CDFW size requirements, which comprise the composite sample available for the 2018 assessment, there is insufficient information to determine if the COMM beneficial use designated to Crowley Lake is impaired by mercury from this line of evidence alone.

Staff considered the weight of evidence, consistent with Section 3.11 of the Listing Policy, for evaluation of available mercury information from Crowley Lake, including fish tissue data, investigative studies related to mercury contamination in bird populations local to Crowley Lake, and water quality data collected from tributary streams to the

waterbody. If all available lines of evidence developed for the waterbody, other pertinent ancillary information related to the waterbody, and mercury water quality data from two tributaries to Crowley Lake are considered together, the weight of evidence indicates that the COMM beneficial use is likely not being attained.

Evaluation of mercury concentrations from Rainbow Trout which fall outside of the California DFW fish length regulations for Crowley Lake reveal contamination above the statewide mercury Sport Fish WQO. Mercury data recovered from Rainbow Trout collected in 2012 ranged from 0.05 mg/kg wet weight to 0.60 mg/kg wet weight, but only three of ten individual fish attained the mercury water quality objective, and the average concentration across all individuals was 0.33 mg/kg. The water quality objective for the protection of the COMM beneficial use is 0.20 mg/kg ww. The two fish that met the DFW length requirements had mercury concentrations of 0.404 mg/kg and 0.519 mg/kg, respectively. Considering that the lake is a sportfish destination, Lahontan Water Board staff has identified there is a mercury human health concern present in Crowley Lake that prevents attainment of beneficial uses. Accordingly, Water Board staff recommends that the waterbody be listed as impaired by mercury in the 2018 Integrated Report.

In addition to the available fish tissue data, staff considered a 2015 USGS investigation into mercury exposure for piscivorous birds in California Lakes. Crowley Lake was included in the study, which concluded that fish contaminated with mercury in the reservoir were likely contributing to elevated mercury levels found in the grebe populations living in the vicinity. The USGS study, titled ‘Estimating exposure of piscivorous birds and sport fish to mercury In California lakes using prey fish monitoring’, is available as a reference at the end of this staff report.

Staff also considered mercury impairments in the Upper Owens River watershed, of which Crowley Lake is a receiving water, when making the recommendation to list the reservoir. Mercury data available for two tributaries to the reservoir, Mammoth Creek and Hot Creek, support the inclusion of both the creeks to the 303(d) list of impaired waters. Mammoth Creek and Hot Creek have mercury fish tissue and mercury water column data available for assessment, and both data types indicate exceedances of the applicable water quality objectives for the municipal and domestic supply (MUN), WILD, and COMM beneficial uses. Segments of Mammoth Creek have been listed as impaired by mercury during previous iterations of the Integrated Report and will remain on the 303(d) list as a result of the 2018 assessments, while Hot Creek is a new listing for the 2018 cycle. Staff considered the impairments of these tributary waterbodies as ancillary evidence supporting impairment of Crowley Lake in accordance with section 3.11 of the Listing Policy. Mercury contamination in the Upper Owens River watershed is a high priority for further investigation for the Lahontan Region, and staff plans to collect mercury data from all affected waterbodies before the 2024 assessment cycle.

2.7 "TMDL Integrated Report Special Study" Data Analysis

Generally, data are assessed for the Integrated Report according to the project under which each group of data is collected. This approach allows staff to develop lines of evidence from individual monitoring efforts and reduces data comparability issues that arise due to variation between projects in how samples are collected, handled, and analyzed. Functionally, this means that for every pollutant decision Water Board staff makes for a waterbody there can be many lines of evidence based on data from many monitoring projects, all of which are evaluated together during the decision-making process, but which remain separate lines of evidence in the assessment database. For most cases, this approach offers a clear and uniform way to assess data and track its source for the Integrated Report.

One of the outcomes of the Lahontan Region 2012 Integrated Report was the identification of waterbody/pollutant combinations which warranted further investigation so that seemingly potential water quality issues could be better characterized. Many of the creeks that were prioritized for more investigation could be visited during the regular SWAMP sampling operations. However, some of the prioritized waterbody/pollutant combinations could not be visited with adequate frequency by the SWAMP sampling staff; and therefore, Lahontan Water Board staff planned and implemented a supplemental monitoring program to capture the waterbody/pollutant combinations that SWAMP could not include as part of its regular business. This supplemental monitoring effort, called the "TMDL Integrated Report Special Study," followed the same standard operating procedures as SWAMP, used the same Quality Assurance Project Plan, and in many cases, SWAMP staff collected the data. Data were also processed by the same SWAMP laboratories. The main difference between "TMDL Integrated Report Special Study" and SWAMP-collected data were the funding sources for the collection and analyses of the two monitoring efforts.

For the 2018 assessments, Water Board staff combined the "TMDL Integrated Report Special Study" data with regional SWAMP-collected data for the relevant waterbody/pollutant combinations. Staff chose to combine these projects for assessment purposes because of the close similarities between each monitoring effort, and because the intention behind the "TMDL Integrated Report Special Study" was to supplement business-as-usual SWAMP monitoring with a view to building a more robust data set for the waterbody/pollutant combinations in question. The combination of the two projects' data for the 2018 assessments allowed staff to write lines of evidence which reflected the intentions of the data collection, use one continuous data set as opposed to two temporally overlapping ones; and therefore, make decisions based on the best information available to Water Board staff. Table 12, below, details the waterbody/pollutant combinations which were affected by the combination of these two monitoring programs.

Table 12: Waterbody/pollutant combinations sampled under "TMDL Integrated Report Special Study" & business-as-usual SWAMP sampling

Waterbody segment	County	Pollutant
Carson River, East Fork	Alpine	Turbidity
East Walker River, below Bridgeport Reservoir	Mono	Turbidity, Total Dissolved Solids
Mammoth Creek (Headwaters to Twin Lake outlet)	Mono	Total Dissolved Solids
Mammoth Creek (Old Mammoth Road to Highway 395)	Mono	Turbidity, Total Dissolved Solids
Susan River (Headwaters to Willard Creek)	Lassen	Nitrate+Nitrite as N, Nitrate, Nitrite, Total Nitrogen, Total Kjeldahl Nitrogen, Total Dissolved Solids, Turbidity
Susan River (Willard Creek to Susanville)	Lassen	Nitrate+Nitrite as N, Nitrate, Nitrite, Total Nitrogen, Total Kjeldahl Nitrogen, Total Dissolved Solids, Turbidity
Susan River (Susanville to Honey Lake)	Lassen	Nitrate+Nitrite as N, Nitrate, Nitrite, Total Nitrogen, Total Kjeldahl Nitrogen, Total Dissolved Solids, Turbidity

2.8 Lahontan Region Water Quality Projects

The Lahontan Water Board is developing water quality improvement plans for the West Fork of the Carson River, Alpine County and Bishop Creek, Inyo County. Both plans are scheduled to be completed by 2022. Lahontan Water Board staff identified the impairments to these waters through data collected by the SWAMP program, and via data submitted to the Water Board by regional stakeholders for assessment in previous iterations of the Integrated Report. In 2015, Lahontan Water Board staff identified both waterbodies as suitable candidates for USEPA's new collaborative framework for implementing the CWA Section 303(d) program called the Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program (The Vision). The Vision describes a watershed-wide plan focused on improving water quality and provides flexibility in using available tools beyond TMDLs to attain water quality restoration and protection. Table 13 contains information pertaining to impairments in the West Fork Carson River and Bishop Creek which will be addressed by each Vision Project.

Table 13: Water Quality impairments that will be addressed by the West Fork Carson River and Bishop Creek Vision Projects

Waterbody segment name	Pollutant (year listed in parentheses[1])
Carson River, West Fork (Headwaters to Hope Valley)	Nitrogen, Nitrate (2010); Phosphorus (2006); Total Kjeldahl Nitrogen (2018);
Carson River, West Fork (Hope Valley to Woodfords)	Chloride (2016); Nitrogen (2006); Nitrogen, Nitrate (2016); Phosphorus (2018; Sulfates (2012); Total Dissolved Solids (2012); Total Kjeldahl Nitrogen (2018); Turbidity (2012);
Carson River, West Fork (Woodfords to Stateline)	Indicator Bacteria (2006); Iron (2018); Nitrogen (2018); Nitrogen, Nitrate (2018); Sulfates (2018); Total Dissolved Solids (2018); Total Kjeldahl Nitrogen (2018); Turbidity (2018);
Bishop Creek Forks (North and South Forks below bifurcation)	Indicator Bacteria (2018);
Bishop Creek Canal	Indicator Bacteria (2018);

[1] The West Fork Carson River has been re-segmented to reflect overarching land use and topography in the watershed. One of the by-products of re-segmentation are updates to the listing year of a pollutant. The year listed in parentheses reflects the most recent listing for the segment/pollutant combination.

Both Vision Projects are scheduled for completion by 2022. The projects have been identified in the Integrated Report Staff Report because their scheduled completion date is before the next Integrated Report that the Lahontan Region is scheduled to participate in.

2.9 Waterbodies with Updated TMDL Completion Dates

When one or more beneficial uses designated to a waterbody are determined to be impaired by a pollutant and the waterbody is added to the 303(d) list, staff must also identify a date in the future by which time a TMDL will be adopted for the waterbody to address the beneficial use impairment. The expected TMDL completion date is saved with the waterbody/pollutant combination decision to list the waterbody. USEPA suggests that states complete TMDLs for listed waterbodies within thirteen years of the decision to 303(d) list the waterbody.

In the Lahontan Region, the large volume of 303(d) listed waters coupled with limited staff resources to address those listings prevent TMDLs from being written for every 303(d)-listed waterbody within the USEPA-recommended thirteen-year period. Consequently, there are multiple regional surface waters that have been added to the 303(d) list whose expected TMDL completion dates have already passed. For the 2018 listing cycle, Lahontan Water Board staff have updated those TMDL completion dates for listed waterbodies that have already passed, or which will imminently pass, to reflect regional priorities and the available staff resources to address specific impairments. Staff determined imminently expiring TMDL completion dates as those which will pass before the next Integrated Report the Lahontan Region is scheduled for in 2024. Lahontan Water Board staff identified that listed waterbodies with now-past or soon-to-

pass TMDL completion dates could be a source of confusion for those reviewing the proposed 2018 Integrated Report. Waterbodies with past or soon-to-pass TMDL completion dates were prioritized following the 'Prioritization of Lahontan Region 303(d) List: Guidelines for Prioritizing Listed Water Bodies', which was adopted by the Lahontan Water Board in July 2015. The document is available on the Lahontan Water Board TMDL webpage.

Past or expiring TMDL completion dates were updated using a high/medium/low priority strategy found in the prioritization document. Using the prioritization strategy as a guideline for the 2018 Integrated Report, Lahontan Water Board staff has designated that high priority waters be addressed within six years, medium priority waters be addressed within nine years, and low priority waters to be addressed within twelve years. Waters have been prioritized based on human health concerns, source water protection, and available resources to address impairments. Currently, the Lahontan Region is engaged in the development of two TMDL-alternative projects in the Bishop Creek and West Fork Carson watersheds to address water quality impairments. These 'Vision Projects' will be completed by 2022. The prioritization strategy used for the 2018 report updates can be found in Table 14. A complete list of waterbodies with updated TMDL completion dates can be found in Tables 15 and 16.

Table 14: Prioritization strategy for updating TMDL completion dates

Impairment Priority	Number of years for TMDL completion	Number of impairments with updated TMDL completion dates
High	6	13
Medium	9	18
Low	12	46

Table 15: Waterbodies with new data for the 2018 assessment cycle & with updated TMDL completion dates

Waterbody (County)	Pollutant	New data assessed for 2018 cycle?	TMDL completion date prior to 2018 cycle	TMDL Priority	TMDL completion date updated to:
Carson River, West (Hope Valley to Woodfords) (Alpine)	Chloride, Nitrogen, Nitrate	Yes	2019/2022	High	2022
Carson River, West (Woodfords to Stateline) (Alpine)	Indicator Bacteria	Yes	2019/2023	High	2022
Mammoth Creek (Old Mammoth Road to Highway 395) (Mono)	Mercury	Yes	2019/2021	High	2025
Mammoth Creek (Twin Lakes Outlet to Old Mammoth Road) (Mono)	Manganese, Mercury	Yes	2019/2021	High	2025
Silverwood Lake (San Bernardino)	Mercury	Yes	2021	High	2025
Susan River (Headwaters to Willard Creek) (Lassen)	Nitrogen, TDS	Yes	2021	Medium	2028
Susan River (Susanville to Honey Lake) (Lassen)	Toxicity	Yes	2019	Medium	2028
Susan River (Willard Creek to Susanville) (Lassen)	Total Dissolved Solids (TDS), Unknown Toxicity	Yes	2019/2021	Medium	2028
Carson River, East Fork (Alpine)	TDS	Yes	2021	Medium	2028
East Walker River, below Bridgeport Reservoir (Mono)	Manganese, Turbidity	Yes	2021	Medium	2028
Indian Creek (Alpine)	Indicator Bacteria	Yes	2019	Medium	2028

Waterbody (County)	Pollutant	New data assessed for 2018 cycle?	TMDL completion date prior to 2018 cycle	TMDL Priority	TMDL completion date updated to:
Mammoth Creek (Headwaters to Twin Lakes Outlet) (Mono)	TDS	Yes	2021	Medium	2028
Mammoth Creek (Old Mammoth Road to Highway 395) (Mono)	TDS	Yes	2021	Medium	2028
Amargosa River (NV border to Tecopa) (Inyo)	Arsenic	Yes	2021	Low	2031
Amargosa River (Tecopa to Upper Canyon) (Inyo)	Arsenic	Yes	2012	Low	2031
Bidwell Creek (Modoc)	TDS	Yes	2019	Low	2031
Hilton Creek (Mono)	Dissolved Oxygen	Yes	2021	Low	2031
Mojave River (Upper Narrows to Lower Narrows) (San Bernardino)	Fluoride, Sulfates, TDS	Yes	2021	Low	2031
Sheep Creek (San Bernardino)	Nitrate, TDS	Yes	2021	Low	2031
Trout Creek (below Highway 50) (El Dorado)	Indicator Bacteria	Yes	2019	Low	2031

Table 16: Waterbodies with no new data for the 2018 assessment cycle & with updated TMDL completion dates

Waterbody (County)	Pollutant	New data assessed for 2018 cycle?	TMDL completion date prior to 2018 cycle	TMDL Priority	TMDL completion date updated to:
Mammoth Creek, unnamed tributary (Mono)	Arsenic, Mercury	No	2012/2021	High	2025
Donner Lake (Nevada)	PCBs	No	2019	High	2025
Eagle Lake (Lassen)	Nitrogen, Phosphorus	No	2019	High	2025
Crowley Lake (Mono)	Ammonia, Dissolved Oxygen	No	2019	Medium	2028
Bijou Park Creek (El Dorado)	Oil/Grease, Iron	No	2011	Medium	2028
Haiwee Reservoir (Inyo)	Copper	No	2004	Medium	2028
Heavenly Valley Creek (source to USFS boundary) (El Dorado)	Chloride	No	2011/2019	Medium	2028
Littlerock Reservoir (Los Angeles)	Manganese	No	2021	Medium	2028
Bodie Creek (Mono)	Mercury	No	2019	Low	2031
Bridgeport Reservoir (Mono)	Nitrogen, Phosphorus, Sedimentation/siltation	No	2006	Low	2031
Blackwood Creek (Placer)	Iron	No	2022	Low	2031
Crab Creek (San Bernardino)	TDS	No	2021	Low	2031
East Walker River, above Bridgeport Reservoir	Sedimentation/siltation	No	2019	Low	2031
General Creek (Placer)	Iron	No	2019	Low	2031
Holcomb Creek (San Bernardino)	TDS	No	2021	Low	2031
Honey Lake (Lassen)	Arsenic, Salinity/TDS	No	2019	Low	2031
Honey Lake wetlands (Lassen)	Metals	No	2019	Low	2031

Waterbody (County)	Pollutant	New data assessed for 2018 cycle?	TMDL completion date prior to 2018 cycle	TMDL Priority	TMDL completion date updated to:
Honey Lake wildlife management ponds (Lassen)	Metals, Trace Elements, Salinity/TDS	No	2019	Low	2031
Mesquite Springs (Inyo)	Arsenic, Boron	No	2021	Low	2031
Mill Creek (Modoc)	TDS	No	2021	Low	2031
Mojave River (Mojave Forks Reservoir Outlet to Upper Narrows) (San Bernardino)	Fluoride	No	2021	Low	2031
Mojave River (Upper Narrows to Lower Narrows) (San Bernardino)	Fluoride, Sulfates, TDS	No	2021	Low	2031
Monitor Creek (Alpine)	Aluminum, Iron, Manganese, Silver, Sulfates, TDS	No	2019	Low	2031
Pleasant Valley Reservoir (Inyo)	Organic enrichment/Low Dissolved Oxygen	No	2019	Low	2031
Swauger Creek (Mono)	Phosphorus	No	2019	Low	2031
Trout Creek (above Highway 50) (El Dorado)	Iron	No	2019	Low	2031
Trout Creek (below Highway 50) (El Dorado)	Iron	No	2019	Low	2031
Upper Truckee River (above Christmas Valley) (El Dorado.)	Iron	No	2019	Low	2031
Upper Truckee River (below Christmas Valley) (El Dorado)	Iron	No	2019	Low	2031
Ward Creek (Placer)	Iron	No	2015	Low	2031
Wolf Creek (Alpine)	Sedimentation/siltation	No	2019	Low	2031

2.10 Waterbody Fact Sheets

A waterbody Fact Sheet is comprised of Lines of Evidence (LOEs) and beneficial use support decisions based on available water quality data and information collected within the waterbody. A LOE was developed for each unique combination of a waterbody, pollutant, matrix, and fraction. The term "matrix" refers to the sample medium used in an LOE. The "fraction" is the analyzed portion of the sample medium. For example, if the matrix of a sample is water, then the fraction can be either the total constituent or the dissolved ratio of the constituent.

A beneficial use support decision was made for each pollutant based on the available LOEs for that pollutant. Each decision is given a rating of supporting, not supporting, or insufficient information based on assessment of beneficial use support. If the number of samples exceeding regulatory limits was greater than the allowable exceedance count, the pollutant combination is rated as not supporting (impaired) and recommended for a 303(d) listing. In each waterbody, data for multiple pollutants may be assessed, resulting in more than one decision.

A Fact Sheet is prepared for each waterbody summarizing the decisions and supporting LOEs for each waterbody. Figure 1 below illustrates how LOEs and decisions are combined into the waterbody Fact Sheets. Detailed Fact Sheets for all waterbodies assessed for the 2018 Integrated Report are available in Appendix H.

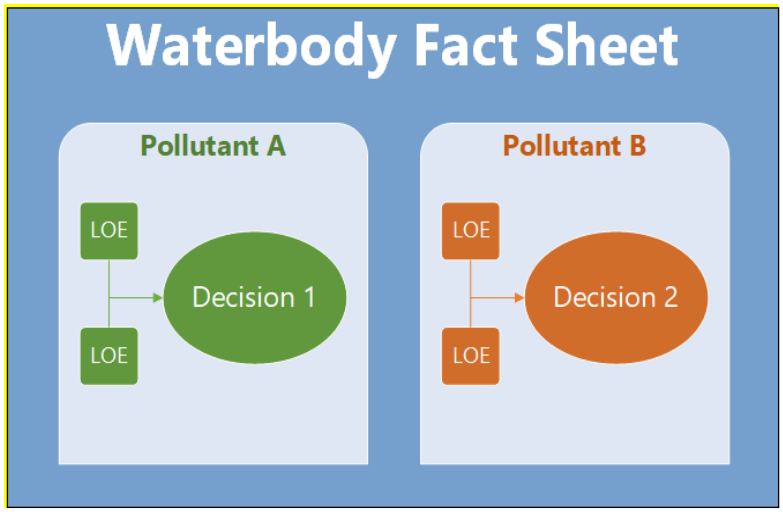

Figure 1: Waterbody Fact Sheets

Potential sources are generally only identified in Fact Sheets when a specific source analysis has been performed as part of a TMDL, other regulatory process, or through project work undertaken by Lahontan Water Board staff. Otherwise, the potential source was marked "Source Unknown."

3. Recommended Updates to the Integrated Report

3.1 Recommended Updates to the 305(b) Report

To meet CWA section 305(b) requirements of reporting on water quality conditions, the Integrated Report places each waterbody into one of five Integrated Report Categories based on assessment of all available data collected in that waterbody. The waterbody's overall category is determined based on the outcomes of all beneficial use support decisions in the waterbody, as described below.

If a waterbody segment has no existing or proposed 303(d) listings, and staff concluded that at least one beneficial use was fully supported, it is placed into Category 1. If staff could not determine use support for at least one beneficial use, the waterbody segment is placed into Category 2, or Category 3 depending on the likelihood of impairment. This approach was taken to prevent waterbodies with insufficient data from being classified as fully attaining standards, thus providing a more accurate baseline for future assessments.

If there are one or more 303(d) listing decisions in the waterbody, it is placed into Category 5. The waterbody remains in Category 5 until all 303(d) listings are addressed by U.S. EPA-approved TMDLs or by another regulatory program that is expected to result in the reasonable attainment of the water quality standards. If all 303(d) listings are being addressed, and at least one is being addressed by U.S.EPA-approved TMDL, the waterbody is placed in Category 4a. If all 303(d) listings are being addressed by actions other than TMDLs, the waterbody is placed into Category 4b. Waterbodies are placed in Category 4c if the impairment is not caused by a pollutant but rather caused by pollution, such as flow alteration or habitat alteration. Waterbodies placed in Category 4c do not require the development of a TMDL. See Figure 2 below.

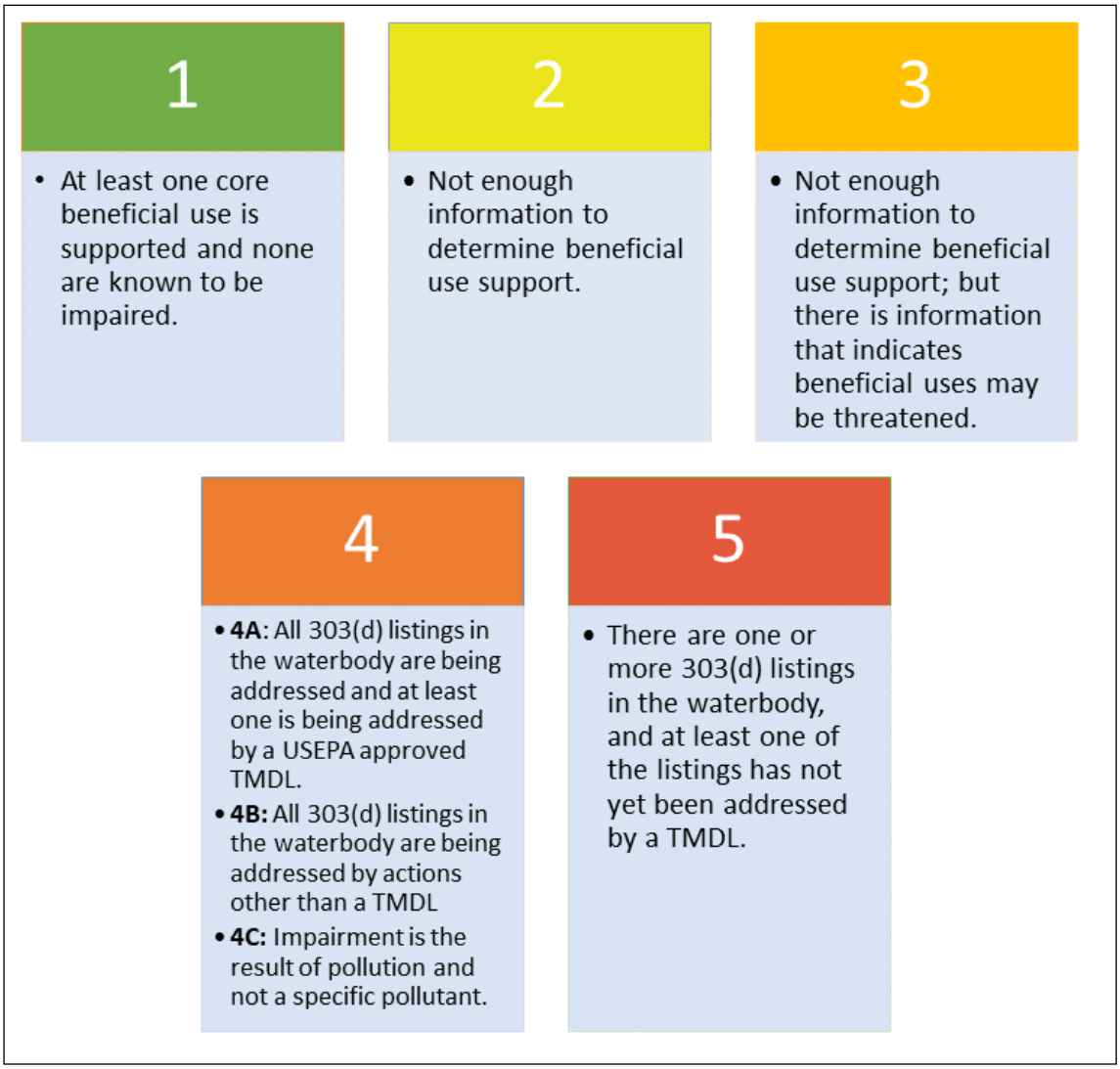

Figure 2: Integrated Report Categories

In the 2018 cycle, a total of 339 waterbody segments (containing 2,409 waterbody-pollutant combinations) were evaluated by the Lahontan Water Board staff. Table 17 below describes each category and summarizes the number and extent of waterbody segments in each category. The information in Table 17 is based on a count of the waterbodies in each category as depicted in the Integrated Report assessment. Some waterbodies have been segmented, such that each segment is considered an individual waterbody for the tallies shown in Table 17.

Table 17 Summary of Existing and Recommended Updates to 305(b) Integrated Report Categories for Lahontan a) Streams & Rivers and b) Lakes and Reservoirs

a)

Integrated Report Condition Category	Streams per Category (Count)	2018 Proposed Changes (Count)	Sum of Current + Proposed (Count)	Streams per Category (Miles)	2018 Proposed Changes (Miles)	Sum of Current + Proposed (Miles)	% of All Stream Miles in Region [1]
1	8	35	43	88	249.7	337.7	2.31
2	53	44	97	726.9	83.4	810.3	5.53
3	0	3	3	0	17.4	17.4	0.12
4A	4	-1	3	49.2	-37.3	11.9	0.08
4B	9	0	9	55	0	55	0.37
4C	0	0	0	0	0	0	0
5	43	39	82	557.9	539.2	1,097.1	7.5
Total	117	120	237	1,477	852.4	2,329.4	15.9

b)

Integrated Report Condition Category	Lakes per Category (Count)	2018 Proposed Changes (Count)	Sum of Current + Proposed (Count)	Lakes per Category (Acres)	2018 Proposed Changes (Acres)	Sum of Current + Proposed (Acres)	% of All Lake Acres in Region [2]
1	14	-10	4	5,848	-4,786	1,061	0.26
2	21	46	67	5,592	5,534	11,126	2.75
3	0	0	0	0	0	0	0
4A	2	0	2	84,260	0	84,260	20.8
4B	2	0	2	88,207	0	88,207	21.8
4C	0	0	0	0	0	0	0
5	17	1	18	148,721	226	148,947	36.8
Total	56	37	93	332,628	974	333,602	82.5

[1]Total estimated stream miles (from National Hydrography Dataset): 14650.28
[2]Total estimated lakes and reservoir acres (from National Hydrography Dataset): 404576.20

3.2 Recommended Updates to the 303(d) List of Impaired Waterbodies

Under CWA section 303(d), states are required to review, make changes as necessary, and submit to U.S. EPA a list identifying waterbodies failing to meet water quality standards and the water quality parameter(s) (i.e., pollutant) causing the failure. This is referred to as the 303(d) List. The 303(d) List must include a description of the pollutants causing lack of attainment of water quality standards 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 (40 C.F.R. § 130.7(b)(iii)(4)). Federal regulation defines a "water quality limited segment" as "any segment 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 C.F.R. § 130.2(j)). To restore water quality, a TMDL or other planning tool must be developed for water quality limited segments on the 303(d) List.

The 303(d) List includes all waterbody-pollutant combinations that are recommended for listing or delisting based on assessments conducted by Water Board staff. Note that the 303(d) List decisions are made at the pollutant level, and there may be multiple listing decisions within one waterbody. Table 18 below summarizes the number of current Lahontan Water Board 303(d) listings and the proposed new listings and de-listings for the 2018 cycle.

Table 18: Number of existing impairments on the 303(d) List and number of impairments recommended for addition or removal from the 303(d) List for the 2018 assessment cycle

2012 Total Listings	Recommended 2018 303(d) Listings		Recommended 2018 303(d) De-listings		2018 Total Listings
303(d)-listed waterbody/ pollutant combinations	New Listings	Other Listings*	De-listings due to water quality improvement	Other De-listings*	Recommended 303(d) listed waterbody/pollutant combinations
145	104	6	2	8	**245**

* Other listings and delistings include those created from the adoption of new water quality objectives, mapping changes, errors in the original decision, or other reasons. See Appendix A for the proposed updates to the 303(d) list.

Appendices B through G provide more information by waterbody on the proposed changes to the 303(d) List for the 2018 assessment cycle. Additional information, including the rationale for each listing and delisting decision are documented in the Fact Sheets in Appendix H.

3.3 TMDL Scheduling

A TMDL is the total maximum daily load(s) of a pollutant(s) that can be discharged into a given waterbody and still ensure the attainment of applicable water quality standards. In conformance with section 5 of the Listing Policy, a TMDL completion schedule date is required for all waterbody-pollutant combinations placed on the 303(d) List. Water Board staff relied on guidance from the U.S. EPA (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." The timeline for completing TMDLs for waterbodies listed for the first time as part of the 2018 Integrated Report is estimated to be no longer than thirteen years, which equates to an estimated completion date of 2031. Expected TMDL completion dates are proposed by Lahontan Water Board staff in the fact sheets of this report (Appendix H).

4. Public Review and Board Approval

4.1 Regional and State Board Approval Process

Pursuant to section 6.2 of the Listing Policy, waterbodies proposed for the 303(d) listing require public review and approval by the Lahontan Water Board during a public Board hearing. They are then submitted to the State Water Board for compiling into the statewide 303(d) List. As described in section 3.1 above, these waterbodies are placed into Integrated Report Categories 4a, 4b, and 5. Waterbodies listed in Integrated Report Categories 1, 2, 3, or 4c are also provided to the State Water Board. Waterbodies in Categories 1-5 are then compiled by the State Water Board staff into the California Integrated Report. Once compiled, the California Integrated Report is noticed for additional public review and approval by the State Water Board Executive Director or the State Water Board, as outlined in section 6.3 of the Listing Policy.

4.2 Timely Requests for State Board Review

If any person or entity seeks to have the State Water Board review a listing recommendation made by the Regional Water Board with respect to one or more waterbodies, the individual or entity must submit a request to the State Water Board to review the specific listing recommendation no later than 30 days after the date of the Regional Water Board's approval of the resolution. The State Water Board may refuse to receive public comment concerning listing recommendations from a Regional Water Board that are not requested for review in a timely manner. A request for review shall include the identification of the waterbody/pollutant combination of concern and an explanation of why the requestor believes that the Regional Water Board's corresponding recommendation is unsupported or inadequate.

Email requests for review to WQAssessment@waterboards.ca.gov (must be no more than 15 megabytes); or mail or hand deliver at:

Surface Water Quality Assessment Unit
State Water Resources Control Board, Division of Water Quality
P.O. Box 100, Sacramento, CA 95812-2000 (mail)
1001 I Street, 15th Floor, Sacramento, CA 95814 (hand delivery)

Please also indicate in the subject line, “Request for Review of [Specific Regional Board] Listing Recommendation – 303(d) List Portions of the 2018 California Integrated Report.”

Before the State Water Board approves the 2018 303(d) List, the State Water Board shall provide advance notice and an opportunity for public comment. The public comment will be limited to the listing recommendations that are requested in timely fashion for review unless the State Water Board elects to consider recommendations on other waters.

4.3 US EPA Review

Upon approval by the State Water Board, the statewide 2018 List shall be submitted to U.S. EPA for approval as required by the Clean Water Act. The 303(d) List of impaired waters will require final approval by the U.S. EPA. If U.S. EPA determines that changes are needed to the submitted report, U.S. EPA will initiate further public review before finalizing and publishing the report.

References

For a complete list of references (data, QAPPs, evaluation guidelines, etc.) used in all the waterbody Fact Sheets, see Appendix J.

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