CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

MEETING OF OCTOBER 14 AND 15, 2009
South Lake Tahoe

ITEM: 10

SUBJECT: *PUBLIC HEARING* - 2009 TRIENNIAL REVIEW OF THE WATER QUALITY CONTROL PLAN FOR THE LAHONTAN REGION (BASIN PLAN)

DISCUSSION: Periodic review and update of Basin Plans is required under state and federal law. Some states undertake comprehensive revisions of their water quality standards every three years. In California, the "Triennial Review" process generally involves Water Board action on a list of priority topics for use of planning staff time over the following three years. Triennial Review is not a regulatory action (unless it includes adoption of Basin Plan amendments) and therefore does not require environmental review.

For the 2009 Triennial Review process, Water Board staff prepared a draft list of planning topics for public review, and a staff report. These documents were made available on the Board's internet webpage, and the topics list and hearing notice were sent to the Basin Plan mailing list and electronic Triennial Review mailing list. Six sets of written public comments were received. Copies of written public comments and a staff response document are enclosed with this agenda item.

After consideration of written public comments, staff prepared final recommendations for planning topics to be addressed over the next three fiscal years (Attachment A to the proposed resolution). Several changes were made as a result of public comments.

Following Water Board action, the resolution and the administrative record of the Triennial Review process will be transmitted to the State Water Resources Control Board. No formal State Water Board action will be taken.

RECOMMENDATION: Adoption of Proposed Resolution.

Enclosures:
1. Proposed Resolution
2. Staff Report
3. Responses to Written Public Comments
4. Written Public Comments

ENCLOSURE 1

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

RESOLUTION R6T-2009-(PROPOSED)

TRIENNIAL REVIEW OF WATER QUALITY CONTROL PLAN FOR THE LAHONTAN REGION (BASIN PLAN)

WHEREAS, the California Regional Water Quality Control Board, Lahontan Region (Water Board), finds:

1. The Water Quality Control Plan for the Lahontan Region (Basin Plan) took effect March 31, 1995 and has been amended since that date.

2. State and federal laws require period review and revision of Basin Plans.

3. The Water Board is responsible for reviewing water quality standards and implementation plans as appropriate and for modifying and adopting standards contained in the Basin Plan under provisions set forth in Section 303(c) of the federal Clean Water Act and Section 13240, Division 7 of the California Water Code. The federal process is called "Triennial Review."

4. The Water Board and its staff implemented the 2009 Triennial Review by:

    a. Sending a letter to the Region's Basin Plan mailing list and the electronic mailing list for Triennial Review, with a list of potential planning issues for public comment.

    b. Making the issues list and a staff report available to the public on request and posting these materials on the Water Board's Internet web page.

    c. Noticing and conducting a public hearing at its October 14 and 15, 2009 regular meeting.

    d. Responding to all written public comments received during the designated period.

5. As a result of the Triennial Review process, the Water Board formulated the priority issues list shown in Attachment A. This attachment includes recommendations for both regional and statewide planning priorities and identifies priority topics that would require additional funding to be addressed before the next Triennial Review.

PROPOSED

THEREFORE BE IT RESOLVED:

1. The Water Board, in fulfillment of the requirements of Section 303(d) of the Federal Clean Water Act and Section 13240, Division 7 of the California Water Code, has done the following:

    a. Concluded the 2009 Triennial Review of the Lahontan Basin Plan

    b. Approved the priority list (Table 1 in Attachment A) for revision of the Lahontan Basin Plan

    c. Concluded that all other planning issues identified by staff and the public during the 2009 Triennial Review process would require additional funding in order to be addressed before the next Triennial Review.

2. The Water Board's Triennial Review actions do not preclude other Basin Plan revisions that may become necessary before the next Triennial Review in 2012.

I, Harold J. Singer, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Lahontan Region, on October 15, 2009.

_____
HAROLD J. SINGER
EXECUTIVE OFFICER

Attachment: A. Triennial Review Recommendations

PROPOSED

ATTACHMENT A

ATTACHMENT A - 2009 TRIENNIAL REVIEW PRIORITY LIST FOR THE LAHONTAN REGION

TABLE 1. - PRIORITIES TO BE ADDRESSED WITH PROJECTED RESOURCES FOR FY 09 TO FY 11

Topic No.	Topic	Description	Resource Needs (PYs)	Estimated Completion Date
0	Complete Lake Tahoe TMDL and associated amendments to Chapter 5.	Ongoing work that will use TMDL program rather than Basin Planning program resources.		
1	Complete amendments to the water quality objective for pesticides	Ongoing work (in FY 09-10 workplan)	0.7	May 2010
2	Complete amendments to plan provisions affecting the shorezone of Lake Tahoe	Ongoing work (in FY 09-10 workplan)	0.6	July 2010
3	Complete Tahoe/ Truckee prohibition/forestry amendments	Ongoing work (in FY 09-10 workplan). Revise exemption criteria for 100-year floodplain waste discharge prohibitions in the Lake Tahoe and Truckee River watersheds to be consistent and to clarify application of exemption criteria to forest fuel reduction activities. Update Chapter 4 and 5 discussions on timber harvest and vegetation management.	0.7	January 2011

10-0007

Table 1, continued

Topic No.	Topic	Description	Resource Needs (PYs)	Estimated Completion Date
4	Complete Chapter 5 amendments to incorporate Tahoe Regional Planning Agency's (TRPA's) new 20-year Regional Plan	Ongoing assistance to TRPA staff to ensure that TRPA Regional Plan is consistent with the Lake Tahoe TMDL. Additional water quality programs and implementation measures will be incorporated into Chapter 5 of the Basin Plan following TRPA's adoption of its Regional Plan.	0.7	Early 2012
5	Revise water quality objectives for Mojave River	**Initial effort** to gather information from Mojave Water Agency and other entities. Prepare workplan and resource estimate to complete Basin Plan amendment to revise objectives.	0.2	June 2012
6	Modify waste discharge prohibitions to protect additional prime groundwater recharge areas of arid basins	**Initial effort** during this Triennial Review cycle. Prepare scope, workplan and resource estimate to complete basin plan amendment.	0.2	June 2012
7	Revise bacteria objectives	**Initial effort** includes managing contract to collect data and compare fecal coliform bacteria levels to E.coli levels in waters of the Lahontan Region and reviewing proposed State Water Board and USEPA criteria. Basin Plan amendment (post-2013 at the conclusion of a Proposition 84 grant study) will incorporate the State Water Board's bacteria policy when final and consider revisions to the Lahontan Region's bacteria-related objectives.	0.2	June 2012

10-0008

Table 1, continued

Topic No.	Topic	Description	Resource Needs (PYs)	Estimated Completion Date
8	Miscellaneous work that will not directly result in Basin Plan amendments	Work includes coordination with other states, agencies, tribes and TRPA regarding standards revisions, contract management for plan-related work, staff training, administrative staff updates of electronic plan, coordination with State Water Board Division of Water Rights and water purveyors in Squaw Valley, Placer County regarding ground water management issues, work with third parties on nutrient and salt management plans developed under State Water Board's Recycled Water Policy, etc.	0.8	N/A
9	Update of entire Basin Plan	Update of the plan to improve its usability for staff and the public. Revisions will address new and revised State Water Board plans and policies, California Toxics Rule standards, clarification of bacteria objectives, Nonpoint Source Plan, waiver and enforcement provisions, Surface Water Ambient Monitoring Program, Watershed Management Initiative, revised maps, a revised beneficial use table reflecting the CalWater watershed numbering system, etc. Salt/nutrient management plans completed in response to the State Water Board's recycled water policy may be incorporated into the Basin Plan as part of this project if they are available before public drafts are completed.	0.6	Spring 2012
10	Remove MUN use from Eastern Indian Wells Valley and Salt Wells Valley Basins	This project was requested in comments from the China Lake Naval Air Weapons Center. Staff will rely upon the Navy to provide adequate information and data to justify the amendments. Depending on the availability of data the project may or may not be completed within the next 3 years.	0.4	After 2012

10-0009

Table 1, continued

Topic No.	Topic	Description	Resource Needs (PYs)	Estimated Completion Date
11	2009 and 2012 Triennial Review	Resources are needed to develop a draft priority list and related documents, respond to public comments, and prepare agenda materials and administrative records.	0.3	October 2009, October 2012
12	Program Manager (0.1 PY/year)	Program manager participates in State/Regional Board roundtable meetings, aids in workplan development, provides information to the public, etc.	0.3	N/A
	PY TOTAL: TOPICS 1 THROUGH 12	Basin Planning program currently provides 2 PYs per year. If current furlough program continues for one year as specified in the Executive Order (15% cut), only 5.7 PYs will be spent over the three years.	**5.7**	**June 2012**

10-030

TABLE 2. - PRIORITIES THAT WOULD NEED ADDITIONAL RESOURCES TO BE ADDRESSED BETWEEN FY 09 AND FY 11

Topic No.	Topic	Description	Resource Needs (PYs)
13	Develop groundwater objectives for selected South Lahontan groundwater basins.	Currently the groundwater objectives in the Lahontan Basin Plan apply to all groundwaters, or to categories of groundwaters designated for specific beneficial uses. Development of "site specific" groundwater objectives would require adequate water quality data for the constituents of concern, and aquifer maps to define the areas where objectives would apply. Funding is for an initial effort to produce a detailed workplan.	0.2
14	Revise Chapter 3 language on compliance with objectives and "means of monthly means"	Define minimum sample numbers for determining compliance with objectives expressed as annual means. Change the expression of water quality objectives for surface waters in the Truckee, Little Truckee and Carson River watersheds from means of monthly means to annual means.	0.5
15	Add Cultural Resources beneficial use	This topic would include development of a definition for the use, and designation of specific waters for the use. The definition would recognize the traditional or cultural uses of water and aquatic and wetland ecosystems and resources by indigenous people. Examples include but are not limited to subsistence fishing, basket weaving, and ceremonial or medicinal uses of hot springs. Basin Plan amendments would be developed in cooperation with Native American tribes.	1.0+
16	Develop SSOs for salinity in Searles Lake.	Develop objectives to reflect the naturally high levels of salt and trace elements in this desert playa lake.	1.0

110-0011

Table 2, continued

Topic No.	Topic	Description	Resource Needs (PYs)
17	Develop site-specific objectives (SSOs) for salinity and related constituents in Honey Lake and adjacent ponds and wetlands.	SSOs would avoid the need for TMDLs to address six Clean Water Act Section 303(d) listings for high salinity and trace elements in Honey Lake and adjacent waters. Additional monitoring might be necessary to document existing water quality and reference conditions.	1.0
18	Remove two beneficial uses from Piute Ponds and Piute Ponds wetlands.	This topic would involve removal of the Groundwater Recharge (GWR) and Agricultural Supply (AGR) beneficial uses from the Piute Ponds and wetlands in the Amargosa Creek watershed in eastern Los Angeles County. The ponds and wetlands are maintained with effluent from the Los Angeles County Sanitation District No. 14 (Lancaster) wastewater treatment facilities.	1.0
19	Consider incorporating State Board Numeric Nutrient Endpoint (NNE) methodology.	The NNE methodology provides direction for use of secondary indicators of eutrophication (such as chlorophyll) in development of nutrient standards and TMDL targets. Depending on the outcome of peer review, the State Water Board may ask Regional Water Boards to incorporate the NNE methodology into their Basin Plans.	1.0
20	Outstanding National Resource Water (ONRW) designations for segments of East Fork Carson River, West Walker River and Leavitt Creek.	Federal antidegradation regulations allow states to designate water bodies as ONRWs, where no long-term degradation should be permitted. The three listed waters have been designated as state wild/scenic rivers.	0.5
	PY TOTAL: TOPICS 13 THROUGH 19		**6.2**

10-0012

TABLE 3. - PRIORITIES THAT SHOULD BE ADDRESSED ON A STATEWIDE BASIS

Topic	Description
Address violations of standards due to pollutants from natural sources	Naturally high levels of salt and trace elements such as arsenic occur in certain waters of California. A joint effort by State Water Board staff, staff from all of the Regional Boards, and U.S. Environmental Protection Agency staff has been initiated to identify statewide solutions to avoid the need for Section 303(d) listing and TMDL development for waters where "impairment" is due entirely to natural sources, and to address other natural source issues. Solutions could include "natural sources exclusion" language for statewide policies and/or regional Basin Plans, and a subcategory of the Municipal and Domestic Supply beneficial use that would not apply drinking water Maximum Contaminant Levels to "naturally impaired" ambient waters.
Revise Temperature objectives	This topic was approved as a Lahontan Region priority in the 2006 Triennial Review, in response to comments by the U.S. Environmental Protection Agency. The development of new objectives would be a complex, resource-intensive task that might best be handled on a statewide basis.
Mixing zones	The Basin Plan does not contain allowances for mixing zones below point source discharges. The only applicable provisions are those for toxic pollutants in the State Implementation Policy for California Toxics Rule standards. It would probably be more productive for mixing zone language for non-toxic pollutants to be developed on a statewide basis than for Regional Boards to adopt separate Basin Plan amendments and have them invalidated due to a desire for statewide consistency.

10-0013

Table 3, continued

Topic	Description
Turbidity objectives	The U.S. Geological Survey has recently begun measuring turbidity using new equipment and new units (NTRU rather than NTU) that are not directly comparable with existing objectives. There is a growing scientific literature on turbidity criteria for protection of aquatic life uses. Under the State Water Board's Section 303(d) Listing Policy, waters with small numbers of violations of the turbidity Maximum Contaminant Level (5 NTU) may need to be listed, even if the violations are due to natural conditions. The development of new objectives would be a complex, resource-intensive task that might best be handled on a statewide basis.
Bio-objectives	The State Water Board is developing statewide "bio-objective" language based on the health of benthic macroinvertebrate communities. Both a narrative objective and an implementation plan will be adopted. The implementation plan will provide direction to Regional Water Boards for the development of numeric biocriteria. The process is expected to take 4-5 years.

10-0014

ENCLOSURE 2

STAFF REPORT

on

Triennial Review of the Water Quality Control Plan for the Lahontan Region

California Regional Water Quality Control Board
Lahontan Region
2501 Lake Tahoe Boulevard
South Lake Tahoe CA 96150

July 2009

Contact Person:

Judith Unsicker
Staff Environmental Scientist
Telephone: (530) 542-5462
Fax: (530) 544-2271
Email: junsicker@waterboards.ca.gov

10-0016

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10-0017

Introduction

The California Regional Water Quality Control Board, Lahontan Region (Water Board) is the state agency responsible for setting and implementing water quality standards in about 20 % of California east of the Sierra Nevada crest and in the Northern Mojave Desert (Figure 1). Water quality standards and control measures are contained in the *Water Quality Control Plan for the Lahontan Region* (Basin Plan). The current Basin Plan took effect in 1995, replacing three earlier plans. As of July 2009, ten sets of amendments to the 1995 plan have received all necessary approvals. The Basin Plan is available on the Water Board's Internet web page at: http://www.waterboards.ca.gov/lahontan.

State and federal laws require periodic review and revision of Basin Plans; the federal process is called "Triennial Review." Some states revise water quality standards as part of the Triennial Review process. Due to resource limitations and the complexity of California's plan amendment process, Triennial Review in California is generally limited to identification of high priority planning topics to be addressed over the three years between one Triennial Review cycle and the next. Unless it actually involves adoption of plan amendments, Triennial Review is not a regulatory action and does not require environmental analysis under the California Environmental Quality Act. The Water Board's current Triennial Review priorities were adopted in October 2006.

A public hearing for Triennial Review is tentatively scheduled for the Water Board's October 14 and 15, 2009 regular meeting. This staff report provides information on the Triennial Review process and on planning topics identified by Water Board staff. Additional topics may be identified in written public comments or testimony at the hearing. Water Board staff will make final recommendations regarding priority planning topics following the public hearing. The Water Board will be asked to approve a "short list" of topics to be addressed over the following three fiscal years, and to identify the remaining topics as topics requiring additional funding. The review process does not necessarily mean that specific revisions will be made to the Basin Plan, but after investigation by Water Board staff, the identified topics may result in plan amendments.

Water Quality Standards

In California, water quality standards include designated beneficial uses of water, narrative and numerical water quality objectives, and a nondegradation policy. Water quality objectives are similar to federal "water quality criteria," but objectives are regulatory and criteria are not. Water quality standards in the Lahontan Basin plan are set forth in Basin Plan Chapters 2, 3, and 5. The plan's beneficial use tables (Tables 2-1 and 2-2) do not distinguish between existing and potential beneficial uses. Most of the numerical objectives are based on historical water quality data collected before adoption of

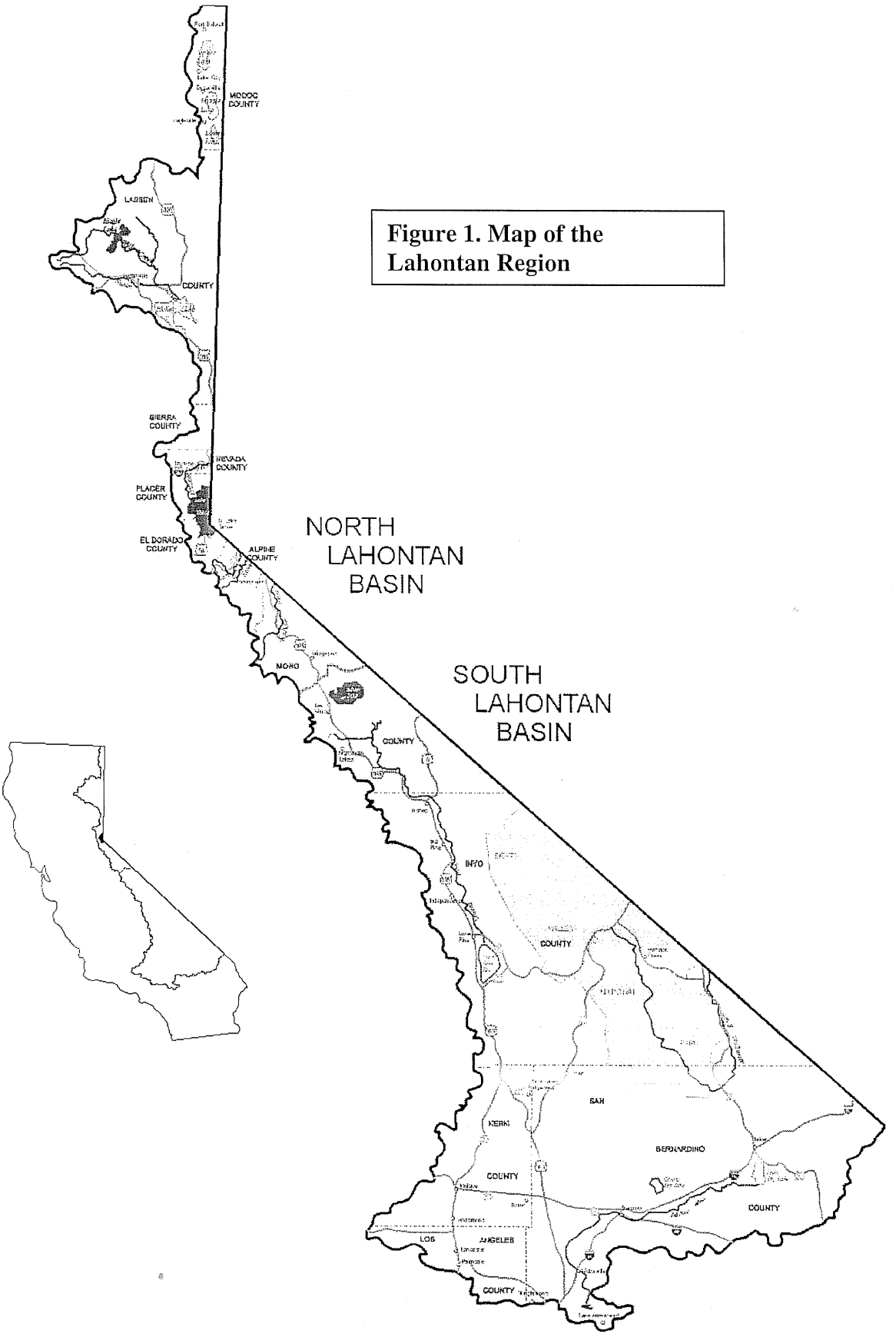

Figure 1. Map of the Lahontan Region

10-0019

the 1975 North and South Lahontan Basin Plans, and reflect antidegradation considerations rather than numeric criteria for the protection of specific beneficial uses. Unless criteria for variances to objectives are specifically included in the Basin Plan, variances or exceptions cannot be granted without Basin Plan amendments to revise the objectives.

Applicable water quality standards also include numerical limits for toxic "priority pollutants" promulgated as surface water standards by the U.S. Environmental Protection Agency (USEPA) under the National Toxics Rule and California Toxics Rule. These standards have not yet been physically incorporated into the Basin Plan.

All of the waters of the Lahontan Region are internally drained, and many of them are isolated. The U.S. Army Corps of Engineers has determined that some waters within the Lahontan Region are not "waters of the United States" under the federal Clean Water Act. State standards still apply to any "waters of the State" that are determined not to be waters of the United States.

Triennial Review Process and Public Participation

The Water Board's 2009 Triennial Review Process will involve:

- Sending staff's draft topics list and the hearing notice to the Water Board's Basin Plan mailing list and to an electronic mailing list for Triennial Review.

- Making copies of the hearing notice, topics list, and this staff report available on the Water Board's webpage.

- Providing a 45-day public review period for the topics list and the opportunity to submit other topics and written comments.

- Preparing written responses to written public comments. All comments and responses will be provided to the Water Board before the hearing.

- Testimony at the public hearing.

- Water Board adoption of a resolution identifying priority planning topics to be addressed by staff and topics requiring additional funding, and affirming the adequacy of the remainder of the plan.

- Completion and submission of the administrative record of the Triennial Review process to the State Water Resources Control Board (State Water Board). The State Water Board will make the approved Triennial Review, including the resolution and priority list, available to the USEPA.

10-0020

Basin Plan Amendment Process

The Basin Plan amendment process is summarized in Table 1, adapted from the State Water Board's planning guidance. As the table indicates, the process is lengthy and complex. (The table does not include the revisions that may need to be made in preliminary drafts in response to comments by internal reviewers, and in response to scientific peer review.) Chronologically, the process can require six months to more than a year between the end of the "research" period in Step A. and Water Board action, and nine months or more can be required after Water Board action for the amendments to receive all needed approvals. "Research" for Basin Plan amendments can include scientific literature review and/or water quality monitoring or special studies. Scientific peer review is required for amendments involving scientific judgment, and the reviewer's comments may result in significant changes to preliminary draft amendments before they are released for public review. Following Water Board adoption, amendments must be approved by the State Water Board, the California Office of Administrative Law (OAL), and (in some cases) the USEPA. To facilitate the OAL review process, a detailed administrative record must be prepared and indexed.

Planning Considerations

Budget. The Water Board's planning resources are extremely limited. Due to the Governor's Executive Order on furloughs, projected total available resources for the next three years are about 5.7 personnel years (PY), including both administrative and technical staff time. Some Basin Plan amendments may also require contracted studies for data collection (e.g., special monitoring studies to facilitate update of water quality objectives) or predictive modeling.

Topics needing additional funding. The State Water Board's guidance for the Triennial Review process asks Regional Water Boards to identify planning topics that would require additional funding to address. The Lahontan Water Board will be asked to choose a small subset of the planning topics identified by staff and the public for emphasis over the next three years; ideally the total estimated cost of the selected topics should not exceed the resources expected to be available within that time. All of the remaining topics will be identified as topics requiring additional funding in order to be addressed during the next three years.

10-0021

Table 1 Summary of Basin Plan Amendment Process

WHO...	DOES WHAT?
REGIONAL OR STATE WATER BOARD	A. IDENTIFY THE NEED for a Plan amendment based on the triennial review, public concerns, new or revised laws, regulations or policies, etc. Undertake work to develop solutions - research, field work (e.g. collect chemical, physical, and/or biological monitoring data; data analysis), etc. B. PLAN the Administrative Record for the amendment. C. PREPARE NECESSARY DOCUMENTS **STAFF REPORT** on the proposed amendment; reasonable alternatives, mitigation, economic considerations, and anti-degradation as required • If addressing beneficial uses • If addressing water quality objectives • If addressing an implementation plan **THE CEQA CHECKLIST** **DRAFT AMENDMENT** **DRAFT RESOLUTION** D. EXTERNAL SCIENTIFIC PEER REVIEW E. PUBLISH A HEARING NOTICE / NOTICE OF FILING at least 45 days prior to the hearing F. RESPOND to comments – revising the draft amendment and staff report as necessary G. ADOPTION HEARING H. REGIONAL WATER BOARD TRANSMIT 2 copies of the complete administrative record to the State Water Board; and PARTICIPATE in State Water Board Workshop and Board Meeting
STATE WATER BOARD	I. APPROVE AMENDMENT at a public meeting (or return it to the Regional Water Board for further consideration) J. TRANSMIT approved amendment to OAL for review and approval of the regulatory provisions K. TRANSMIT the OAL approved amendment to USEPA, if needed, for review and approval of surface waters standards and their implementing provisions
REGIONAL WATER BOARD	L. (1) FILE CEQA NOTICE OF DECISION with the Secretary for Natural Resources after final approval by OAL or USEPA. (2) Either pay Department of Fish and Game filing fee or submit Certificate of Fee Exemption. M. PRINT and DISTRIBUTE Amendment

10-0022

Total Maximum Daily Loads (TMDLs). The federal Clean Water Act requires states to identify surface water bodies that are not meeting standards due to pollutants (the "Section 303(d) list"), and to prepare strategies called TMDLs to ensure attainment of standards. In California, TMDLs and TMDL implementation programs are generally (but not always) adopted as Basin Plan amendments. Priorities and schedules for TMDL development are determined through the Section 303(d) list update process and through the Regional Board's annual TMDL program workplans. Section 303(d) listing does not necessarily mean that TMDLs (and/or Basin Plan amendments) will be developed for all listed waters; the impairment issues may be addressed in other ways.

Work on Basin Plan amendments to incorporate TMDLs will be supported with state and/or federal TMDL program funds, not basin planning funds. Public comments may be submitted on TMDL issues as part of the Triennial Review process. Responses to these comments will be prepared, and they will be included in the administrative record. However, the Water Board's action will focus on priorities for use of Basin Planning funds for planning topics other than TMDL development.

2009 Triennial Review Planning Topics

Table 2 summarizes potential priority topics for the 2009 Triennial Review. (These include priorities carried over from previous years, identified by staff, the Water Board and others. They have not yet been discussed by the Water Board as 2009 priorities.)

After reviewing written public comments, staff will prepare final recommendations as part of the Water Board's agenda packet for the public hearing. Staff will request the Water Board to choose a subset of topics from Table 2 and from any new topics identified in public comments, and to direct staff to investigate these topics over the next three years and develop draft Basin Plan amendments as appropriate.

Schedules for completion of public draft amendments and Water Board action on specific topics will depend upon the complexity of the selected topics. Some of the topics may be worked upon between Fiscal Years 09-10 and 11-12, with Board action on plan amendments after 2012. If important new topics arise before the next Triennial Review, planning priorities may be changed by the Water Board or the Executive Officer. Topics not selected for emphasis in the next three fiscal years will be identified as topics requiring additional funding. Staff will reconsider these topics during the next Triennial Review process and may recommend them as priorities at that time.

10-0023

TABLE 2. DRAFT 2009 TRIENNIAL REVIEW PRIORITY LIST FOR THE LAHONTAN REGION

Table 2A.

Staff-Recommended Priorities That Could Be Addressed With Projected Resources for FY 09-10 to FY 11-12

Topic No.	Topic	Description	Resource Needs (PYs)	Estimated Completion Date
0	Complete Lake Tahoe TMDL and associated amendments to Chapter 5.	Ongoing work that will use TMDL program rather than Basin Planning program resources.		
1	Complete amendments to the water quality objective for pesticides	Ongoing work (in FY 09-10 workplan)	0.4	April to May 2010
2	Complete amendments to plan provisions affecting the shorezone of Lake Tahoe	Ongoing work (in FY 09-10 workplan)	0.6	May 2010
3	Complete Truckee Prohibition/forestry amendments	Ongoing work (in FY 09-10 workplan)	0.5	July 2010

10-0024

Table 2A, continued

Topic No.	Topic	Description	Resource Needs (PYs)	Estimated Completion Date
4	Complete Chapter 5 amendments to incorporate Tahoe Regional Planning Agency's (TRPA's) new 20-year Regional Plan	Ongoing assistance to TRPA staff to ensure that TRPA Regional Plan is consistent with the Lake Tahoe TMDL. Additional water quality programs and implementation measures will be incorporated into Chapter 5 of the Basin Plan following TRPA's adoption of its Regional Plan.	0.7	Early 2012
5	2009 and 2012 Triennial Review	Resources are needed to develop a draft priority list and related documents, respond to public comments, and prepare agenda materials and administrative records.	0.3	October 2009, October 2012
6	Update of entire Basin Plan	Update of the plan to improve its usability for staff and the public. Revisions could address new and revised State Water Board plans and policies, California Toxics Rule standards, Nonpoint Source Plan, waiver and enforcement provisions, Surface Water Ambient Monitoring Program, Watershed Management Initiative, revised maps, a revised beneficial use table reflecting the CalWater watershed numbering system, etc. Project may include a limited number of regulatory policy changes that would not require scientific peer review.	1.0	Spring 2012

10-0025

Table 2A, continued

Topic No.	Topic	Description	Resource Needs (PYs)	Estimated Completion Date
7	Miscellaneous work that will not directly result in Basin Plan amendments	Work could include coordination with other states, agencies, tribes and TRPA regarding standards revisions, contract management for plan-related work, staff training, administrative staff updates of electronic plan, coordination with State Water Board Division of Water Rights and water purveyors in Squaw Valley, Placer County regarding ground water management issues, review of nutrient and salt management plans developed by third parties under State Board Recycled Water Policy, etc. (average of 0.2 PY per year over 3 years).	0.6	N/A
8	Revise water quality objectives for Mojave River	Initial effort to gather information from Mojave Water Agency and other entities. Prepare workplan and resource estimate to complete basin plan amendment to revise objectives.	0.2	June 2012
9	Modify waste discharge prohibitions to protect additional prime groundwater recharge areas of arid basins	Initial effort during this Triennial Review cycle. Prepare scope, workplan and resource estimate to complete basin plan amendment.	0.2	June 2012

10-0026

Table 2A, continued

Topic No.	Topic	Description	Resource Needs (PYs)	Estimated Completion Date
10	Revise bacteria objectives	Initial effort includes managing contract to collect data and compare fecal coliform bacteria levels to E.coli levels in waters of the Lahontan Region. and reviewing proposed State Water Board and USEPA criteria. Basin Plan amendment (post-2013 at the conclusion of a Proposition 84 grant study) will incorporate the State Water Board's bacteria policy when final and consider revisions to the Lahontan Region's bacteria-related objectives.	0.2	
11	Develop groundwater objectives for selected South Lahontan groundwater basins.	Currently the groundwater objectives in the Lahontan Basin Plan apply to all groundwaters, or to categories of groundwaters designated for specific beneficial uses. Development of "site specific" groundwater objectives would require adequate water quality data for the constituents of concern, and aquifer maps to define the areas where objectives would apply. Funding is for an initial effort.	0.2	After 2012.
12	Revise Chapter 3 language on compliance with objectives and "means of monthly means"	Define minimum sample numbers for determining compliance with objectives expressed as annual means. Change the expression of water quality objectives for surface waters in the Truckee, Little Truckee and Carson River watersheds from means of monthly means to annual means.	0.5	After 2012.

10-0027

Table 2A, continued

Topic No.	Topic	Description	Resource Needs (PYs)	Estimated Completion Date
13	Program Manager (0.1 PY/year)	Program manager participates in State/Regional Board roundtable meetings, aids in workplan development, provides information to the public, etc.	0.3	N/A
	PY TOTAL: TOPICS 1 THROUGH 13	Basin Planning program currently provides 2 PYs per year. If current furlough program continues for one year as specified in the Executive Order (15% cut), only 5.7 PYs will be spent over the three years.	**5.7**	**June 2012**

10-0028

Table 2B. Priorities That Would Need Additional Resources to be Addressed Between 2010 and 2012

Topic No.	Topic	Description	Resource Needs (PYs)
14	Add Cultural Resources beneficial use	This topic could include development of a definition for the use, and designation of specificaters for the use. The definition would recognize the traditional or cultural uses of water and aquatic and wetland ecosystems and resources by indigenous people. Examples include but are not limited to subsistence fishing, basket weaving, and ceremonial or medicinal uses of hot springs. Basin Plan amendments would be developed in cooperation with Native American tribes.	1.0+
15	Outstanding National Resource Water (ONRW) designations for segments of East Fork Carson River, West Walker River and Leavitt Creek.	Federal antidegradation regulations allow states to designate water bodies as ONRWs, where no long-term degradation should be permitted. The three listed waters have been designated as state wild/scenic rivers.	0.5
16	Develop site-specific objectives (SSOs) for salinity and related constituents in Honey Lake and adjacent ponds and wetlands.	SSOs would avoid the need for TMDLs to address six Clean Water Act Section 303(d) listings for high salinity and trace elements in Honey Lake and adjacent waters. Additional monitoring might be necessary to document existing water quality and reference conditions.	1.0
17	Develop SSOs for salinity in Searles Lake.	Develop objectives to reflect the naturally high levels of salt and trace elements in this desert playa lake.	1.0

10-0029

Table 2B, continued

Topic No.	Topic	Description	Resource Needs (PYs)
18	Consider incorporating State Board Numeric Nutrient Endpoint (NNE) methodology.	The NNE methodology provides direction for use of secondary indicators of eutrophication (such as chlorophyll) in development of nutrient standards and TMDL targets. Depending on the outcome of peer review, the State Water Board may ask Regional Water Boards to incorporate the NNE methodology into their Basin Plans.	1.0
	PY TOTAL: TOPICS 14 THROUGH 18		4.5+

10-0030

Table 2C. Priorities That Should be Addressed on a Statewide Basis.

Topic	Description
Address violations of standards due to pollutants from natural sources	Naturally high levels of salt and trace elements such as arsenic occur in certain waters of California. A joint effort by State Water Board staff, staff from all of the Regional Boards, and U.S. Environmental Protection Agency staff has been initiated to identify statewide solutions to avoid the need for Section 303(d) listing and TMDL development for waters where "impairment" is due entirely to natural sources, and to address other natural source issues. Solutions could include "natural sources exclusion" language for statewide policies and/or regional Basin Plans, and a subcategory of the Municipal and Domestic Supply beneficial use that would not apply drinking water Maximum Contaminant Levels to "naturally impaired" ambient waters.
Revise Temperature objectives	This topic was approved as a Lahontan Region priority in the 2006 Triennial Review, in response to comments by the U.S. Environmental Protection Agency. The development of new objectives would be a complex, resource-intensive task that might best be handled on a statewide basis.
Mixing zones	The Basin Plan does not contain allowances for mixing zones below point source discharges. The only applicable provisions are those for toxic pollutants in the State Implementation Policy for California Toxics Rule standards. It would probably be more productive for mixing zone language for non-toxic pollutants to be developed on a statewide basis than for Regional Boards to adopt separate Basin Plan amendments and have them invalidated due to a desire for statewide consistency.

10-0031

Table 2C, continued

Topic	Description
Turbidity objectives	The U.S. Geological Survey has recently begun measuring turbidity using new equipment and new units (NTRU rather than NTU) that are not directly comparable with existing objectives. There is a growing scientific literature on turbidity criteria for protection of aquatic life uses. Under the State Water Board's Section 303(d) Listing Policy, waters with small numbers of violations of the turbidity Maximum Contaminant Level (5 NTU) may need to be listed, even if the violations are due to natural conditions. The development of new objectives would be a complex, resource-intensive task that might best be handled on a statewide basis.
Bio-objectives	The State Water Board is developing statewide "bio-objective" language based on the health of benthic macroinvertebrate communities. Both a narrative objective and an implementation plan will be adopted. The implementation plan will provide direction to Regional Water Boards for the development of numeric biocriteria The process is expected to take 4-5 years.

10-0032

ENCLOSURE 3

Summary of and Responses to Public Comments, and Recommended Priorities

(The topic numbers used below are those in the public draft recommendations.
Topic numbers were changed in the final staff recommendations.)

Comments	Response to Comments	Priority
Topic 0. Complete Lake Tahoe TMDL and associated amendments to Chapter 5. No written public comments were received on this topic.	No response is necessary.	High
Topic 1. Complete amendments to the water quality objective for pesticides. No written public comments were received on this topic.	No response is necessary.	High
Topic 2. Complete amendments to plan provisions affecting the shorezone of Lake Tahoe. No written public comments were received on this topic.	No response is necessary	High
Topic 3. Complete Truckee Prohibition Forestry Amendments The U.S. Forest Service (Pacific Southwest Region and Lake Tahoe Basin Management Unit) commented: 1) "The prohibition on "The discharge or threatened discharge attributable to human activities (or human development), of solid or liquid waste materials including soil, silt, clay, sand, and other organic or earthen materials to lands with the 100-year floodplains of the Truckee River, and tributary of the Truckee River or Lake Tahoe", is currently being applied to placement of burn piles within the 100 year floodplain. We do not believe it was the intent that this prohibition apply to the practice of pile burning, as the section describing control measures for Fire Control and	Topic 3 will include revisions to prohibition exemption criteria for the Lake Tahoe and Truckee River watersheds, and revisions to forest management language in Basin Plan Chapters 4 and 5. The primary purpose of the amendments is to facilitate fuel reduction activities. The scientific literature will be used as appropriate. Staff will consider the Forest Service comments on burn piles in developing the amendments. Water Board staff will consult with U.S. Forest	High

10-0034

Prescribed Burn in the Basin Plan states that "Burning under prescribed conditions should generally be located away from stream channels or standing water" **and** "When the residual fuel load will be acceptable, non-burning techniques such as scattering or hauling away slash are preferred, especially where the slash will provide soil protection". We have heard from Lahontan staff that there is a concern that burn piles have the potential to be transported into stream channels during over bank flood events, and therefore are considered to be a "potential discharge of organic materials". However staff has also indicated that there is no prohibition regarding lop and scatter of residual fuels with the floodplain, as well as prescribed underburns. Because of the inherent structural stability of burn piles and the unlikely occurrence of over bank flood events with the magnitude necessary to move these piles, burn piles are highly unlikely to be transported into waterbodies, and are certainly much less likely to be mobilized then residual fuels scattered over the floodplain surface. Likewise we have heard concerns about the transport of ash from burn piles, however the transport of ash residues from prescribed underburning does not appear to trigger the same level of concern. Fuels treatments that include piling of slash prior to burning are needed in many riparian areas to reduce unnaturally high fuel loads, prevent adverse impacts to water quality from severe wildfires, and restore the health and vigor of the riparian vegetation. Followup maintenance treatments with prescribed underburns are also likely to be desired in some areas (ie. meadow restoration projects). I request that these prohibitions be modified to exclude pile burning, as well as other ground fuels treatments. Design features	Service and CAL FIRE staff during the plan amendment process. The turbidity limit cited in U.S. Forest Service Comment 3 is not a prohibition. It comes from the water quality objective for turbidity applicable to surface waters of the Lake Tahoe Basin, and to all surface waters of the Lahontan Region that do not have different "site-specific" objectives. Revisions to this objective are not planned at this time because the Basin Plan (Section 4.1) allows exemptions from all waste discharge prohibitions (including a prohibition against violation of objectives) for restoration projects that meet specific criteria.	

10-0035

related to all residual ground fuels treatments (pile burning, underburning, lop and scatter) to prevent soil and water impacts would still be developed as part of the NEPA process and timber waiver permitting. 2) The prohibitions on permanent soil disturbance in Stream Environment Zones (SEZ) for forest management activities in the Lake Tahoe Hydrologic Unit are also being applied to pile burning. Unlike grading and construction, soil disturbance resulting from pile burning is dispersed in nature, and localized impacts generally do not persist. The primary threat from pile burning concerns potential temporary impacts from erosion, transport of ash, and subsurface flows of nutrients. Design features have been developed to mitigate these potential temporary impacts as part of the NEPA process. Data collected by the Lake Tahoe Basin Management Unit (LTBMU, 2008) indicates substantial vegetative recovery within several years of burning piles in SEZs, and therefore that permanent soil disturbance is not occurring. Although there are very few opportunities to conduct monitoring and research because of current restrictions, both research and monitoring is funded and planned on this topic within the Lake Tahoe Hydrologic Unit. We request that the prohibition on permanent soil disturbance be modified to exclude pile burning, and that a clear definition of what constitutes permanent soil disturbance is provided. We have heard from Lahontan staff that any soil disturbance that persists for more then a year is considered to be "permanent". We do not believe this a fair definition of permanent, and that a more logical definition needs to be articulated and provided in the Basin Plan.		

10-0036

3) The current prohibition within the Lake Tahoe Hydrologic Unit stating that during construction activities "Increases in turbidity shall not exceed natural levels by more than ten percent" has proven to be economically infeasible for in-channel construction projects. This includes both the construction of stream crossings as well as stream channel restoration projects. The inability to meet this standard is largely due to the inherently low turbidity values that exist for streams within this Hydrologic Unit, (often less then 1 NTU), as well as the inevitable temporary increase in turbidity that will result once flows are initiated back in the stream once construction is completed. Based on our experience on past projects we believe a more reasonable objective for in-channel construction projects would be: "Increases in turbidity shall not exceed natural levels by more than ten percent, or $\geq$ 3 NTU, which ever is greater." We believe board staff should provide a more thorough review of water quality monitoring results and costs of mitigation measures related to these projects to validate and support this recommendation." The California Department of Forestry and Fire Protection (CAL FIRE) commented: "Upon review of Chapter 5.13 pages 1-4 Timber Harvest Activities (Lake Tahoe Basin), this entire section is grossly outdated and requires updating in terms of content, assumptions, allowable harvesting practices, harvesting requirements and restrictions. Chapter 5.13 fails to cite scientific data when discussing impacts and ensuing requirements regarding timber harvesting. Inaccurate		

10-0037

assumptions must be corrected based upon scientific data and, in some instances, those licensed as a California Registered Professional Forester. Also, Chapter 5.13 must now be rewritten so as to take into account practices reducing the risk of catastrophic wildfire, including treatment within SEZ's and steep slopes, pile and prescribed burning, and the findings and recommendations set forth in the Bi State Governor's Tahoe Basin Fire Commission Report adopted by Governor Schwarzenegger on May 24, 2008. Such revision would include, but not be limited to, the terms of the 2009 Timber Harvest Waiver, and the 2009 Memorandum of Understanding (MOU) between the Lahontan Water Regional Quality Control Board and the Tahoe Regional Planning Agency. Finally, Chapter 5.13 must change "CDF" to "CAL FIRE" and change "California Board of Forestry" to "California Board of Forestry and Fire Protection". In closing, we in the Amador El Dorado Unit look forward to continuing to work with the Lahontan Board and staff throughout the review and revision process of the Water Quality Control Plan for the Lahontan Region in far greater detail as the process accelerates and evolves. This initial response is a broad-brush one. Future responses to the proposed revision will be far more detailed and specific, as the hearings and public comment processes evolve. We are in a historical time of change and progress in the Tahoe Basin and we believe the above changes will enhance the ability of us all to protect our natural resources in the Lahontan Region from risk of catastrophic fire."		

10-0038

Topic 4. Complete Chapter 5 Amendments to Incorporate Tahoe Regional Planning Agency's (TRPA's) new 20-year Regional Plan. No written public comments were received on this topic.	No response is necessary.	High
Topic 5. 2009 and 2012 Triennial Review. No written public comments were received regarding the proposed commitment of staff resources to the Triennial Review process.	No response is necessary.	High
Topic 6. Update of Entire Basin Plan. The Mojave Water Agency (MWA) commented: "The 2004 MWA Integrated Regional Water Management Plan (IRWMP) is a comprehensive planning document developed through years of planning and working cooperatively with various local stakeholders and other government entities (including the LRWQCB). The IRWMP consists of a Regional Water Management Plan, a Groundwater Management Plan and an Urban Water Management Plan for the entire MWA region. This combined document is considered the foundation for water resource management for the region over the next two decades and should be strongly considered when updating the WQCP. The MWA has conducted various scientific studies for the region, maintains extensive water monitoring programs, and houses a considerable water quality data repository that should be taken into account when reviewing potential Basin Plan Objectives for the region."	The IRWMP will be referenced as appropriate in the proposed Basin Plan amendments. This topic does not involve revision of water quality objectives, but Water Board staff will keep MWA's resources in mind in connection with other planning projects.	High
Topic 7. Miscellaneous work that will not directly result in Basin Plan amendments. Regarding salt and nutrient management plans, the Los Angeles County Sanitation Districts (LACSD) commented:	The description of this topic has been revised to include staff work related to salt/nutrient management plans over the next	High

10-0039

"the description of this topic states that work could include review of salt/nutrient management plans developed by third parties under the State Water Resources Control Board's (State Board's) Recycled Water Policy (Recycled Water Policy). The Sanitation Districts believe that this is a very important issue, and that salt/nutrient management planning should be considered as a separate topic with a high overall priority. It is the Sanitation Districts' understanding that, as intended by the Recycled Water Policy, the Regional Board will review the resultant salt/nutrient management plans and consider them for adoption into the Basin Plan in the next five to seven years. Furthermore, salt/nutrient management plans could result in the need to revise certain water quality objectives within the Basin Plan, as has been demonstrated in other Regions (e.g., Santa Ana Regional Board Resolution No. R8-2004-0001). As considerable efforts will be expended by stakeholders in implementing these requirements of the Recycled Water Policy, it is imperative that the Regional Board provide adequate staff resources to fully participate and provide required guidance and feedback for these efforts. With respect to allotting Regional Board staff time/resources and prioritizing topics, the Sanitation Districts strongly suggest combining the salt/nutrient management portion of Topic No.7 with some of the efforts described in Topic Nos. 9 and 11 to make a separate topic with a high priority to address salt/nutrient management planning and associated basin plan amendments and water quality objective revisions."	three years. Most of the funding for Water Board staff work with stakeholders on salt/nutrient management plans during this time is expected to come from other sources. Incorporation of salt/nutrient management plans into the Basin Plan has been added to the list of components of the "Update of Entire Basin Plan" topic (Draft Topic No. 6). It is unlikely that all of the projected plans will be complete in time to be addressed in this project. Funding to incorporate additional salt/nutrient management plans, and funding for any related changes in water quality objectives should be considered during the next (2012) Triennial Review.	
<u>Topic 8. Revise water quality objectives for Mojave River.</u> The Mojave Water Agency (MWA) commented: "The MWA fully supports this effort and considered it a high priority item for the region. When reviewing potential water quality objectives for the Mojave River, MWA professional staff should be contacted to	Water Board staff will consult with MWA and make use of its resources during the development of the proposed workplan, and eventually the development of	High

10-0040

make available and consider various scientific studies for the region, existing water quality monitoring programs, and the MWA water quality data repository."	revised water quality objectives.	
Topic 9. Modify waste discharge prohibitions to protect additional prime groundwater recharge areas of arid basins The Los Angeles County Sanitation Districts commented: "the Districts strongly suggest combining the salt/nutrient management portion of Topic No.7 with some of the efforts described in Topic Nos. 9 and 11 to make a separate topic with a high priority to address salt/nutrient management planning and associated basin plan amendments and water quality objective revisions."	See the response to comments on Topic 7 regarding salt/nutrient management plans.	High
Topic 10. Revise Bacteria objectives. The Bishop Paiute Tribe commented: "We will be interested in any revisions to the Lahontan Regions bacteria-related objectives, as we may incorporate those revisions into the Bishop Paiute Tribe Water Quality Control Plan during our own Triennial Review process, which will occur in 2011."	The comment is acknowledged.	High
Topic 11. Develop groundwater objectives for selected South Lahontan groundwater Basins. The Los Angeles County Sanitation Districts commented: "The Sanitation Districts agree with the Regional Board staff recommendation to develop specific water quality objectives for selected South Lahontan groundwater basins, and strongly encourage that this be made a high priority item. The development of site-specific water quality objectives will help facilitate the use of recycled water in this arid region by allowing recycled water reuse projects to be evaluated on the basis of basin-specific criteria consistent with the State's antidegradation policy.	LACSD's support for this topic is acknowledged. After review of written public comments, staff's recommendation is that this topic be moved to the list of topics that would require additional resources to be addressed before the next Triennial Review. See the response to comments on Topic 7 regarding salt and nutrient management plans.	Medium

10-0041

The development of specific water quality objectives for selected South Lahontan groundwater basins will be protective of required beneficial uses of surface and groundwaters in those basins while maximizing the recycled water use benefits to the people of the State. The Sanitation Districts strongly encourage the Regional Board to make this item a high priority for the 2009 Triennial Review. The Sanitation Districts recognize that the Regional Board has limited staffing and budgets in which to complete this work, so it is recommend that the Regional Board investigate alternative methods/resources for completing the work, such as participating as a stakeholder in salt/nutrient management planning efforts…"		
Topic 12. Revise Chapter 3 language on compliance with objectives and "means of monthly means" No written public comments were received on this topic.	No response is necessary. After review of the public comments, staff moved this topic to the list that requires additional resources to be addressed before the next Triennial Review.	Medium
Topic 13. Program Manager No written public comments were received on this topic.	No response is necessary.	High
Topic 14. Add Cultural Resources Beneficial Use The Bishop Paiute Tribe commented: "we were particularly pleased to see that adding Cultural Resources (Topic No. 14) as a beneficial use is listed, but concerned that it is listed as a priority that would need additional resources to be addressed between 2010 and 2012. The addition of Cultural Resources as a beneficial use is a significant interest to members of the Bishop Paiute Tribe. Immediate examples of waters within the Lahontan region that could benefit from this use designation include Keoughs Hot Ditch, and Coso Hot Spring. The former is an area frequented and still used by Bishop tribal members for medicinal purposes, while the	After considering all written public comments, staff decided not to recommend higher priority for this topic. If additional Basin Planning resources become available before the next Triennial Review, it may be considered for a higher priority.	Medium

10-0042

later can no longer be used for medicinal and ceremonial purposes because of geothermal activity and recent increase in water temperature. It is imperative that the addition of Cultural Resources as a beneficial use be given adequate resources and addressed as soon as possible, before waters are degraded any further and existing cultural and ceremonial uses of those waters are lost forever."		
Topic 15. Outstanding National Resource water Designations for segments of East Fork Carson River, West Walker River and Leavitt Creek. No written public comments were received on this topic.	No response is necessary.	Medium
Topic 16. Develop site-specific objectives (SSOs) for salinity and related constituents in Honey Lake and adjacent ponds and wetlands. No written public comments were received on this topic.	No response is necessary.	Medium
Topic 17. Develop SSOs for salinity in Searles Lake. No written public comments were received on this topic.	No response is necessary.	Medium
Topic 18. Consider incorporating State Board Numeric Nutrient Endpoint methodology. No written public comments were received on this topic.	No response is necessary.	Medium
Statewide Priority Topic: Address violations of standards due to pollutants from natural sources. The Mojave Water Agency (MWA) commented: "The MWA and others have identified multiple areas where naturally occurring constituents of concern are over the drinking water Maximum Contaminant Levels. Prior to developing policy in the MWA service area, MWA professional staff should be contacted regarding the various scientific studies available for the region,	This topic was recommended as a statewide priority in order to emphasize the importance of ongoing discussions among State and Regional Water Board planning staff that could result in statewide policy language and/or consistent language that could be	N/A

10-0043

existing regional water quality monitoring programs, and the MWA water quality repository."	incorporated into regional Basin Plans. Development of this language is likely to be a lengthy process, and Basin Plan amendments on natural sources are not recommended as a regional Triennial Review priority at this time.	
Statewide Priority Topic: Revise Temperature objectives. No written public comments were received on this topic.	No response is necessary.	N/A
Statewide Priority Topic: Mixing zones. The Los Angeles County Sanitation Districts (LACSD) commented: "In Table 2C of the Staff Report, the Regional Board recommends that the planning priority for developing allowances for mixing zones should be addressed on a statewide basis, rather than the Regional Board attempting to amend the Basin Plan for this issue. While the Sanitation Districts understand the Regional Board's recommendation that allowances for mixing zones be developed on a statewide basis for consistency, mixing zones have already been granted in many other Basin Plans in California. In the absence of any appreciable statewide effort and in recognition of the Regional Board's limited basin planning resources, the Sanitation Districts request that mixing zone allowances remain an option in waste discharge permitting, as determined on a on a case-by-case basis within the Lahontan Region. Whether the issue is handled on a regional or statewide basis, the Sanitation Districts believe that mixing zones provisions should continue to be recognized as an integral part of the Clean Water Act regulatory structure, as this approach takes into consideration	The Lahontan Basin Plan does not now include authority to grant mixing zones. Mixing zones for California Toxics Rule (CTR) pollutants may be granted under the State Implementation Policy for CTR standards. This issue was recommended as a statewide topic to avoid the sort of duplication of effort that occurred when the State Water Board decided to develop statewide policy language on NPDES compliance schedules that superseded language in Regional Basin Plans.	N/A

10-0044

the concentrations that will actually be observed in receiving waters. As stated by the United States Environmental Protection Agency (EPA), "[t]he concept of mixing zones as a regulatory tool to address the incomplete mixing of wastewater discharges in receiving water has been embraced by both EPA and its predecessor agencies." The basis for the regulatory mixing zone, as applied to both surface and groundwaters, is that it is designed to ensure that there will be no adverse effects on receiving water quality or beneficial uses for the waterbody as a whole. With regard to allowing mixing zones in groundwater, the Sanitation Districts believe this authority is vested in Water Code Section 13263 (b), which states that, "A regional board, in prescribing requirements, need not authorize the utilization of the full waste assimilation capacities of the receiving waters." As such, since the Water Code consents to some assimilative capacity allowance, the Legislature therefore also provided for mixing zone allowances in groundwater."		
Statewide Priority Topic: Turbidity objectives. See U.S. Forest Service Comment 3 on turbidity, cited in relation to Topic 3, above.	As noted in the response to comments related to Topic 3, no changes in the Lahontan Region's turbidity objective are being proposed at this time because the U.S. Forest Service's concerns can be addressed through prohibition exemptions for restoration projects.	N/A

10-0045

Additional Topic A. The Naval Air Weapons Station China Lake commented: "The attached file contains our request for consideration for priority and staff support of a Basin Plan amendment within NAWS China Lake. Our comments are included in the format requested and include the technical support and justification for removal of the municipal and domestic supply designation for shallow groundwater. These waters are naturally impaired due to high TDS, naturally-occurring inorganics, and limited production ability. As presented in our position paper, the waters of the Eastern Indian Wells Valley and the Salt Wells Valley do not meet the SWRCB Res. 88-63 criteria for Sources of drinking water. Therefore, these water bodies do not warrant municipal and domestic supply designation since they currently do not, and are not reasonably expected to, supply a public water system." The documents submitted by the Navy provide a more detailed justification for its requested changes in beneficial uses.	This topic has been recommended for inclusion in the list of high priority topics to be worked on before the next (2012) Triennial Review. Staff will rely on the Navy to provide information and data to justify the removal of the beneficial use from the two groundwater basins. Depending on the availability of data, the amendments may not be ready for Board action until after the next Triennial Review.	High
Additional Topic B. The Los Angeles County Sanitation Districts commented: "The Sanitation Districts would also like to request that the Regional Board consider as a high priority the examination of Beneficial Uses (BUs) for Piute Ponds (also known as "Paiute Ponds") and the Piute Ponds Wetlands. The Regional Board has put forth substantial efforts toward specific BUs for Piute Ponds in the past and has repeatedly indicated its intent to consider changes in the designation of other specific BUs, namely Ground Water Recharge (GWR) and Agricultural Supply (AGR). The	After considering all written public comments, staff decided not to recommend high priority for this topic.	Medium

10-0046

Sanitation Districts would like to support efforts to de-designate these BUs, and suggest that the issue be considered as a high priority because these beneficial uses do not actually exist for these receiving waters. The Sanitation Districts are greatly concerned that there remains the risk that inappropriate water quality standards could be applied to these waterbodies and the discharges to them despite the fact that the BU designations are not appropriate. Application of drinking water or salt-sensitive agriculture based limits to the end of pipe discharges would likely require advanced treatment. Application of those same limits to receiving water would result in the need for advanced treatment and greatly increased flows in the waterbodies to counteract the effects of evapoconcentration.		

10-0047

ENCLOSURE 4

DEPARTMENT OF FORESTRY AND FIRE PROTECTION
2841 Mt. Danaher Road
Camino, CA 95709
(530) 644-2345
Website: www.fire.ca.gov

September 10, 2009

Lahontan Regional Water Quality Control Board
Attn: Judith Unsicker
2501 Lake Tahoe Blvd
South Lake Tahoe, CA 96150

RE: Comments regarding: Triennial Review of the Water Quality Control Plan for the Lahontan Region

Dear Ms. Unsicker,

Thank you for the opportunity to comment on the periodic review and revision of the Water Quality Control Plan ("Plan") for the Lahontan Region. We very much appreciate the time and attention to the issues the Plan addresses and believe changes to the Plan are in the interest of the natural resources, their management, and protection. The following are CAL FIRE's Amador El Dorado Unit comments regarding the Lake Tahoe Basin portion of the Plan.

Upon review of Chapter 5.13 pages 1-4 Timber Harvest Activities (Lake Tahoe Basin), this entire section is grossly outdated and requires updating in terms of content, assumptions, allowable harvesting practices, harvesting requirements and restrictions. Chapter 5.13 fails to cite scientific data when discussing impacts and ensuing requirements regarding timber harvesting. Inaccurate assumptions must be corrected based upon scientific data and, in some instances, those licensed as a California Registered Professional Forester. Also, Chapter 5.13 must now be rewritten so as to take into account practices reducing the risk of catastrophic wildfire, including treatment within SEZ's and steep slopes, pile and prescribed burning, and the findings and recommendations set forth in the Bi State Governor's Tahoe Basin Fire Commission Report adopted by Governor Schwarzenegger on May 24, 2008. Such revision would include, but not be limited to, the terms of the 2009 Timber Harvest Waiver, and the 2009 Memorandum of Understanding (MOU) between the Lahontan Water Regional Quality Control Board and the Tahoe Regional Planning Agency. Finally, Chapter 5.13 must change "CDF" to "CAL FIRE" and change "California Board of Forestry" to "California Board of Forestry and Fire Protection".

In closing, we in the Amador El Dorado Unit look forward to continuing to work with the Lahontan Board and staff throughout the review and revision process of the Water Quality Control Plan for the Lahontan Region in far greater detail as the process accelerates and evolves. This initial response is a broad-brush one. Future responses to the proposed revision will be far more detailed and specific, as the hearings and public comment processes evolve. We are in a historical time of

10-0049

change and progress in the Tahoe Basin and we believe the above changes will enhance the ability of us all to protect our natural resources in the Lahontan Region from risk of catastrophic fire.

Sincerely,

Mary Huggins
Amador El Dorado Division Chief
Tahoe Basin/Alpine County Division

for

Bill Holmes
Unit Chief
Amador El Dorado Unit

Electronic Cc: Todd Ferrara, Resources Agency
Del Walters, Director CAL FIRE
Bill Hoehman, Northern Region Chief CAL FIRE
Duane Shintaku, Assistant Deputy Director CAL FIRE
Clay Brandow, Hydrologist, CAL FIRE
George Gentry, Board of Forestry and Fire Protection
Mary Huggins, Tahoe Basin Division Chief CAL FIRE

BISHOP TRIBAL COUNCIL

Environmental Management Office

September 10, 2009

Judith Unsicker
CA Regional Water Quality Control Board, Lahontan Region
2501 Lake Tahoe Boulevard
South Lake Tahoe, CA 96150

RE: 2009 Triennial Review of the Lahontan Basin Plan

Dear Ms. Unsicker,

Thank you for the opportunity for the Bishop Paiute Tribe to review the CA Regional Water Quality Control Board, Lahontan Region's staff recommended priority topics for revisions to the *Water Quality Control Plan for the Lahontan Region* (Basin Plan) revisions. In reviewing the priority list, we are particularly interested in three of the topics highlighted by your staff.

First, plans to revise current bacteria objectives. As you are aware, the Bishop Paiute Tribe has its own water quality standards (*Bishop Paiute Tribe Water Quality Control Plan)* for waters on the reservation which includes bacteria objectives based upon *U.S. Environmental Protection Agency, Ambient Water Quality Criteria for Bacteria-1986 (EPA 440-5-84-002).* We will be interested in any revisions to the Lahontan Region's bacteria-related objectives, as we may incorporate those revisions into the *Bishop Paiute Tribe Water Quality Control Plan* during our own Triennial Review process, which will occur in 2011.

In addition, the Bishop Paiute Tribe is interested in the statewide "bio-objective" language and development of numeric biocriteria. We are in the midst of developing our own index of biological integrity for benthic macroinvertebrates for Bishop Creek, and would like to incorporate such developments into our own standards if applicable. We understand that this process could take several years to implement, nonetheless we look forward to its development.

Finally, we were particularly pleased to see that adding Cultural Resources (Topic No. 14) as a beneficial use is listed, but concerned that it is listed as a priority that would need additional resources to be addressed between 2010 and 2012. The addition of Cultural Resources as a beneficial use is a significant interest to members of the Bishop Paiute Tribe. Immediate 10-0051

PAIUTE PROFESSIONAL BUILDING • 50 TU SU LANE • BISHOP, CA 93514
PHONE (760) 873-3584 • FAX (760) 873-4143

examples of waters within the Lahontan region that could benefit from this use designation include Keoughs Hot Ditch, and Coso Hot Spring. The former is an area frequented and still used by Bishop tribal members for medicinal purposes, while the later can no longer be used for medicinal and ceremonial purposes because of geothermal activity and recent increase in water temperature. It is imperative that the addition of Cultural Resources as a beneficial use be given adequate resources and addressed as soon as possible, before waters are degraded any further and existing cultural and ceremonial uses of those waters are lost forever.

Should you have any questions, or seek further information regarding the Bishop Paiute Tribe's comments on the 2009 Triennial Review of the Lahontan Basin Plan, please contact me at 760.873.3584 ext. 246, or via email at: juliette.nabahe@bishoppaiute.org. Thank you for your time.

Sincerely,

Juliette Nabahe

Juliette Nabahe
Water Quality Coordinator

CC: Brian Adkins, Environmental Manager

10-0052

United States Department of Agriculture | Forest Service | Lake Tahoe Basin Management Unit | 35 College Drive
South Lake Tahoe, CA 96150
(530) 543-2600

File Code: 2500
Date: September 11, 2009

RECEIVED
SEP 15 2009
By JEU

Judith Unsicker
Lahonton Regional Water Quality Control Board
2501 Lake Tahoe Boulevard
South Lake Tahoe, CA 96150

Dear Ms. Unsicker:

The USDA Forest Service, Pacific Southwest Region (USFS), has the following comments on the Lahontan Regional Water Quality Control Board Triennial Review of its Basin Plan specific to waste-discharge prohibitions for the Tahoe Hydrologic Units:

1) The prohibition on "The discharge or threatened discharge attributable to human activities (or human development), of solid or liquid waste materials including soil, silt, clay, sand, and other organic or earthen materials to lands with the 100-year floodplains of the Truckee River, and tributary of the Truckee River or Lake Tahoe", is currently being applied to placement of burn piles with the 100 year floodplain. We do not believe it was the intent that this prohibition apply to the practice of pile burning, as the section describing control measures for Fire Control and Prescribed Burn in the Basin Plan states that "Burning under prescribed conditions should generally be located away from stream channels or standing water" **and** "When the residual fuel load will be acceptable, non-burning techniques such as scattering or hauling away slash are preferred, especially where the slash will provide soil protection". We have heard from Lahontan staff that there is a concern that burn piles have the potential to be transported into stream channels during over bank flood events, and therefore are considered to be a "potential discharge of organic materials". However staff has also indicated that there is no prohibition regarding lop and scatter of residual fuels with the floodplain, as well as prescribed underburns. Because of the inherent structural stability of burn piles and the unlikely occurrence of over bank flood events with the magnitude necessary to move these piles, burn piles are highly unlikely to be transported into waterbodies, and are certainly much less likely to be mobilized then residual fuels scattered over the floodplain surface. Likewise we have heard concerns about the transport of ash from burn piles, however the transport of ash residues from prescribed underburning does not appear to trigger the same level of concern.

Fuels treatments that include piling of slash prior to burning are needed in many riparian areas to reduce unnaturally high fuel loads, prevent adverse impacts to water quality from severe wildfires, and restore the health and vigor of the riparian vegetation. Followup maintenance treatments with prescribed underburns are also likely to be desired in some areas (ie. meadow restoration projects). I request that these prohibitions be modified to

10-0053

exclude pile burning, as well as other ground fuels treatments. Design features related to all residual ground fuels treatments (pile burning, underburning, lop and scatter) to prevent soil and water impacts would still be developed as part of the NEPA process and timber waiver permitting.

2) The prohibitions on permanent soil disturbance in Stream Environment Zones (SEZ) for forest management activities in the Lake Tahoe Hydrologic Unit are also being applied to pile burning. Unlike grading and construction, soil disturbance resulting from pile burning is dispersed in nature, and localized impacts generally do not persist. The primary threat from pile burning concerns potential temporary impacts from erosion, transport of ash, and subsurface flows of nutrients. Design features have been developed to mitigate these potential temporary impacts as part of the NEPA process.

Data collected by the Lake Tahoe Basin Management Unit (LTBMU, 2008) indicates substantial vegetative recovery within several years of burning piles in SEZs, and therefore that permanent soil disturbance is not occurring. Although there are very few opportunities to conduct monitoring and research because of current restrictions, both research and monitoring is funded and planned on this topic within the Lake Tahoe Hydrologic Unit. We request that the prohibition on permanent soil disturbance be modified to exclude pile burning, and that a clear definition of what constitutes permanent soil disturbance is provided. We have heard from Lahontan staff that any soil disturbance that persists for more then a year is considered to be "permanent". We do not believe this a fair definition of permanent, and that a more logical definition needs to be articulated and provided in the Basin Plan.

3) The current prohibition within the Lake Tahoe Hydrologic Unit stating that during construction activities "Increases in turbidity shall not exceed natural levels by more than ten percent" has proven to be economically infeasible for in-channel construction projects. This includes both the construction of stream crossings as well as stream channel restoration projects. The inability to meet this standard is largely due to the inherently low turbidity values that exist for streams within this Hydrologic Unit, (often less then 1 NTU), as well as the inevitable temporary increase in turbidity that will result once flows are initiated back in the stream once construction is completed. Based on our experience on past projects we believe a more reasonable objective for in-channel construction projects would be:

"Increases in turbidity shall not exceed natural levels by more than ten percent, or $\geq$3 NTU, which ever is greater."

We believe board staff should provide a more thorough review of water quality monitoring results and costs of mitigation measures related to these projects to validate and support this recommendation.

Thank you for the opportunity to comment on the triennial review. If you have any questions, please contact, Sue Norman, LTBMU Physical Sciences Group Leader, at 530-543-2662.

Sincerely,

Terri Marceron

TERRI MARCERON
Forest Supervisor

cc: Sue Norman, Barry Hill

10-0055

WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

STEPHEN R. MAGUIN
Chief Engineer and General Manager

RECEIVED
SEP 17 2009
BY

September 14, 2009
File Nos. 14-14.01-00
20-04.01-00

Ms. Judith Unsicker
California Regional Water Quality Control Board
Lahontan Region
2501 Lake Tahoe Boulevard
South Lake Tahoe, CA 96150

Dear Ms. Unsicker:

2009 Triennial Review of the Lahontan Basin Plan

Thank you for the opportunity to provide comments on the Triennial Review of the Water Quality Control Plan for the Lahontan Region (Basin Plan). Within the jurisdiction of the California Regional Water Quality Control Board, Lahontan Region (Regional Board), County Sanitation District Nos. 14 and 20 of Los Angeles County (Sanitation Districts) operate the Lancaster and Palmdale Water Reclamation Plants (WRPs), respectively. These plants operate under Regional Board Orders and may be directly impacted by modifications to the Basin Plan. The Sanitation Districts are pleased to provide comments on four issues that we feel should be priorities for this Triennial Review of the Basin Plan: Topic Nos. 7 and 11, listed in Table 2A in the July 2009 "*Staff Report on the Triennial Review of the Water Quality Control Plan for the Lahontan Region*" (Staff Report); development of allowances for mixing zones; and Beneficial Use designations related to Piute Ponds, located in the Lancaster Hydrologic Area.

Topic No. 7 – Miscellaneous Work That Will Not Directly Result In Basin Plan Amendments

In the Staff Report, the description of this topic states that work could include review of salt/nutrient management plans developed by third parties under the State Water Resources Control Board's (State Board's) Recycled Water Policy (Recycled Water Policy). The Sanitation Districts believe that this is a very important issue, and that salt/nutrient management planning should be considered as a separate topic with a high overall priority. It is the Sanitation Districts' understanding that, as intended by the Recycled Water Policy, the Regional Board will review the resultant salt/nutrient management plans and consider them for adoption into the Basin Plan in the next five to seven years. Furthermore, salt/nutrient management plans could result in the need to revise certain water quality objectives within the Basin Plan, as has been demonstrated in other Regions (e.g., Santa Ana Regional Board Resolution No. R8-2004-0001). As considerable efforts will be expended by stakeholders in implementing these requirements of the Recycled Water Policy, it is imperative that the Regional Board provide adequate staff resources to fully participate and provide required guidance and feedback for these efforts. With respect to allotting Regional Board staff time/resources and prioritizing topics, the Sanitation Districts strongly suggest combining the salt/nutrient management portion of Topic No. 7 with some of the efforts described in Topic Nos. 9 and 11 to make a separate topic with a high priority to address salt/nutrient management planning and associated basin plan amendments and water quality objective revisions.

10-0056

DOC #1358148

Topic No. 11 - Develop Groundwater Objectives for Selected South Lahontan Groundwater Basins

The Sanitation Districts agree with the Regional Board staff recommendation to develop specific water quality objectives for selected South Lahontan groundwater basins, and strongly encourage that this be made a high priority item. The development of site-specific water quality objectives will help facilitate the use of recycled water in this arid region by allowing recycled water reuse projects to be evaluated on the basis of basin-specific criteria consistent with the State's antidegradation policy.

The development of specific water quality objectives for selected South Lahontan groundwater basins will be protective of required beneficial uses of surface and groundwaters in those basins while maximizing the recycled water use benefits to the people of the State. The Sanitation Districts strongly encourage the Regional Board to make this item a high priority for the 2009 Triennial Review. The Sanitation Districts recognize that the Regional Board has limited staffing and budgets in which to complete this work, so it is recommend that the Regional Board investigate alternative methods/resources for completing the work, such as participating as a stakeholder in salt/nutrient management planning efforts (as described above).

Mixing Zones

In Table 2C of the Staff Report, the Regional Board recommends that the planning priority for developing allowances for mixing zones should be addressed on a statewide basis, rather than the Regional Board attempting to amend the Basin Plan for this issue. While the Sanitation Districts understand the Regional Board's recommendation that allowances for mixing zones be developed on a statewide basis for consistency, mixing zones have already been granted in many other Basin Plans in California. In the absence of any appreciable statewide effort and in recognition of the Regional Board's limited basin planning resources, the Sanitation Districts request that mixing zone allowances remain an option in waste discharge permitting, as determined on a on a case-by-case basis within the Lahontan Region.

Whether the issue is handled on a regional or statewide basis, the Sanitation Districts believe that mixing zones provisions should continue to be recognized as an integral part of the Clean Water Act regulatory structure, as this approach takes into consideration the concentrations that will actually be observed in receiving waters. As stated by the United States Environmental Protection Agency (EPA)[1], "[t]he concept of mixing zones as a regulatory tool to address the incomplete mixing of wastewater discharges in receiving water has been embraced by both EPA and its predecessor agencies." The basis for the regulatory mixing zone, as applied to both surface and groundwaters, is that it is designed to ensure that there will be no adverse effects on receiving water quality or beneficial uses for the waterbody as a whole. With regard to allowing mixing zones in groundwater, the Sanitation Districts believe this authority is vested in Water Code Section 13263 (b), which states that, "A regional board, in prescribing requirements, need not authorize the utilization of the full waste assimilation capacities of the receiving waters." As such, since the Water Code consents to some assimilative capacity allowance, the Legislature therefore also provided for mixing zone allowances in groundwater.

Beneficial Use Designations of Piute Ponds

The Sanitation Districts would also like to request that the Regional Board consider as a high priority the examination of Beneficial Uses (BUs) for Piute Ponds (also known as "Paiute Ponds") and the Piute Ponds Wetlands. The Regional Board has put forth substantial efforts toward specific BUs for Piute

[1] EPA, Office of Water, *Advance Notice of Proposed Rulemaking, Water Quality Standards Regulation.* July 7, 1998, 63 FR 36741.

Ponds in the past and has repeatedly indicated its intent[2,3] to consider changes in the designation of other specific BUs, namely Ground Water Recharge (GWR) and Agricultural Supply (AGR). The Sanitation Districts would like to support efforts to de-designate these BUs, and suggest that the issue be considered as a high priority because these beneficial uses do not actually exist for these receiving waters. The Sanitation Districts are greatly concerned that there remains the risk that inappropriate water quality standards could be applied to these waterbodies and the discharges to them despite the fact that the BU designations are not appropriate. Application of drinking water or salt-sensitive agriculture based limits to the end of pipe discharges would likely require advanced treatment. Application of those same limits to receiving water would result in the need for advanced treatment and greatly increased flows in the waterbodies to counteract the effects of evapoconcentration.

Ground Water Recharge (GWR)

The Sanitation Districts have provided the Regional Board with substantial technical evidence indicating that the GWR beneficial use does not exist for Piute Ponds and the Piute Ponds Wetlands. Since having submitted the reports, "*Beneficial Use Designation Report*" (October 2003) and "*Addendum to Final Report, Beneficial Use Designation Report*" (August 2004), the Sanitation Districts have investigated the areas of Amargosa Creek, Piute Ponds and Rosamond Dry Lake extensively as part of the Lancaster WRP Groundwater Monitoring Plan. This Groundwater Monitoring Plan was implemented in accordance with waste discharge requirements (Regional Board Order No. R6V-2002-053) to investigate the potential effects of discharges to the Lancaster WRP receiving waters on underlying groundwater quality. The final report summarizing the findings of this study was submitted to the Regional Board under the title "*Lancaster Water Reclamation Plant Groundwater Monitoring Plan: Evaluation of Phase II Investigation Results at Piute Ponds*" in December 2005. The analysis indicated that there is no significant recharge to the groundwater aquifer below Piute Ponds and Rosamond Dry Lake due to the presence of a thick lacustrine clay layer. Shallow water exists below the Piute Ponds area, but it is isolated from the groundwater aquifer by this clay layer, which dips to the west or southwest of Piute Ponds. Since shallow groundwater below Piute Ponds has the potential to flow down the slope of the lacustrine clay layer and contribute to the observed perched intervals, which in turn creates the possibility of contributing to recharge of the regional groundwater aquifer, the Sanitation Districts retained Geochemical Technologies Corporation (GTC) to further investigate this hypothesis. GTC evaluated hydrogeological and groundwater quality data, and based on this evaluation, concluded that there is insignificant or no recharge to the regional groundwater aquifer under the Lancaster WRP receiving waters, because there appears to be no mechanism that provides a pathway for recharge. The findings of this study are contained in the previously submitted memorandum "*Subsurface Geohydrology Project: Paiute Ponds*" (December 2006) prepared by GTC.

Agricultural Supply (AGR)

The waters of Piute Ponds and the Piute Ponds Wetlands have never been used nor are they proposed to be used as agricultural supply. These waterbodies exist wholly within property owned by the US Air Force and the limited-access area is maintained for the purposes of habitat maintenance. There may have been a previous understanding by the Regional Board staff that the water in Piute Ponds would be diverted to agricultural sites for crop irrigation. This is not the case and there are no plans to do so. Water that flows through the ponds is discharged to Rosamond Dry Lake. The Sanitation Districts and

---

[2] Letter to Sanitation Districts from Regional Board, "*Comments On Los Angeles County Sanitation Districts' October 2003 Aquatic Biological Survey and Beneficial Use Designation Reports for Paiute Ponds, Amargosa Creek, and Rosamond Dry Lake*," January 20, 2004.

[3] Lahontan Regional Board, "*Technical Staff Report: Revised Water Quality Standards for Surface Waters of the Antelope Hydrologic Unit*," August 2007.

Edwards Air Force Base are currently evaluating options to maintain the integrity of Piute Ponds but none of these involve the use of Piute Ponds water for agricultural supply.

Recycled water used for agricultural supply is piped directly from the Sanitation Districts-operated water reclamation facilities, and is never conveyed from Piute Ponds or the Piute Ponds Wetlands. Ambient water from Paiute Ponds is not suitable as irrigation water for agricultural uses primarily due to high salt levels. Any water diverted from Paiute Ponds and used for irrigation would have to be treated (salt removal) or blended with plant effluent to make it suitable for irrigation for even non-salt sensitive crops.

The Regional Board has indicted that, "If future management scenarios for the Piute Ponds do not include agricultural diversions, the Water Board may consider removing the AGR use from the ponds and wetlands at a later date."[4] Again, there are no plans for diversions of water from Piute Ponds for agricultural supply; thus, the Sanitation Districts request that AGR is de-designated as a beneficial use for Piute Ponds and the Piute Ponds Wetlands.

In addition, as explained in the section above about groundwater recharge, there is very limited connectivity from Piute Ponds or the Piute Ponds Wetlands to the regional groundwater aquifer that is used for some agricultural activities. Thus, the AGR beneficial use for groundwater would not be affected by de-designating this use for surface water.

Alternatively, if the Regional Board continues to insist on keeping the AGR beneficial use designation for Piute Ponds and the Piute Ponds Wetlands, at the very least, the Sanitation Districts request that the AGR beneficial use be more narrowly defined for these receiving waters to exclude using the water for irrigating crops which may exhibit sensitivity to Piute Ponds water quality (such as salt sensitivity).

Again, thank you for the opportunity to comment on the Triennial Review of the Lahontan Basin Plan. The Sanitation Districts anticipate providing testimony at the public hearing on this issue to be held on October 14 and 15, 2009. In addition, the Sanitation Districts may be able to offer staff resources for Basin Planning efforts, as they pertain to Sanitation Districts' activities and concerns. If you have any questions, please contact Erika de Hollan at (562) 908-4288 extension 2836 (or by email at edehollan@lacsd.org).

Very truly yours,

Stephen R. Maguin

Ray Tremblay
Assistant Department Head
Technical Services

RT:EXD:lmb

[4] Lahontan Regional Board, "*Technical Staff Report: Revised Water Quality Standards for Surface Waters of the Antelope Hydrologic Unit,*" August 2007.

22450 Headquarters Drive ◆ Apple Valley, California 92307
Phone (760) 946-7000 ◆ Fax (760) 240-2642 ◆ www.mojavewater.org

Mojave Water Agency

RECEIVED
SEP 17 2009
By JEU

September 14, 2009

Lauri Kemper, Supervising Water Resource Control Engineer
California Regional Water Quality Control Board
Lahontan Region
2501 Lake Tahoe Boulevard
South Lake Tahoe, CA 96150

RE: 2009 TRIENNIAL REVIEW OF THE LAHONTAN BASIN PLAN

Dear Ms. Kemper:

Thank you for the opportunity to review and comment on the 2009 Triennial Review of the Lahontan Basin Plan. Mojave Water Agency's comments are as follows:

Affected Water Bodies:

DWR Groundwater Basins	
Basin	**Name**
6-35	CRONISE VALLEY
6-36.01	LANGFORD VALLEY
6-37	COYOTE LAKE VALLEY
6-38	CAVES CANYON VALLEY
6-40	LOWER MOJAVE RIVER VALLEY
6-41	MIDDLE MOJAVE RIVER VALLEY
6-42	UPPER MOJAVE RIVER VALLEY
6-43	EL MIRAGE VALLEY
6-44	ANTELOPE VALLEY
6-46	FREMONT VALLEY
6-47	HARPER VALLEY
6-48	GOLDSTONE VALLEY
6-49	SUPERIOR VALLEY
6-50	CUDDEBACK VALLEY
6-51	PILOT KNOB VALLEY
6-52	SEARLES VALLEY
6-53	SALT WELLS VALLEY
6-54	INDIAN WELLS VALLEY
6-77	GRASS VALLEY

10-0060

CalWater Watersheds	
Hydraulic Unit	**Hydrologic Area Name**
616.0	BICYCLE
617.0	GOLDSTONE
618.0	COYOTE
619.0	SUPERIOR
621.1	SEARLES VALLEY
621.2	SALT WELLS
621.3	PILOT KNOB
624.2	CHINA LAKE
625.4	KOEHN
626.5	LANCASTER
626.6	NORTH MUTOC
626.7	BUTTES
626.8	ROCK CREEK
627.0	CUDDEBACK
628.1	EL MIRAGE
628.2	UPPER MOJAVE
628.3	MIDDLE MOJAVE
628.4	LOCKHART
628.5	LOWER MOJAVE
628.6	NEW BERRY SPRINGS
628.7	AFTON

TABLE A COMMENTS
Task No. 6 – Update of entire Basin Plan

For the MWA region within the Lahontan Regional Water Quality Control Board (LRWQCB) management area, the MWA requests the following considerations be used in the creation of the Basin Plan Amendment:

The majority of the MWA service area that is within the boundaries of the Mojave Basin Area Judgment is also within the Lahontan Area. The Judgment includes a "physical solution" for the area to stabilize and replenish local water supplies and identifies how imported water will be used in order to maintain the stability and sustainability of the affected basins. The 2004 MWA Integrated Regional Water Management Plan (IRWMP) is a comprehensive planning document developed through years of planning and working cooperatively with various local stakeholders and other government entities (including the LRWQCB). The IRWMP consists of a Regional Water Management Plan, a Groundwater Management Plan and an Urban Water Management Plan for the entire MWA region. This combined document is considered the foundation for water resource management for the region over the next two decades and should be strongly considered when updating the WQCP.

The MWA has conducted various scientific studies for the region, maintains extensive water quality monitoring programs, and houses a considerable water quality data repository that should be taken into account when reviewing potential Basin Plan Objectives for the region.

Task No. 8 – Revise Water Quality Objectives for Mojave River

The MWA fully supports this effort and considers it a high priority item for the region. When reviewing potential water quality objectives for the Mojave River, MWA professional staff should be contacted to make available and consider various scientific studies for the region, existing regional water quality monitoring programs, and the MWA water quality data repository.

TABLE C COMMENTS
Table C. Address Violations of Standards Due to Pollutants from Natural Sources

The MWA and others have identified multiple areas where naturally occurring constituents of concern are over the drinking water Maximum Contaminant Levels. Prior to developing policy in the MWA service area, MWA professional staff should be contacted regarding the various scientific studies available for the region, existing regional water quality monitoring programs, and the MWA water quality data repository.

Much of the data, planning documents, scientific studies, data from monitoring programs and other information are available via the web at http://www.mojavewater.org/StateofBasin.aspx. MWA professional staff should be contacted for data sets of interest that are not found on the MWA website.

The MWA is looking forward to working closely with the LRWQCB in order to help develop sound policy that balances the multiple needs for the common good for the region. If you have any questions regarding our comments, please contact me at (760) 946-7015 or e-mail at leckhart@mojavewater.org.

Sincerely,

Lance Eckhart, PG, CHg, REA
Principal Hydrogeologist

LE:mrd

10-0062

Mail Message

Reply Read Later

Mail Properties

From:	"Cornell, Michael J CIV NAVFAC SW" <michael.j.cornell@navy.mil>	Friday - September 11, 2009 4:07 PM
To:	"Judith Unsicker" <JUnsicker@waterboards.ca.gov> <OPacheco@waterboards.ca.gov>, "Mcdonald, James E CIV NAVFACSW, GRDK39/OPDK" <james.e.mcdonald@navy.mil>, "Laurie Racca" <LRacca@dtsc.ca.gov>	
CC:		
Subject:	Public comment for the Triennial Review of the Lahontan Basin Plan	
Attachments:	Information Requested in Written Triennial Review Comments-rev2.doc (41984 bytes)	[View] [Open] [Save As]
	DeDes_Figures.pdf (1176238 bytes)	[Open] [Save As]
	DeDes_Tables.xls (176128 bytes)	[View] [Open] [Save As]
	SWV_IWV_Drinking_Water_Exemption_Sept_2009DF (2).doc (93184 bytes)	[View] [Open] [Save As]
	smime.p7s (4950 bytes)	[View] [Open] [Save As]
	Mime.822 (2048576 bytes)	[Save As]

Ms. Unsicker - good afternoon -

On behalf of the Naval Air Weapons Station China Lake, I am submitting the U.S. Navy's public comments on the Triennial Review of the Lahontan Basin Plan.

The attached file contains our request for consideration for priority and staff support of a Basin Plan amendment within NAWS China Lake. Our comments are included in the format requested and include the technical support and justification for removal of the municipal and domestic supply designation for shallow groundwater. These waters are naturally impaired due to high TDS, naturally-occurring inorganics, and limited production ability. As presented in our position paper, the waters of the Eastern Indian Wells Valley and the Salt Wells Valley do not meet the SWRCB Res. 88-63 criteria for Sources of drinking water. Therefore, these water bodies do not warrant municipal and domestic supply designation since they currently do not, and are not reasonably expected to, supply a public water system.

If you wouldn't mind, pls provide a reply so I know that you received this by the deadline.

Thank you for your consideration,
NAWS China Lake Team

10-0063

INFORMATION REQUESTED IN WRITTEN TRIENNIAL REVIEW COMMENTS
Written comments on Triennial Review priorities should include the following information:

1. Submitting Organization: This section should include the name of the organization, entity or person submitting the data, information, documents or evidence for consideration.

   U.S. NAVY - Naval Air Weapons Station China Lake, CA

2. Contact Person: This section should include the name, address, phone number(s), and e-mail address for the contact person that can answer questions about the information provided.

   Commanding Officer
   Naval Air Weapons Station China Lake, CA
   Attn: Mr. Jim McDonald
   429 E. Bowen Road – Stop 4014
   China Lake, CA 93555-6108
   james.e.mcdonald@navy.mil
   (760) 939-3216

3. Affected Waterbody(ies) and Watershed(s): This section should identify the specific waterbody(ies) and watershed(s) affected by the data, information or evidence.

   a) *Groundwater in Salt Wells Valley, northwestern San Bernardino County (Department of Water Resources [DWR] Basin No. 6-53)*
   b) *Groundwater in eastern Indian Wells Valley, Kern, San Bernardino, and Inyo Counties (DWR Basin No. 6-54)*

4. Affected section of the Basin Plan:
a. Affected Beneficial Use: If applicable, this section should identify the beneficial use(s) listed in the Basin Plan that is addressed by the data, information or evidence. Alternatively, if the information relates to a beneficial use not currently designated in the Basin Plan, this section should identify the waterbody(ies) to which the beneficial use(s) should apply.

Municipal and Domestic Supply (MUN)

b. Affected Water Quality *Objective:* This section should include, if applicable, the water quality objective for which the data, information, or evidence is being submitted. If the data, information, or evidence relates to more than one water quality objective, please list all water quality objectives to which the information pertains.

The affected water quality objectives are maximum contaminant levels (MCL). MCLs will no longer qualify as water quality objectives once the MUN beneficial use designation is removed.

c. Affected Implementation Program: This section should include, if applicable, the existing implementation program that needs modification or a description of a new implementation program that should be developed. Implementation programs include any necessary monitoring and surveillance to determine the effectiveness of the implementation program.

The proposed removal of the MUN beneficial use designation will not require the development of an implementation program.

5. Concise Summary of Suggested Revisions: This section should clearly and specifically describe the suggested Basin Plan amendments based upon the data, information or evidence submitted.

   See attached Technical Justification Letter for Removal of MUN Designation for Groundwater in Salt Wells Valley and Eastern Indian Wells Valley.

6. Supporting Data, Information or Evidence: For each comment, list any existing documents, data, information, and/or specific evidence (with references to particular pages as appropriate) that the Regional Water Board should consider and provide copies of the documents, data, information, and/or evidence referenced (electronically, where possible).

   Key documents supporting the proposed removal of the MUN designation include the following:

   Tetra Tech EM Inc. (Tetra Tech). 2001. "Background Groundwater Chemistry Study Report." Final. September.

   Tetra Tech. 2002. "Preliminary Background Groundwater Data Set for Playa Deposits Memorandum, NAWS China Lake, California." July 24.

   Tetra Tech. 2003. "Basewide Hydrogeologic Characterization Report." NAWS China Lake, California. Final. July.

   Tetra Tech. 2006. "Remedial Investigation Propulsion Laboratory Operable Unit." NAWS China Lake, California. Final. May 26.

   Tetra Tech. 2008a. "Feasibility Study for the Area R Operable Unit." NAWS China Lake, California. Final. February.

   Tetra Tech. 2008b. "Feasibility Study for Michelson Laboratory/Public Works Operable Unit." NAWS China Lake, California. Draft. November.

7. Concise Summary of Data, Information or Evidence: This section should describe in one or two sentences the essence of the data, information, or evidence submitted to support the suggested revisions to the Basin Plan.

   Based on several criteria, most notably total dissolved solids and naturally occurring inorganic constituent concentrations, groundwater in Salt Wells Valley and eastern Indian Wells Valley is not suitable or potentially suitable as a source for municipal or domestic water supply.

8. Stakeholder Support for Suggested Revisions to the Basin Plan: If applicable, please explain any widespread stakeholder support for the suggested revisions. Also, if available, please list supportive stakeholder(s) with phone or email contact(s).

   Stakeholder support includes members of the Naval Air Weapons Station (NAWS) China Lake Restoration Advisory Board (RAB). Members of the RAB include the Commanding Officer of NAWS China Lake and several community members who reside in the greater Ridgecrest, California area. The phone and email addresses (if available) of the RAB members are listed below.

Capt. Gary Peterson, Commanding Officer, gary.peterson@navy.mil, 760-939-2211

Leroy Corlett, corlettc@mchsi.com760-446-3028

Luke Crews, atacc1@ridgenet.net, 760-371-4133

Barbara Houghton, houghtonb@co.kern.ca.us, 661-862-8743

Ray Kelso, pleistocene@verizon.net, 760-375-9833

David Kurdeka, davekurdeka@verizon.net, 760-375-5132

Craig McKenzie, craig.mckenzie@navy.mil, 760-446-1678

Terry Rodgers, rodgerskcwa@iwvisp.com, 760-375-9277

Carolyn Shepherd, shepherdCA@mchsi.com, 760-375-4867

Lee Sutton, 2roadrunner@verizon.net, 760-375-1981

9. Financial Support for Suggested Revisions to the Basin Plan: If applicable, please describe any substantial resources that have been invested in developing technical information to support the requested revisions. Also, if applicable, please describe any substantial resources that are likely to augment Regional Water Board resources to develop the requested revisions.

   The US Navy has invested substantial financial resources to investigate and characterize groundwater conditions in Indian Wells and Salt Wells Valleys. Reports documenting these studies are listed under item 6, above. Of particular note is the Basewide Hydrogeologic Characterization Report (Tetra Tech 2003), which was a multi-year effort to develop and refine a hydrogeologic conceptual model for NAWS China Lake.

September 11, 2009

Mr. Omar Pacheco
California Regional Water Quality Control Board
Lahontan Region 6
14440 Civic Drive, Suite 200
Victorville, California 92392-2306

Subject: Proposed Amendment to the Water Quality Control Plan for the Lahontan Region to Remove Municipal and Domestic Supply Beneficial Use Designation for Groundwater in Salt Wells Valley and Shallow Groundwater in Eastern Indian Wells Valley

Dear Mr. Pacheco:

The Department of the Navy is proposing an amendment to the Water Quality Control Plan for the Lahontan Region (Basin Plan) which would remove the municipal and domestic supply beneficial use (MUN) designation for groundwater in Salt Wells Valley (SWV) and shallow groundwater in eastern Indian Wells Valley (IWV). SWV and IWV are designated as California Department of Water Resources (DWR) Basin Numbers 6-53 and 6-54, respectively. These valleys are predominantly within the boundaries of Naval Air Weapons Station (NAWS) China Lake (Figure 1). The proposed amendment is based on criteria contained in State Water Resources Control Board (SWRCB) Resolution 88-63. Although other beneficial use designations have been applied to water within IWV and SWV, this request concerns only the MUN designation.

Resolution 88-63 states the following:

> "All surface and ground waters in the State are considered to be suitable, or potentially suitable for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of surface and groundwater where:
>
> - The total dissolved solids (TDS) exceed 3,000 milligrams per liter (mg/L) (5,000 microSiemens per centimeter, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or
> - There is contamination, by natural processes that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or
> - The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day."

10-0067

Groundwater conditions in SWV and IWV are discussed below, with emphasis on those factors the Navy believes preclude use of groundwater in SWV and eastern IWV as suitable or potentially suitable sources for municipal or domestic supply.

SALT WELLS VALLEY

Geology and Hydrogeology

SWV is a structurally formed valley that covers 12 square miles east of IWV. SWV drains eastward to Searles Valley and is separated from IWV by hills composed of basement-complex rocks. The SWV basin is filled with Quaternary-age sedimentary deposits, consisting primarily of interbedded gravel, sand, and silt, with significant intervals of clay toward the center and eastern portions of the basin. The sedimentary deposits range from a few feet thick at the upper edges of the valley to more than 400 feet under the mud flats in eastern SWV. The sedimentary deposits overlie basement complex and intrusive igneous rock.

Based on the information collected in the Basewide Hydrogeologic Characterization (BHC) study (Tetra Tech EM Inc. [Tetra Tech] 2003a), groundwater in SWV is unconfined in a single hydrologic zone and flows east toward Searles Valley. Groundwater is typically first encountered at about 10 feet below ground surface (bgs) in the eastern edge of the valley and at about 25 feet bgs in the western part of SWV. The alluvial fans along the southern, western, and northern flanks of the valley contain groundwater at depths of more than 90 feet bgs.

Total Dissolved Solids Distribution

Piper diagrams constructed for several wells indicate SWV groundwater chemistry is predominantly sodium chloride (Tetra Tech 2003a). As illustrated on Figure 2, TDS content ranges from about 3,000 mg/L on the western edge of the valley to more than 39,000 mg/L beneath the playa in the central and eastern part of the valley. The mean TDS concentration of approximately 14,000 mg/L is more than four times the 3,000 mg/L standard cited in SWRCB Resolution 88-63. The TDS sample results are summarized in Table 1.

Naturally Occurring Inorganic Constituents Relative to Applicable MCLs

Groundwater was sampled from nine wells in SWV to obtain data on general water quality and metals concentration in support of the BHC study. Four of these wells, along with an additional upgradient well, were used to develop background metals concentrations for comparison with site-specific data and for use in risk assessments at the Propulsion Laboratory Operable Unit (Tetra Tech 2006). Table 1 includes a statistical summary of sample results for metals and other inorganic constituents for these 10 SWV wells. As shown, mean background concentrations for fluoride, TDS, and arsenic exceed California maximum contaminant levels (MCL). Arsenic is of

particular note, as its mean background concentration of 73 micrograms per liter (µg/L) is approximately seven times the primary MCL. The mean TDS concentration of approximately 14,000 mg/L noted previously relative to the SWRCB Resolution 88-63 standard is also significantly higher than the upper secondary MCL of 1,000 mg/L for municipal use. Arsenic data are included with the TDS concentrations on Figure 2.

Table 1 also indicates that mean concentrations of chloride, sulfate, iron, and manganese exceed applicable secondary MCLs in SWV groundwater and that other metals can occasionally exceed primary or secondary MCLs (aluminum, chromium, nickel, and thallium). Treatment of SWV groundwater to reduce metals and attain MCLs would incur substantial cost. High-quality drinking water is currently supplied to Navy operations in SWV by the Indian Wells Valley Water District in Ridgecrest, California.

Historical, Current, and Potential Future Groundwater Use

There is no information to indicate that SWV groundwater has ever been used as a source of domestic or municipal water. The only known groundwater wells are monitoring wells related to environmental investigations. The current land use at SWV is military–industrial, and it is expected that future land use will continue to be military-industrial. Therefore, it is unlikely that SWV groundwater will be used as a source of drinking water in the future.

Well Construction Requirements

The California Department of Water Resources (DWR) has developed standard well construction requirements to prevent contamination of water supply wells by chemicals and biologic hazards related to point and nonpoint sources (DWR 1991). The California Well Standards require that annular seals must extend at least 50 feet bgs for community and industrial water supply wells and at least 20 feet bgs for domestic, agricultural, and other types of water supply wells. The depth to groundwater in SWV ranges from about 10 feet bgs in the east to 25 feet bgs in the west. The thickness of the saturated sediments varies greatly, ranging from a few feet near the edges of the valley to more than 400 feet in the eastern portion of the valley. Water supply wells cannot be installed in accordance with the California Well Standards for those areas where the saturated thickness is limited.

Sustained Groundwater Yield

Resolution 88-63 states that groundwater suitable for the MUN designation should provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day. Pumping tests have not been conducted on wells in SWV; however, well behavior during development indicates wells in the central and eastern portion of the valley can likely achieve this requirement. Wells completed in the thin saturated interval present near the flanks of the basin probably would not achieve a sustained yield of 200 gallons per day.

INDIAN WELLS VALLEY

Geology and Hydrogeology

IWV is located at the southwestern edge of the Basin and Range Physiographic Province and is bounded on all sides by mountains or hills. The valley contains deposits of unconsolidated alluvium representing alluvial fan, fluvial-alluvial-deltaic, and lacustrine depositional environments. As much as 6,500 feet of basin fill is present on the western edge of IWV, but the average depth of basin fill is about 2,000 feet. The present China Lake playa (Figure 3) is a remnant of the Pleistocene lakes fed by glacial meltwater from the Sierra Nevada. Plio-Pleistocene faults in IWV include the Little Lake and Airport Lake Faults Zones.

The hydrogeology of IWV was originally described in terms of a shallow and a deep aquifer (Berenbrock and Martin 1991). The shallow aquifer has subsequently been subdivided into the shallow hydrologic zone (SHZ) and the intermediate hydrogeologic zone (IHZ), with the deep aquifer now referred to as the deep hydrogeologic zone (DHZ) (Tetra Tech 2003a). The Navy is requesting the MUN exemption for SHZ groundwater in the eastern portion of IWV, as shown on Figure 3.

The SHZ is composed of alluvium and playa deposits, and groundwater is unconfined. In general, groundwater flows from the basin margins to the China Lake playa, although a groundwater mound is present in the vicinity of the Main Gate of NAWS China Lake (Tetra Tech 2003a). The mound is believed to be related to localized uplifting of low-permeability clays. Water quality in the SHZ varies significantly from west to east, due in part to the interaction of the groundwater with differing sediment types ranging from alluvium in the western portion of the basin to fine-grained sediments in the playa region. High evaporation rates also tend to concentrate cations and anions in groundwater in the vicinity of the playa. The depth to groundwater in the eastern portion of IWV ranges from just a few feet near the playa to about 50 feet farther south. The base of the SHZ is marked by the occurrence of low-permeability lacustrine clays characteristic of the IHZ. The SHZ does not occur west of the Little Lake fault zone where it crosses North China Lake Boulevard (between West Las Flores Avenue and Ridgecrest Boulevard), as evidenced by lithologic logs and monitoring well completion reports

for private gasoline stations. First-encountered groundwater west of the Little Lake fault zone occurs within the intermediate hydrogeologic zone (upper portion of the regional aquifer) at depths greater than 140 feet bgs, most likely as a result of widespread pumping (Tetra Tech 2003b).

Total Dissolved Solids and Naturally Occurring Inorganic Constituents Relative to MCLs

Multiple groundwater data sets have been developed to assess natural groundwater quality in the shallow aquifer of the IWV. These data sets include the shallow wells sampled during the BHC (Tetra Tech 2003a), the wells sampled during the Background Geochemistry Study (Tetra Tech 2001), a background data set for playa and near-playa conditions (Tetra Tech 2002a), and other miscellaneous background or upgradient wells associated with specific IR sites and operable units (OUs). These data sets have been combined into a generalized data set of 39 wells to document conditions across the IWV, and summary statistics are presented in Table 2. The mean TDS concentration from the set of 39 wells is 1,540 mg/L with concentrations lowest in the southwestern portion of the basin and increasing toward the east and north. The mean concentration exceeds its upper secondary MCL. Samples from several wells in the eastern IWV exceed the 3,000 mg/L TDS standard. Mean concentrations of fluoride and arsenic exceed the primary MCLs. Arsenic is of particular note, as its mean background concentration of 66 μg/L is more than six times the MCL. (Arsenic concentrations are included with the TDS data on Figure 3.) In addition, as indicated by maximum concentration and 95 percent upper confidence limit values, primary or secondary MCLs can be exceeded in IWV groundwater for chloride, sulfate, beryllium, cadmium, chromium, iron, lead, manganese, and thallium.

As noted previously, the data set summarized in Figure 3 and Table 2 includes low TDS and metals data from the central and western portions of IWV. These data include wells associated with IRP Site 12 and the Airfield OU (west of the China Lake Boulevard designation line for the SHZ), where MCLs have been considered or applied as remedial action objectives for groundwater cleanup. Restriction of the IWV data set to include only 22 wells to the east of these sites (Figure 3) produces significant increases in TDS and metals concentrations associated with the eastern IWV, which includes the China Lake playa and other playas. Separate summary statistics in Table 3 for the 22 eastern IWV wells screened in the SHZ show that the mean TDS concentration increases from 1,540 mg/L in the full IWV data set to 2,370 mg/L in the eastern IWV data set, and the mean arsenic concentration rises from 66 μg/L to 107 μg/L (more than 10 times the MCL). In addition, the mean concentrations of chloride and sulfate increase to above the secondary MCLs of 500 mg/L in the eastern IWV data set.

Effects of playa and near-playa conditions on water quality in the eastern IWV are further demonstrated in Figure 4 and Table 4, which present data strictly from these areas. These data are restricted to the aforementioned playa background data set compiled for China Lake (Tetra Tech

2002a), along with comparable data from the Area R Operable Unit located near the China Lake playa (Tetra Tech 2002b, 2005). Summary statistics in Table 4 indicate that the mean TDS concentration 3,245 mg/L in the playa areas exceeds the 3,000 mg/L standard cited in SWRCB Resolution 88-63, with concentrations ranging as high as 11,000 mg/L. The mean arsenic concentration is more than 20 times the primary MCL at 214 ug/L, with concentrations as high as 540 ug/L at individual wells.

Treatment of shallow groundwater from the eastern portion of IWV to achieve MCLs would incur substantial cost. Furthermore, high-quality drinking water from the regional aquifer is currently produced from the southern and western portions of the IWV. Currently the major producers in the IWV cooperatively plan additional production, focusing on a newly developed well field in the southwest corner of the IWV.

Historical, Current, and Potential Future Groundwater Use

There is no information to indicate that shallow groundwater from the area proposed for exemption has ever been used as a source of domestic or municipal water. The only known groundwater wells in this area are monitoring wells related to environmental investigations. The current land use at IWV within the boundaries of NAWS China Lake is military–industrial, and it is expected that future land use will continue to be military-industrial. Therefore, it is highly unlikely that groundwater from this area will be used as a source of drinking water in the future.

Well Construction Requirements

The depth to groundwater in the area proposed for exemption ranges from about 3 feet near the China Lake playa to about 45 feet in the Public Works Area. However, the thickness of saturated sediments in the SHZ is generally less than 20 feet. Therefore, water supply wells cannot be installed in accordance with the California Well Standards in this area.

Sustained Groundwater Yield

Aquifer test results (Tetra Tech 2008a) and use of the analytical program AQTESOLV (Tetra Tech 2008b) indicate that a long-term well yield of 200 gallons per day is probably achievable for some wells within the proposed exemption area but not sustainable for others, particularly those with a small saturated thickness. For example, hydraulic testing, modeling, and groundwater sampling involving multiple wells in the Public Works area found that sustained aquifer yield above 150 gallons per day would be unlikely (Tetra Tech 2008b).

CONCLUSION AND RECOMMENDATIONS

The Navy proposes an amendment to the Basin Plan which would remove the MUN designation for groundwater in SWV and eastern IWV. This proposal includes all of SWV and the eastern portion of IWV extending from China Lake Boulevard and Sandquist Road in the southern boundary of NAWS China Lake in the south. A boundary of the exempted IWV zone based on TDS and naturally occurring metals levels is proposed on Figure 3; the western boundary runs northward from Township 26-South, Range 40-East, Section 21 to Township 24-South, Range 40-east, Section 21, and the southern boundary runs along the boundary of the base and California Highway 187. Structural features of the central IWV that serve as a basis for this boundary include the occurrence or absence of shallow groundwater east of the Little Lake fault zone where it crosses China Lake Boulevard (Figure 3). In addition, although the geology of the IWV is complex, the proposed boundary is also within an interpreted "transition zone" in the central IWV from predominantly alluvial conditions to playa sediments (Tetra Tech 2002a).

The Navy believes that the removal of the MUN designation for SWV and IWV should receive a high priority as a planning topic in the triennial review of the Basin Plan because it affects the progress of the Navy's Installation Restoration Program (IRP) at NAWS China Lake. Groundwater use designation will affect the technical approach, costs, and schedules associated with the cleanup of multiple IRP sites and OUs.

Should you have any questions about this matter, or require additional supporting information, please call me at (619) 532-4208.

Sincerely,

Michael J. Cornell
Lead Remedial Project Manager
NAWS China Lake

cc: James McDonald, NAWS China Lake
Laurie Racca, California Department of Toxic Substances Control

Enclosures:

1 Figure 1, NAWS China Lake Vicinity Map
2 Figure 2, TDS and Arsenic Concentrations in Groundwater, Salt Wells Valley
3 Figure 3, TDS and Arsenic Concentrations in Groundwater, Indian Wells Valley

4 Figure 4, TDS and Arsenic Concentrations in Groundwater Near the China Lake Playa
5 Table 1, Summary Statistics: Natural Concentrations of Inorganic Constituents in Groundwater, Salt Wells Valley
6 Table 2, Summary Statistics: Natural Concentrations of Inorganic Constituents in Shallow Groundwater, Indian Wells Valley
7 Table 3, Summary Statistics for Natural Concentrations of Inorganic Constituents in Shallow Groundwater, Eastern Indian Wells Valley
8 Table 4, Summary Statistics for Natural Concentrations of Inorganic Constituents in Shallow Groundwater Near the China Lake Playa

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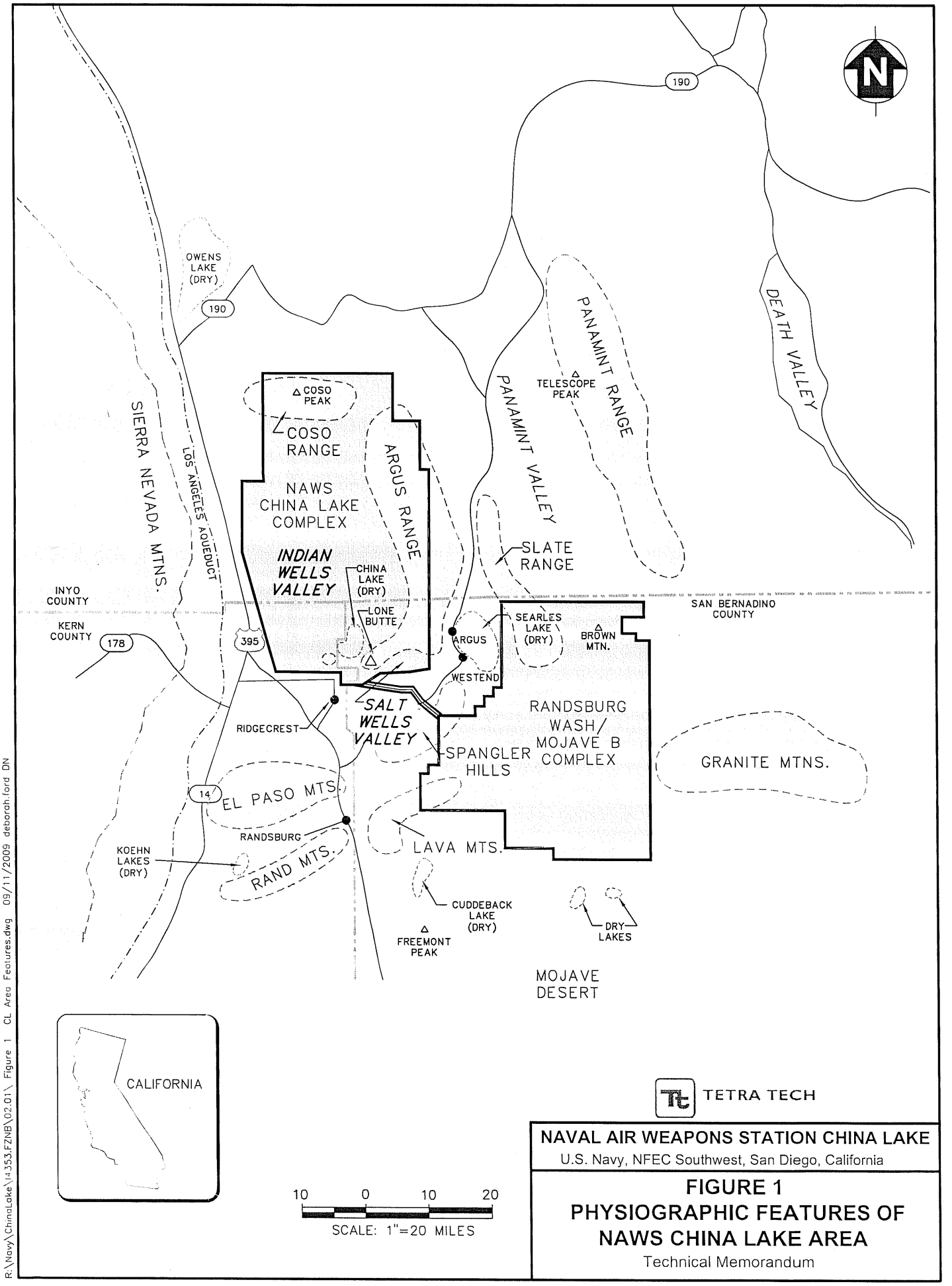

TETRA TECH

NAVAL AIR WEAPONS STATION CHINA LAKE

U.S. Navy, NFEC Southwest, San Diego, California

FIGURE 1
PHYSIOGRAPHIC FEATURES OF NAWS CHINA LAKE AREA

Technical Memorandum

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10-0076

Additional Maps Submitted by the Navy are too large to reproduce for the Agenda Package

10-0077

TABLE 1: SUMMARY STATISTICS FOR NATURAL CONCENTRATIONS OF INORGANIC CONSTITUENTS IN GROUNDWATER, SALT WELLS VALLEY [1,2]

NAWS China Lake, California

Analyte	CA MCL	CA SMCL	Number of Samples	Number of Detections	% Detections	Minimum Detection	Maximum Detection	Mininum RL	Maximum RL	Mean [4]	Standard Deviation	95% UCL	Geometric Mean	Median	Q25	Q75
ANIONS, mg/L																
TOTAL ALKALINITY			55	55	100.0	59.6	3540	--	--	1102.59	1169.87	1367.61	446.33	298.00	100.50	2215.00
BROMIDE			13	13	100.0	2.2	13.6	--	--	6.24	3.86	8.04	5.22	4.50	3.56	8.94
CHLORIDE		**500**	**55**	**55**	**100.0**	**137**	**15500**	--	--	**5884.85**	**4053.62**	**6803.13**	**4473.17**	**4840.00**	**3215.00**	**7020.00**
FLUORIDE	**2**		**55**	**54**	**98.2**	**0.166**	**99.9**	**0.2**	**0.2**	**20.08**	**24.87**	**25.71**	**7.73**	**11.30**	**3.14**	**22.05**
NITRATE	45		13	9	69.2	0.123	1.02	0.1	0.15	0.26	0.26	0.38	0.18	0.15	0.08	0.35
NITRATE/NITRITE (AS N)	10		42	13	31.0	0.044	2.1	0.02	0.3	NA	NA	NA	NA	NA	NA	NA
ORTHOPHOSPHATE			13	2	15.4	0.714	0.719	0.2	1	NA	NA	NA	NA	NA	NA	NA
SULFATE		**500**	**55**	**55**	**100.0**	**35.8**	**4460**	--	--	**1281.91**	**973.09**	**1502.34**	**872.93**	**1050.00**	**754.50**	**1505.00**
PERCHLORATE, µg/L	6		11	1	9.1	2	2	0.2	10	NA	NA	NA	NA	NA	NA	NA
SOLIDS, mg/L																
TOTAL DISSOLVED SOLIDS [3]		**1,000**	**55**	**55**	**100.0**	**924**	**29800**	--	--	**13996.07**	**8683.49**	**15963.15**	**10913.01**	**12200.00**	**7580.00**	**21600.00**
TOTAL SUSPENDED SOLIDS			55	28	50.9	5	55	5	5	10.64	12.53	13.48	6.16	5.00	2.50	13.25
TOTAL METALS, µg/L																
ALUMINUM	1,000	200	55	13	23.6	37.3	1110	5.6	63.6	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	6		55	3	5.5	2.4	4.78	1	20	NA	NA	NA	NA	NA	NA	NA
ARSENIC	**10**		**55**	**44**	**80.0**	**4.2**	**443**	**1**	**9.99**	**72.94**	**91.37**	**93.64**	**30.23**	**52.30**	**9.70**	**81.55**
BARIUM	1,000		55	55	100.0	4.5	140	--	--	48.36	38.71	57.12	35.00	34.90	21.05	61.85
BERYLLIUM	4		55	0	0.0	--	--	0.081	1	NA	NA	NA	NA	NA	NA	NA
BORON			44	44	100.0	2620	189000	--	--	59744.09	53692.15	73342.68	32244.76	47000.00	13575.00	86400.00
CADMIUM	5		55	13	23.6	0.61	2.4	0.21	3.1	NA	NA	NA	NA	NA	NA	NA
CALCIUM			55	52	94.5	975	961000	945	1010	237310.97	279928.10	300723.41	37351.15	185000.00	3030.00	431500.00
CHROMIUM	50		55	15	27.3	2.6	60	0.86	5	NA	NA	NA	NA	NA	NA	NA
COBALT			35	1	2.9	3	3	0.46	7.4	NA	NA	NA	NA	NA	NA	NA
COPPER		1,000	55	5	9.1	3.1	12.6	0.8	6	NA	NA	NA	NA	NA	NA	NA
IRON		**300**	**55**	**47**	**85.5**	**14.6**	**5450**	**8.6**	**65**	**640.23**	**1097.43**	**888.83**	**161.03**	**152.00**	**32.05**	**596.00**
LEAD	15		55	1	1.8	9	9	0.7	7	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM			55	52	94.5	181	137000	144	230	24673.00	38942.26	33494.64	6161.43	9300.00	2565.00	20350.00
MANGANESE		**50**	**55**	**51**	**92.7**	**2**	**750**	**3**	**13.2**	**154.53**	**214.08**	**203.03**	**35.78**	**19.30**	**8.70**	**289.00**
MERCURY	2		55	10	18.2	0.05	0.14	0.019	0.15	NA	NA	NA	NA	NA	NA	NA
MOLYBDENUM			53	50	94.3	31.2	166	15.9	50.1	77.43	38.34	86.28	67.39	77.70	47.10	98.60
NICKEL	100		55	21	38.2	2.6	251	0.79	16	NA	NA	NA	NA	NA	NA	NA
POTASSIUM			55	55	100.0	3280	287000	--	--	66417.82	70353.97	82355.18	44872.48	38200.00	27350.00	71650.00
SELENIUM	50		55	5	9.1	2.9	6.9	1	10	NA	NA	NA	NA	NA	NA	NA
SILICON			31	31	100.0	628	55700	--	--	19746.03	14946.02	24255.80	12947.48	20400.00	7655.00	27100.00
SILVER		100	55	0	0.0	--	--	0.42	7	NA	NA	NA	NA	NA	NA	NA
SODIUM			55	55	100.0	279000	#####	--	--	4765527.27	3110951.56	5470254.72	3802313.47	4590000.00	2600000.00	5365000.00
THALLIUM	2		55	3	5.5	1.6	5.52	1	7.1	NA	NA	NA	NA	NA	NA	NA
VANADIUM			55	23	41.8	6.7	26.1	0.38	5	NA	NA	NA	NA	NA	NA	NA
ZINC		5,000	55	16	29.1	1	429	0.5	36.3	NA	NA	NA	NA	NA	NA	NA

Notes:

1. Historical monitoring data are statistically summarized for 10 background monitoring wells in Salt Wells Valley: MK08-MW01, TTSWV-MW01 through TTSWV-MW07, TTSWV-MW09, and TTSWV-MW10. Additional information concerning these wells is available in the Basewide Hydrogeologic Characterization Report (Tetra Tech 2003) and the Remedial Investigation Report for the Propulsion Laboratory Operable Unit (Tetra Tech 2006).
2. Analytes for which mean SWV concentrations exceed applicable California MCLs are shown in **boldface** type.
3. State Water Resources Control Board Resolution 88-63 specifies an upper limit of 3,000 mg/L TDS for waters that are suitable as "municipal and domestic supply."
4. In the calculation of means and other summary statistics, proxy values of one-half the RL were used for non-detections.

%	Percent
µg/L	Micrograms per liter
95% UCL	95% upper confidence limit of the mean
CA	California
MCL	Maximum contaminant level
mg/L	Milligrams per liter
NA	Not applicable; summary statistics were not calculated for analytes with percent detection less than 50%.
Q25	First quartile (25th percentile concentration)
Q75	Third quartile (75th percentile concentration)
RL	Reporting limit
SMCL	Secondary maximum contaminant level
SWV	Salt Wells Valley
TDS	Total dissolved solids

TABLE 2: SUMMARY STATISTICS FOR NATURAL CONCENTRATIONS OF INORGANIC CONSTITUENTS IN SHALLOW GROUNDWATER, INDIAN WELLS VALLEY [1,2]

NAWS China Lake, California

Analyte	CA MCL	CA SMCL	Number of Samples	Number of Detections	% Detections	Minimum Detection	Maximum Detection	Minimum RL	Maximum RL	Mean [4]	Standard Deviation	95% UCL	Geometric Mean	Median	Q25	Q75
ANIONS, mg/L																
TOTAL ALKALINITY			155	154	99.35	71.1	1560	340	340	290.53	318.91	333.57	214.08	192.00	131.00	280.00
BROMIDE			107	62	57.94	0.1	40	0.1	1000	18.17	72.67	29.98	1.36	1.40	0.23	6.50
CHLORIDE		500	178	177	99.44	15.9	6300	110	110	408.16	762.51	504.18	144.98	121.00	48.10	364.75
FLUORIDE	2		**156**	**113**	**72.44**	**0.2**	**22.5**	**0.5**	**200**	**3.63**	**10.13**	**5.00**	**1.51**	**1.19**	**0.81**	**2.50**
NITRATE	45		117	55	47.01	0.13	14.1	0.05	100	NA	NA	NA	NA	NA	NA	NA
NITRATE/NITRITE (AS N)	10		55	29	52.73	0.06	3.3	0.02	0.4	0.36	0.58	0.50	0.14	0.10	0.04	0.50
ORTHOPHOSPHATE			56	18	32.14	0.03	12.5	0.05	100	NA	NA	NA	NA	NA	NA	NA
SULFATE		500	178	174	97.75	0.2	2350	13	140	344.12	538.37	411.91	142.64	152.00	80.35	310.25
PERCHLORATE, µg/L	6		18	0	0.00	--	--	4	100	NA	NA	NA	NA	NA	NA	NA
SOLIDS, mg/L																
TOTAL DISSOLVED SOLIDS [3]		**1000**	**175**	**173**	**98.86**	**186**	**11000**	**820**	**820**	**1538.98**	**1655.44**	**1749.22**	**982.23**	**791.00**	**520.00**	**2385.00**
TOTAL SUSPENDED SOLIDS			158	33	20.89	3	3220	4	10	NA	NA	NA	NA	NA	NA	NA
TOTAL METALS, µg/L																
ALUMINUM	1000	200	173	32	18.50	15.1	75600	5.6	485	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	6		173	11	6.36	0.94	3.2	0.7	60	NA	NA	NA	NA	NA	NA	NA
ARSENIC	**10**		**173**	**149**	**86.13**	**2.2**	**500**	**1.7**	**16.9**	**65.83**	**92.69**	**77.67**	**25.83**	**34.60**	**7.50**	**75.50**
BARIUM	1000		173	161	93.06	1.8	516	0.47	37	37.81	53.37	44.63	20.33	23.70	10.90	39.70
BERYLLIUM	4		173	2	1.16	1.3	5.4	0.081	5	NA	NA	NA	NA	NA	NA	NA
BORON			143	142	99.30	110	38200	213	213	4483.74	7213.58	5497.16	1525.27	1260.00	458.00	6620.00
CADMIUM	5		173	20	11.56	0.24	6.1	0.12	5	NA	NA	NA	NA	NA	NA	NA
CALCIUM			173	171	98.84	746	598000	55600	56600	98073.71	140968.04	116079.28	39441.33	40800.00	24400.00	79700.00
CHROMIUM	50		173	68	39.31	0.24	148	0.28	10	NA	NA	NA	NA	NA	NA	NA
COBALT			149	7	4.70	0.34	41.9	0.25	10	NA	NA	NA	NA	NA	NA	NA
COPPER		1000	173	24	13.87	0.89	203	0.35	10.2	NA	NA	NA	NA	NA	NA	NA
IRON		300	175	68	38.86	4.6	100000	3.3	214	NA	NA	NA	NA	NA	NA	NA
LEAD	15		173	16	9.25	0.72	69.4	0.6	5	NA	NA	NA	NA	NA	NA	NA
MAGNESIUM			173	168	97.11	127	182000	39.8	626	30491.60	44741.97	36206.40	10857.62	13400.00	5880.00	26600.00
MANGANESE		50	175	114	65.14	0.28	2430	0.24	15.2	40.23	196.76	65.22	5.88	6.90	1.53	20.95
MERCURY	2		173	19	10.98	0.05	0.17	0.015	0.46	NA	NA	NA	NA	NA	NA	NA
MOLYBDENUM			172	149	86.63	2.2	1230	0.6	21.3	109.27	242.35	140.32	26.32	31.35	12.10	67.48
NICKEL	100		173	54	31.21	0.58	109	0.3	16	NA	NA	NA	NA	NA	NA	NA
POTASSIUM			173	173	100.00	2210	94300	--	--	18005.55	14614.83	19872.27	13822.73	11800.00	8590.00	22900.00
SELENIUM			173	71	41.04	1.3	26.6	1	20	NA	NA	NA	NA	NA	NA	NA
SILICA			83	83	100.00	25200	78600	--	--	50424.10	11118.61	52474.41	49150.31	49200.00	44550.00	57550.00
SILICON			138	138	100.00	3890	121000	--	--	27978.19	14641.41	30072.07	25541.90	25300.00	21300.00	28975.00
SILVER		100	173	3	1.73	0.22	0.8	0.15	10	NA	NA	NA	NA	NA	NA	NA
SODIUM			173	173	100.00	27500	4810000	--	--	380422.54	668876.59	465856.84	181953.76	147000.00	90100.00	300000.00
THALLIUM	2		173	4	2.31	1.2	3.8	0.004	13.4	NA	NA	NA	NA	NA	NA	NA
VANADIUM			173	95	54.91	0.87	243	0.38	15.6	14.71	32.30	18.83	4.78	4.70	1.90	13.80
ZINC		5000	173	29	16.76	0.95	959	0.36	24.8	NA	NA	NA	NA	NA	NA	NA

Notes:

1. Historical monitoring data are statistically summarized for 39 background monitoring wells in Indian Wells Valley as shown on Figure 3. Additional information for the majority of these wells is available in the Basewide Hydrogeologic Characterization Report (Tetra Tech 2003), the Background Geochemistry Study (Tetra Tech 2001), and the playa background data set (Tetra Tech 2002).
2. Analytes for which mean IWV concentrations exceed applicable California MCLs are shown in **boldface** type. Maximum detections and 95% UCL concentrations exceed MCLs for numerous other analytes.
3. State Water Resources Control Board Resolution 88-63 specifies an upper limit of 3,000 mg/L TDS for waters that are suitable as "municipal and domestic supply."
4. In the calculation of means and other summary statistics, proxy values of one-half the RL were used for non-detections.

%	Percent	NA	Not applicable; summary statistics were not calculated for analytes with percent detection less than 50%.
µg/L	Micrograms per liter	Q25	First quartile (25th percentile concentration)
95% UCL	95% upper confidence limit of the mean	Q75	Third quartile (75th percentile concentration)
CA	California	RL	Reporting limit
MCL	Maximum contaminant level	SMCL	Secondary maximum contaminant level
mg/L	Milligrams per liter	SWV	Salt Wells Valley
		TDS	Total dissolved solids

TABLE 3: SUMMARY STATISTICS FOR NATURAL CONCENTRATIONS OF INORGANIC CONSTITUENTS IN SHALLOW GROUNDWATER, EASTERN INDIAN WELLS VALLEY [1,2]

NAWS China Lake, California

Analyte	CA MCL	CA SMCL	Number of Samples	Number of Detections	% Detections	Minimum Detection	Maximum Detection	Mininum RL	Maximum RL	Mean [4]	Standard Deviation	95% UCL	Geometric Mean	Median
ANIONS, mg/L														
TOTAL ALKALINITY			73	73	100.00	83.00	1560.00	--	--	396.68	436.27	482.46	254.18	222
BROMIDE			45	22	48.89	0.26	10.00	1.00	1000.00	NA	NA	NA	NA	NA
CHLORIDE			92	92	100.00	21.00	6300.00	--	--	674.87	982.24	846.91	274.08	223
FLUORIDE	2		82	53	64.63	0.20	22.50	1.00	200.00	5.80	13.62	8.32	2.15	1.7
NITRATE	45		47	19	40.43	0.30	1.70	0.10	100.00	NA	NA	NA	NA	NA
NITRATE/NITRITE (AS N)	10		41	23	56.10	0.20	3.30	0.04	0.40	0.40	0.59	0.56	0.17	0.2
ORTHOPHOSPHATE			34	13	38.24	0.03	0.77	0.05	100.00	NA	NA	NA	NA	NA
SULFATE			94	93	98.94	10.00	2350.00	130.00	130.00	558.93	668.75	674.81	296.17	247.5
PERCHLORATE, µg/L	6		16	0	0.00	--	--	4.00	100.00	14.25	13.26	19.82	8.70	10
SOLIDS, mg/L														
TOTAL DISSOLVED SOLIDS		1000	93	93	100.00	360.00	11000.00	--	--	2370.14	1893.04	2699.92	1751.22	1970
TOTAL SUSPENDED SOLIDS			85	13	15.29	3.00	63.00	4.00	10.00	6.02	12.40	8.28	3.15	2.5
TOTAL METALS, µg/L														
ALUMINUM	1000	200	93	18	19.35	15.10	2950.00	5.60	391.00	NA	NA	NA	NA	NA
ANTIMONY	6		93	8	8.60	2.40	3.20	0.70	42.00	NA	NA	NA	NA	NA
ARSENIC	10		93	89	95.70	5.00	500.00	6.70	16.90	106.79	109.81	125.92	59.66	67.2
BARIUM	1000		93	88	94.62	4.10	136.00	5.40	18.20	36.96	31.12	42.38	25.31	33.15
BERYLLIUM	4		93	0	0.00	--	--	0.08	1.00	NA	NA	NA	NA	NA
BORON			70	70	100.00	340.00	38200.00	--	--	7385.86	9193.50	9231.90	3032.11	1430
CADMIUM	5		93	15	16.13	0.24	6.10	0.20	5.00	NA	NA	NA	NA	NA
CALCIUM			93	93	100.00	746.00	598000.00	--	--	136885.51	173370.80	167088.07	42220.87	69500
CHROMIUM	50		93	39	41.94	0.76	148.00	0.40	9.00	NA	NA	NA	NA	NA
COBALT			75	4	5.33	0.34	4.50	0.25	9.00	NA	NA	NA	NA	NA
COPPER		1000	93	15	16.13	0.94	13.60	0.35	10.20	NA	NA	NA	NA	NA
IRON		300	93	39	41.94	4.60	3850.00	3.30	214.00	NA	NA	NA	NA	NA
LEAD	15		93	8	8.60	0.90	7.70	0.70	5.00	NA	NA	NA	NA	NA
MAGNESIUM			93	88	94.62	127.00	182000.00	39.80	626.00	41331.79	56933.83	51250.12	9503.40	12600
MANGANESE		50	93	70	75.27	0.28	722.00	0.25	10.50	28.85	80.36	42.85	6.34	5.08
MERCURY	2		93	14	15.05	0.05	0.16	0.02	0.29	NA	NA	NA	NA	NA
MOLYBDENUM			93	89	95.70	2.80	1230.00	1.00	3.60	185.22	310.26	239.27	59.25	66.3
NICKEL	100		93	31	33.33	0.58	109.00	0.39	16.00	NA	NA	NA	NA	NA
POTASSIUM			93	93	100.00	5060.00	94300.00	--	--	23256.02	17376.31	26283.11	17925.81	13900
SELENIUM	50		93	44	47.31	1.30	26.60	1.00	14.50	NA	NA	NA	NA	NA
SILICA			31	31	100.00	30400.00	78600.00	--	--	54322.58	12287.17	58030.07	52976.14	52800
SILICON			69	69	100.00	3890.00	79000.00	--	--	29354.93	13759.55	32137.77	26703.76	26800
SILVER		100	93	1	1.08	0.53	0.53	0.15	7.00	NA	NA	NA	NA	NA
SODIUM			93	93	100.00	99500.00	4810000.00	--	--	621037.63	840905.41	767529.99	348505.38	291500
THALLIUM	2		93	3	3.23	1.80	3.80	0.00	13.40	NA	NA	NA	NA	NA
VANADIUM			93	54	58.06	0.87	243.00	0.38	15.60	18.43	34.81	24.49	6.79	7.7
ZINC		5000	93	18	19.35	0.95	279.00	0.36	24.80	NA	NA	NA	NA	NA

Notes:

1. Historical monitoring data are statistically summarized for 22 background monitoring wells in Indian Wells Valley, as shown on Figure 3. Additional information for the majority of these wells is available in the Basewide Hydrogeologic Characterization Report (Tetra Tech 2003), the Background Geochemistry Study (Tetra Tech 2001), and the playa background data set (Tetra Tech 2002).
2. Analytes for which mean IWV concentrations exceed applicable California MCLs are shown in **boldface** type. Maximum detections and 95% UCL concentrations exceed MCLs for numerous other analytes.
3. State Water Resources Control Board Resolution 88-63 specifies an upper limit of 3,000 mg/L TDS for waters that are suitable as "municipal and domestic supply."
4. In the calculation of means and other summary statistics, proxy values of one-half the RL were used for non-detections

%	Percent	mg/L	Milligrams per liter
µg/L	Micrograms per liter	Min.	Minimum
95% UCL	95% upper confidence limit of the mean	NA	Not applicable; summary statistics are calculated only for analytes with percent detections greater than 50%
CA	California	RL	Reporting limit
Geo.	Geometric	SMCL	Secondary maximum contaminant level
IWV	Indian Wells Valley	Std.	Standard
Max.	Maximum	TDS	Total dissolved solids
MCL	Maximum contaminant level		

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TABLE 4: SUMMARY STATISTICS FOR NATURAL CONCENTRATIONS OF INORGANIC CONSTITUENTS IN PLAYA AREAS, INCLUDING THE AREA R OPERABLE UNIT, EASTERN INDIAN WELLS VALLEY [1,2]
NAWS China Lake California

Analyte	CA MCL	CA SMCL	Number of Samples	Number of Detections	% Detections	Min. Detection	Max. Detection	Min. RL	Max RL	Mean	Std. Deviation	95% UCL	Geo. Mean	Median
ANIONS, mg/L														
TOTAL ALKALINITY			29	29	100.00	144	1560			612.07	542.51	781.32	433.30	332.00
BROMIDE			27	6	22.22	1.9	3.8	1	1000	NA	NA	NA	NA	NA
CHLORIDE		500	36	36	100.00	140	6300			1437.58	1245.78	1786.40	934.74	1315.00
FLUORIDE	2		34	13	38.24	1.6	30	2	200	NA	NA	NA	NA	NA
IODIDE	45		16	0	0.00			2	2	NA	NA	NA	NA	NA
NITRATE/NITRITE (AS N)	10		11	7	63.64	0.058	3.3	0.04	0.08	0.70	1.01	1.21	0.19	0.11
ORTHOPHOSPHATE			24	5	20.83	0.03	0.34	0.05	100	NA	NA	NA	NA	NA
SULFATE		500	37	36	97.30	10	900	130	130	355.28	245.19	423.00	231.60	400.00
SOLIDS, mg/L														
TOTAL DISSOLVED SOLIDS		1000	38	38	100.00	870	11000			3244.95	2240.72	3855.61	2523.70	2550.00
TOTAL SUSPENDED SOLIDS			21	3	14.29	5	58	4	5	NA	NA	NA	NA	NA
TOTAL METALS, µg/L														
ALUMINUM	1000	200	38	9	23.68	15.1	2950	5.6	391	NA	NA	NA	NA	NA
ANTIMONY	6		38	3	7.89	2.4	3.2	0.7	42	NA	NA	NA	NA	NA
ARSENIC	10		38	37	97.37	7.5	540	10.4	10.4	214.09	129.41	249.36	154.97	174.00
BARIUM	1000		38	38	100.00	6.1	167			59.06	37.28	69.22	48.26	43.80
BERYLLIUM	4		38	0	0.00			0.081	1	NA	NA	NA	NA	NA
BORON			16	16	100.00	1900	38200			11695.00	8524.45	15275.27	8886.41	12050.00
CADMIUM	5		38	11	28.95	0.48	7.3	0.2	5	NA	NA	NA	NA	NA
CALCIUM			38	38	100.00	746	172000			53505.58	49294.26	66939.84	21304.89	40300.00
CHROMIUM	50		38	15	39.47	0.76	148	0.41	9	NA	NA	NA	NA	NA
COBALT			36	5	13.89	0.34	4.5	0.25	9	NA	NA	NA	NA	NA
COPPER		1000	38	5	13.16	0.94	13.6	0.35	10.2	NA	NA	NA	NA	NA
IRON		300	40	16	40.00	31	3850	5	214	NA	NA	NA	NA	NA
LEAD	15		38	5	13.16	0.9	2.4	0.7	5	NA	NA	NA	NA	NA
MAGNESIUM			38	34	89.47	127	87500	39.8	289	15707.21	19577.52	21042.71	4665.94	10300.00
MANGANESE		50	38	22	57.89	0.28	89.4	0.25	10.5	20.26	25.28	27.15	4.85	5.25
MERCURY	2		38	5	13.16	0.04	0.14	0.097	0.2	NA	NA	NA	NA	NA
MOLYBDENUM			38	35	92.11	2.8	160	1	1.9	62.52	41.58	73.85	36.56	70.20
NICKEL	100		38	15	39.47	0.58	109	0.62	16	NA	NA	NA	NA	NA
POTASSIUM			38	37	97.37	5060	94300	42300	42300	34093.68	22550.61	40239.45	26126.52	25300.00
SELENIUM	50		38	13	34.21	2.1	21.7	1	14.5	NA	NA	NA	NA	NA
SILICA			12	12	100.00	30400	78600			58550.00	17456.00	67015.71	55846.37	60650.00
SILICON			19	19	100.00	3890	36800			24741.58	8791.04	28129.81	22546.07	26300.00
SILVER		100	38	1	2.63	0.53	0.53	0.15	7	NA	NA	NA	NA	NA
SODIUM			38	38	100.00	195000	4810000			1178921.05	1013565.06	1455149.95	844347.47	816000.00
THALLIUM	2		38	2	5.26	3.6	3.8	1	8.5	NA	NA	NA	NA	NA
VANADIUM			38	22	57.89	0.87	243	0.7	8	28.83	51.42	42.84	6.70	4.00
ZINC		5000	38	8	21.05	0.95	279	0.9	24.7	NA	NA	NA	NA	NA

Notes:

1. Historical monitoring data are statistically summarized for 10 Playa background monitoring wells in Indian Wells Valley along with 9 wells from the Area R Operable Unit (Figure 4). Additional information for the majority of these wells is available in playa background data set memorandum (Tetra Tech 2002a) and the Remedial Investigation reports for the Area R OU sites (Tetra Tech 2002b, 2005).
2. Analytes for which mean concentrations exceed applicable California MCLs are shown in **boldface** type. Maximum detections and 95% UCL concentrations that exceed MCLs are also highlighted in boldface.
3. State Water Resources Control Board Resolution 88-63 specifies an upper limit of 3,000 mg/L TDS for waters that are suitable as "municipal and domestic supply."
4. In the calculation of means and other summary statistics, proxy values of one-half the RL were used for non-detections.

%	Percent
µg/L	Micrograms per liter
95% UCL	95% upper confidence limit of the mean
CA	California
Geo.	Geometric
IWV	Indian Wells Valley
Max.	Maximum
MCL	Maximum contaminant level
mg/L	Milligrams per liter
Min.	Minimum
NA	Not applicable; summary statistics are calculated only for analytes with percent detections greater than 50%.
RL	Reporting limit
SMCL	Secondary maximum contaminant level
Std.	Standard
TDS	Total dissolved solids