STAFF REPORT and SUBSTITUTE ENVIRONMENTAL DOCUMENT

PROPOSED AMENDMENTS TO THE WATER QUALITY CONTROL PLAN FOR THE LAHONTAN REGION

Removal of the Municipal and Domestic Supply (MUN) Beneficial Use Designation from Ground Waters of Naval Air Weapons Station China Lake, Kern, Inyo, and San Bernardino Counties

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LIST OF ACRONYMS

bgs – below ground surface

BHC – Basewide Hydrogeological Characterization

CEQA – California Environmental Quality Act

MCL – Maximum Contaminant Level

mg/L – milligrams per liter

MUN – Municipal and domestic water supply beneficial use

NAWS – Naval Air Weapons Station

TDS - Total dissolved solids

μg/L – micrograms per liter

USEPA – United States Environmental Protection Agency

EXECUTIVE SUMMARY

This staff report summarizes the background, need, and technical justification for an amendment to the *Water Quality Control Plan for the Lahontan Region* (Basin Plan) to remove the Municipal and Domestic Supply (MUN) beneficial use designation from ground waters located within the Naval Air Weapons Station China Lake (NAWS China Lake). The ground waters proposed for de-designation are those located beneath the Salt Wells Valley and those within the shallow groundwater in the eastern Indian Wells Valley groundwater basin. Both of these areas are located entirely within the boundaries of the NAWS China Lake. No changes are proposed to the other designated beneficial uses for ground waters of the Salt Wells Valley and Indian Wells Valley basins.

Water quality assessments, justification for the areas proposed for de-designation, and water treatability studies are summarized in this staff report from the following sources of information:

- TriEcoTt. 2013. "*Technical Justification for Beneficial Use Changes for Groundwater in Salt Wells Valley and Shallow Groundwater in Eastern Indian Wells Valley*." February. (Technical Justification Report)
- Tetra Tech. 2003. "*Final Basewide Hydrogeologic Characterization Summary Report, NAWS China Lake, California.*" July. (Basewide Hydrogeological Characterization [BHC] Report)
- Discussions between Water Board staff, Navy staff, and consultants for the Navy
- Public input, including scoping meeting held in May 2013 in Ridgecrest

This staff report also includes a California Environmental Quality Act (CEQA) Environmental Checklist that identifies potentially significant environmental impacts from the NAWS China Lake MUN de-designation. On the basis on the Environmental Checklist evaluation, Water Board staff finds the NAWS China Lake MUN de-designation would not have a significant adverse impact on the environment.

Based on the evaluation of the information listed above, Water Board staff concludes that the MUN use is not an existing use of the affected ground waters, and cannot feasibly be attained through permit conditions or treatment. Due to naturally-occurring high concentrations of constituents such as arsenic and total dissolved solids (TDS), removal of the MUN beneficial use designation for certain ground waters of NAWS China Lake is justified under criteria in the federal Water Quality Standards Regulation (40CFR §131.10 (g)) and California's Sources of Drinking Water Policy (State Water Resources Control Board Resolution 88-63).

INTRODUCTION

The Lahontan Regional Water Quality Control Board (Water Board) is the California state agency that sets and enforces water quality standards in about 20 percent of the state including the eastern Sierra Nevada and northern Mojave Desert. Water quality standards and control measures for surface and ground waters of the Lahontan Region are contained in the Basin Plan. California's standards include designated beneficial uses, narrative and numeric water quality objectives for protection of beneficial uses, and a non-degradation policy. Existing state standards for groundwater basins can be found in Chapters 2 and 3 of the Lahontan Basin Plan. The plan is available online at http://www.waterboards.ca.gov/rwqcb6/ .

This staff report provides the technical justification for the proposed amendment and includes an Environmental Checklist that looks at the potential environmental impacts from the proposed Basin Plan Amendment to remove the Municipal and Domestic Supply (MUN) beneficial use designation from select ground waters of NAWS China Lake's Salt Wells Valley and Indian Wells Valley groundwater basins in Inyo County, Kern, and San Bernardino Counties (Figure 1).

DE-DESIGNATION OF A BENEFICIAL USE

Background for a MUN Use Designation

Until 1989, waters of the Lahontan Region were not designated for the MUN use unless they were actually being used for domestic supply. Most of the MUN use designations in the Regional Board's 1975 North and South Lahontan Basin Plans were for groundwater basins. In 1988, the State Water Resources Control Board (State Water Board) adopted Resolution 88-63, the Sources of Drinking Water Policy. This policy includes criteria for identification of water bodies as drinking water sources to be protected under Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, California Health and Safety Code Section 25249.5 *et. seq.* Proposition 65 prohibits discharges of any chemical "known to the State to cause cancer or reproductive toxicity" to a potential source of drinking water, with certain exceptions. The State Water Board directed the Regional Water Boards to identify "sources of drinking water" within their regions using the criteria in the policy, and to amend their Basin Plans to designate MUN uses for these sources.

In 1989, the Water Board amended its 1975 Basin Plans to designate MUN uses for almost all surface and ground waters in the Lahontan Region, including inland saline lakes and geothermal springs. The rationale for this action was that, due to the scarcity of water supplies in much of the region, it might be feasible and desirable to treat and use even poor quality waters in the future. The Water Board also lacked the staff resources and water quality data necessary to assess all water bodies in the Lahontan Region on a case-by-case basis for their suitability as drinking water sources.

A single Lahontan Basin Plan replaced the North and South Lahontan Basin Plans in 1995. Tables 2-1 (Beneficial Uses of Surface Waters of the Lahontan Region) and 2-2 (Beneficial Uses for Ground Waters of the Lahontan Region) in the current plan do not distinguish between existing and potential beneficial uses. Water quality standards and antidegradation regulations are meant to protect both existing and potential uses, and uses that occur only seasonally. The determination whether a use is existing or potential must be made on a case-by-case basis.

State Water Board Sources of Drinking Water Policy (Resolution 88-63)

This policy states that surface and ground waters of the State are to be considered 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 ground waters where:

“a) The total dissolved solids (TDS) exceed 3,000 mg/L (5,000 microsiemens/cm, electrical conductivity) and it is not reasonably expected by Regional Boards to supply a public water system, or

b) There is contamination, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices.

c) 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.”

The provisions above are the parts of the policy most applicable to removal of the MUN use from ground waters of NAWS China Lake. A copy of the full policy is included as an appendix to the existing Lahontan Basin Plan. This policy is not self-executing, and the MUN beneficial use must be de-designated in the Basin Plan.

SCOPE, PURPOSE, AND NEED OF PROPOSED MUN DE-DESIGNATION BASIN PLAN AMENDMENT

The MUN beneficial use is defined in Chapter 2 of the Basin Plan as: “*Beneficial uses of waters used for community, military, or individual water supply systems including, but not limited to drinking water supply*.” Components of the MUN use other than human drinking water supply could include water supplies for local businesses, livestock, pets and home aquaria, bathing, laundry and dishwashing, toilet flushing and landscape watering. California state drinking water standards apply to ambient waters with designated MUN uses, as well as to treated water in water supply and distribution systems. The Water Board designated the MUN use for the Indian Wells Valley and the Salt Wells Valley ground waters in 1989 as part of a “blanket” designation of the use for most waters of the Lahontan Region. The proposed Basin Plan Amendment only affects the portions of the Indian Wells Valley and the Salt Wells Valley groundwater basins located within the current boundaries and beneath the NAWS China Lake.

The proposed amendments would change Table 2-2 in the Basin Plan, “Beneficial Uses for Ground Waters of the Lahontan Region” to remove the “X” in the MUN beneficial use column for the “Salt Wells Valley” (DWR Basin No. 6-53). The “X” will remain in the MUN beneficial use column for the “Indian Wells Valley,” but a footnote will be added specifying that only the shallow water-bearing zone beneath eastern Indian Wells Valley (DWR Basin No. 6-54) is recommended for MUN de-designation. The shallow water-bearing zone is known as the Shallow Hydrologic Zone and is defined in the subsection titled “Area Proposed for De-designation Beneath Indian Wells Valley” below.

Salt Wells Valley groundwater basin continues to be designated for Industrial Supply (IND). The western portion and the deep hydrologic zone of Indian Wells Valley groundwater basin continue to be designated for MUN beneficial use. The entire Indian Wells Valley groundwater basin continues to be designated for IND, Agricultural Supply (AGR), and Freshwater Replenishment (FRSH).

No other changes in beneficial uses are proposed for the groundwater within NAWS China Lake’s Salt Wells Valley or Indian Wells Valley groundwater basins as part of these Basin Plan amendments. No changes are proposed in water quality objectives for the ground waters affected by the use change except for the narrative objective that establishes title 22 standards for drinking water. Drinking water standards will not apply where MUN use is being removed.

The justification for proposing removal of the MUN use is that naturally occurring high TDS and other contaminants are not conducive to treatment and the groundwater is not being used, and is not anticipated to be used in the future, for municipal drinking water supply because of the naturally high concentrations of mineral and salts. The reason to remove MUN use designation now is in response to the Navy’s request to aid in its groundwater remediation efforts.

State Board Resolution 88-63, “Sources of Drinking Water Policy,” allows exceptions to the municipal or domestic beneficial use designation for groundwater bodies with TDS or naturally occurring contaminants at concentrations not conducive to treatment, or that are unable to provide sufficient water to supply a single well capable of producing an average yield of 200 gallons per day. Groundwater in Salt Wells Valley meets the criteria because the existing naturally occurring groundwater quality contains constituents with concentrations above Maximum Contaminant Levels (MCLs). Thus, the naturally occurring groundwater quality does not support MUN use.

TECHNICAL ASSESSMENTS

This section provides the environmental setting of the China Lake area and a discussion of the geology and hydrogeology pertinent to the groundwater proposed for MUN de-designation.

Sources of Information and Data

The proposed basin plan amendment to de-designate the MUN beneficial use is based on Water Board staff's review of relevant information and data on NAWS China Lake and its watershed in relation to the requirements of the Sources of Drinking Water Policy. The Water Board has evaluated and considered the Navy's field studies in the NAWS China Lake watershed and groundwater basins, including water quality monitoring and lithologic and groundwater surveys. Water Board staff relied primarily on the "Technical Justification for Beneficial Use Changes for Groundwater in Salt Wells Valley and Shallow Groundwater in Eastern Indian Wells Valley" (Technical Justification Report) prepared in February 2013 and the "Final Basewide Hydrogeologic Characterization Summary Report, NAWS China Lake, California" (Basewide Hydrogeological Characterization Report) prepared in July 2003.

The primary goal of the basewide hydrogeologic characterization was to develop and refine a hydrogeologic conceptual model for the area, which includes Indian Wells Valley, Salt Wells Valley, and Randsburg Wash. The BHC Report includes definition of the major water-bearing zones, description of groundwater flow directions, evaluation of possible interconnectivities between water-bearing zones, groundwater chemistry based on analytical results (including water quality and isotopic composition), and a compilation of well construction data. It also includes a discussion of the suitability (or lack thereof) of the current municipal or domestic beneficial use designation for groundwater beneath Salt Wells Valley and the Indian Wells Valley in the vicinity of the China Lake playa.

In order to evaluate the technical data necessary for de-designation (e.g., the lateral and vertical extent of the groundwater basin to de-designate, the likelihood of hydrogeologic changes over time that could affect the extent of the chemistry of the affected areas, etc.), Water Board staff, Navy staff, and consultants for the Navy have developed Site Conceptual Models of the subsurface geology and hydrogeology. Abbreviated Site Conceptual Models for Salt Wells Valley and Indian Wells Valley are presented below. Complete descriptions of the models are presented in the Technical Justification and BHC Reports.

The NAWS China Lake Environment

NAWS China Lake is located in the northern Mojave Desert, approximately 150 miles northeast of Los Angeles (Figure 1). The 950-square-mile China Lake Complex, located in Inyo, San Bernardino, and Kern Counties, includes the majority of the range and test facilities, as well as NAWS China Lake headquarters and the China Lake community. The NAWS China Lake facility is located in the Basin and Range Physiographic Province, characterized by isolated, north-south trending mountain ranges separated by desert basins. The ancestral China Lake was formed in Indian Wells Valley as part of a complex chain of lakes, and was fed by the interconnecting Owens River that begins in the Mono Basin and ends in Death Valley. The areas of the Salt Wells Valley and Indian Wells Valley basins subject to this proposed amendment are both within the China Lake Complex. Figure 2 shows the delineated lateral extent of the areas proposed for de-designation.

Salt Wells Valley Groundwater Basin

Salt Wells Valley Site Conceptual Model

The Salt Wells Valley groundwater basin Site Conceptual Model is based primarily on studies reported in the Technical Justification and BHC Reports. The Salt Wells Valley groundwater basin is located in San Bernardino County near Ridgecrest. The surface area covers 46 square miles. Salt Wells Valley groundwater basin underlies an east-trending valley connected to Indian Wells Valley to the west and Searles Valley to the east. The valley margin and underlying crystalline rock are covered with alluvial fan, colluvial, and lacustrine sediments (i.e., fine-grained sediments deposited in a lake environment) deposited when this valley was an embayment of the Pleistocene-age Searles Lake. The sediments are interbedded gravel, sand, and silt, with significant intervals of clay toward the center and eastern portions of the basin.

Groundwater in the Salt Wells Valley basin is unconfined in a single hydrogeologic zone and flows east toward Searles Valley, discharging into the Searles Valley groundwater basin. Groundwater is typically first encountered at about 10 feet below ground surface (bgs) in the basin at the eastern edge of the valley and at about 25 feet bgs in the western part of Salt Wells Valley. The alluvial fans along the southern, western, and northern flanks of the valley contain groundwater at depths of more than 90 feet bgs. The average depth of the Salt Wells Valley basin fill is 2,000 feet with as much as 6,500 feet of basin fill in the western Salt Wells Valley.

Groundwater replenishment of the Salt Wells Valley basin is from

- Infiltration of rain that falls on the valley floor,
- Percolation of runoff from snowmelt,
- Underflow from the Indian Wells Valley groundwater basin.

A low topographic divide separates Indian Wells Valley and Salt Wells Valley basins. Fracture flow through the bedrock is presumed to be the primary source of groundwater recharge to the Salt Wells Valley basin.

<u>Salt Wells Valley Groundwater Quality Assessment</u>

California's Groundwater Bulletin 118 states, "The groundwater [in Salt Wells Valley Groundwater Basin 6-53] is rated inferior for all beneficial uses because of high TDS content that ranges from about 4,000 mg/L to 39,000 mg/L." Other impairments are elevated concentrations of arsenic, sodium, chloride, and boron.

The BHC Report shows groundwater in Salt Wells Valley wells contains the greatest amount of evaporative enrichment of minerals and salts from partial evaporation of precipitation prior to infiltration and recharge of the aquifer. Isotope studies show this evaporative enrichment.

As a result of evaporate enrichment that increases the minerals and salts concentrations, TDS content in groundwater ranges from about 3,290 milligrams per liter (mg/L) at the southern 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 14,522 mg/L is more than four times the 3,000 mg/L standard cited in State Board Resolution 88-63. The TDS and other sample results are summarized in Table 1.

Salt Wells Valley groundwater mean background concentrations for TDS, arsenic, chloride, sulfate, aluminum, chromium, iron, and manganese exceed California MCLs. Arsenic is of particular note, as its mean background concentration of 74 micrograms per liter (μg/L) is over seven times the primary MCL.

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

<u>Area Proposed for De-designation Beneath Salt Wells Valley</u>

Based on the Site Conceptual Model, Water Board staff proposes the Water Board adopt a basin plan amendment to remove the MUN use designation for the Salt Wells Valley groundwater basin within the NAWS China Lake boundaries. The lateral extent of the area proposed for de-designation is shown on Figure 2. The vertical extent of the area proposed for de-designation is the entire aquifer saturated thickness, from the water table (first-encountered groundwater) to the underlying bedrock. A similar basin plan amendment for groundwater beneath Searles Lake in the Searles Valley Basin (DWR Basin 6-52) was approved and adopted over 10 years ago. The Searles Valley groundwater basin is adjacent to and east of the area proposed in this Basin Plan Amendment and receives groundwater from the Salt Wells Valley groundwater basin via subsurface flow.

Indian Wells Valley Groundwater Basin

Indian Wells Valley Site Conceptual Model

The Indian Wells Valley groundwater basin Site Conceptual Model is based primarily on studies reported in the Technical Justification and BHC Reports. The Indian Wells Valley groundwater basin is located in San Bernardino, Kern, and Inyo Counties near Ridgecrest and west of the Salt Wells Valley. The surface area covers almost 600 square miles. However, only 20 percent of that total area is proposed for MUN de-designation and, of that, only the vertical extent of the saturated portion of the Shallow Hydrogeologic Zone of the Indian Wells Valley groundwater basin where water quality meets the requirements for an exemption from MUN designation under the Sources of Drinking Water Policy.

The Indian Wells Valley is bounded on the west and east by mountain ranges (Sierra Nevada and Argus, respectively) which is typical for the Basin and Range Physiographic Province. But Indian Wells Valley is also bounded by mountain ranges on the north (Coso Range) and the south (El Paso Mountains and Spangler Hills).

Lacustrine sediments are widespread throughout Indian Wells Valley. Depositional sequences of fine-grained lacustrine sediments alternating with coarser grained sediments from alluvial deposition over geologic time has resulted in three distinct water-bearing hydrostratigraphic units in the subsurface separated by the lacustrine deposits.

Groundwater in the eastern Indian Wells Valley basin is present in the three water-bearing zones, the Shallow, Intermediate, and Deep Hydrogeologic Zones. The water-bearing zones of the Intermediate Hydrogeologic Zone and Deep Hydrogeologic Zone comprise the regional aquifer, where water quality meets MUN purposes. The MUN de-designation is proposed only for groundwater (saturated portion) of the shallow hydrogeologic zone in the eastern portion of the Indian Wells Valley basin.

Indian Wells Valley Groundwater Quality Assessment

Indian Wells Valley Intermediate and Deep Hydrogeologic Zones - The high confining pressures experienced while drilling in the China Lake playa area indicate the potential for upward movement of deep groundwater on the eastern side of Indian Wells Valley. Results for shallow hydrogeologic zone wells show evaporative enrichment in the heavier isotopes, whereas most intermediate and deep zone groundwater samples plot close to the global meteoric water line, indicating that little evaporation occurred prior to recharge.

Upward movement of deep groundwater and the isotopic evidence that little evaporation occurred in the deep hydrologic zones of Indian Wells Valley are two lines of evidence that explain why the intermediate and deep zones are fresher – they contain significantly smaller concentrations of TDS and inorganic constituents than the shallow hydrogeologic zone. Thus, the intermediate and deep zones are not recommended for MUN de-designation because they do not meet the requirements under the Sources of Drinking Water Policy.

Indian Wells Valley Shallow Hydrogeologic Zone - Water quality in the shallow hydrogeologic zone varies significantly from west to east, caused in part by 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 minerals in shallow groundwater in the vicinity of the playa in the same manner as described in the Salt Wells Valley Groundwater Quality Assessment section above.

Over the years, the Navy has performed numerous groundwater investigations in several areas throughout the Indian Wells Valley basin to determine the extent and character of contamination releases to groundwater due to its activities. The Technical Justification Report provides results of the pertinent groundwater investigations, including seven distinct areas in the Indian Wells Valley that have received extensive study and characterization.

Groundwater sampling results and Site Conceptual Model assessments indicate that the western area of Indian Wells Valley is not appropriate for MUN de-designation. All of the sample results are below 3,000 mg/L TDS, a suitability criterion for TDS. However, results of investigations in the shallow hydrologic zone in the eastern area of Indian Wells Valley show naturally poor quality water with elevated concentrations of TDS, arsenic, and other inorganic constituents.

A generalized data set of 168 samples collected from Shallow Hydrologic Zone monitoring wells located within the NAWS China Lake boundary in the eastern Indian Wells Valley show that TDS concentrations range from 360 to 56,000 mg/L. The mean TDS concentration for Shallow Hydrologic Zone groundwater in the eastern portion of Indian Wells Valley is about 3,318 mg/L, and the 95th percentile is over 7,500 mg/L. (Table 2) About 40 percent of the samples in this generalized data set exceed the 3,000 mg/L TDS criterion for exemption from MUN beneficial use. Concentrations of TDS in the eastern portion of Indian Wells Valley generally increase to the north, with increasing proximity to the China Lake playa.

Arsenic concentrations in the eastern Indian Wells Valley groundwater range from 2.3 to 1,190 μg/L, with a mean concentration of 230 μg/L, which is well over an order of magnitude greater than the MCL for arsenic (10 μg/L). Arsenic concentrations exceed the MCL in 85 percent of the samples for the Indian Wells Valley data set (138 out of 163 samples).

Area Proposed for De-designation Beneath Indian Wells Valley

Water Board staff propose that the Water Board adopt a basin plan amendment to remove shallow groundwater from the MUN use designation for the eastern Indian Wells Valley groundwater basin within the NAWS China Lake boundaries. The lateral extent of the area proposed for de-designation is shown on Figure 2.

The vertical extent of the area proposed for de-designation is based on the saturated thickness of the shallow hydrologic zone as described in the Technical Justification Report. Specifically, the bottom vertical boundary of the zone proposed for de-designation is defined by the top of the low-permeability lacustrine clay sediments. The low-permeability clay sediments are classified as the Intermediate Hydrologic Zone in the Technical Justification Report. Where groundwater in the Shallow Hydrologic Zone exists, the clay sediments act as a barrier between the Shallow hydrologic Zone and the deeper regional aquifer. Groundwater within the Shallow Hydrologic Zone occurs under unconfined (i.e., water table) conditions and generally flows towards the China Lake playa – away from the City of Ridgecrest and municipal water supply wells.

The lateral and vertical extent of the de-designation extends from beneath the China Lake Playa outward into a large portion of the shallow eastern Indian Wells Valley groundwater basin. The extent of de-designation is informed by water quality data and best professional judgment. It is likely that groundwater at some distance west and north of the area proposed for de-designation (Figure 2) also does not meet MUN use designation, but the lack of water quality data precludes extension of the boundary into these areas of greater uncertainty.

Where present, the depth to shallow groundwater in the eastern portion of Indian Wells Valley ranges from about 0 feet (not present) to 20 feet bgs in the vicinity of the China Lake playa to 45 feet bgs in the southeast portion of Indian Wells Valley. There is no information to indicate that shallow groundwater in the eastern portion of Indian Wells Valley proposed for de-designation has ever been used as a source of domestic or municipal water. The only known groundwater wells screened in the Shallow Hydrogeological Zone in the eastern portion of Indian Wells Valley within the confines of NAWS China Lake are monitoring wells related to environmental investigations. The current land use at NAWS China Lake is military-industrial, and future land use is expected to remain military-industrial.

WATER TREATABILITY ANALYSIS

The following water treatability analysis pertains to both Salt Wells Valley and Indian Wells Valley water. The purpose of the analysis, from the Technical Justification Report, is to determine whether the groundwater proposed for MUN de-designation could be economically and feasibly treated for MUN use.

The economic and technical treatability analysis was based on the cost of a household treatment unit in dollars per gallon treated as a metric for comparison with other water supply options. However, household treatment systems generally require a higher cost per gallon treated than public water systems. Results of the analysis indicate that, although treatment costs are not unreasonable compared to other water sources available in the area, the difficulty associated with disposal of treatment byproducts renders household water treatment for groundwater in the study area technically infeasible.

The economic and treatability analysis consisted of the following steps:

1. Identify the primary constituents in groundwater that must be removed for potential use as drinking water.
2. Identify treatment technologies that could treat or remove these constituents.
3. Use a screening process based on one or more limiting properties, identify one or more design treatment technologies for use in the analysis.
4. Identify baseline conditions for areas and populations that could use water for municipal or domestic supply.
5. Evaluate the size and scale of the proposed design treatment system.
6. Evaluate the cost of the proposed design treatment system.
7. Identify alternatives to water treatment.
8. Compare the design treatment technologies with alternatives to treatment according to criteria of effectiveness, implementability, and cost.
9. Offer an opinion regarding feasibility of groundwater use as a drinking water source based on the economic and technical assessment.

The primary constituents considered for treatment in the analysis are arsenic, chloride, fluoride, sulfate, and TDS. These constituents exceeded MCLs in groundwater samples collected within the Salt Wells Valley and the Indian Wells Valley basins.

Waste brine discharged to septic systems would harm anaerobic bacteria that make the septic system effective. Storage and hauling the brine to off-site disposal is infeasible due to the cost. Disposal of waste brine to sanitary sewer systems would likely not meet industrial pretreatment standards and would violate discharge permit parameters. Other brine disposal options were considered in a pilot study for the Indian Wells Valley Water District which evaluated zero liquid discharge using brackish water and were deemed infeasible

(Carollo, 2010). The Navy considered source blending, bulk water handling, and a public water system as alternatives to water treatment. All three alternatives suffer from prohibitive costs. Table 3 provides a comparison of drinking water alternatives, including effectiveness, implementability, and costs.

DESCRIPTION OF PROPOSED PROJECT AND IDENTIFICATION OF SIGNIFICANT OR POTENTIALLY SIGNIFICANT ADVERSE ENVIRONMENTAL IMPACTS OF THE PROJECT AND THE REASONABLY FORESEEABLE METHODS OF COMPLIANCE TO SATISFY REQUIREMENTS OF CCR TITLE 23, SECTION 3777

For the purposes of California Code of Regulations title 23, section 3777, the project is the de-designation of municipal and domestic water supply (MUN) beneficial use for the portions of the groundwater basins discussed above. De-designation is a Water Board action.

In assessing the reasonably foreseeable methods of compliance with the new objective and any reasonably foreseeable significant adverse environmental impacts associated with compliance with the standard, the Water Board considered the potential impacts related to the Navy's ongoing cleanup at NAWS China Lake. One potential consequence of such action is to not require groundwater clean up to the MUN standards for the contaminants previously discharged by the Navy. Although the Water Board can require a discharger to clean up contamination to background levels, it cannot require clean up of naturally-occurring constituents to levels lower than background. In addition, the Water Board may allow cleanup levels above background if it makes findings consistent with State Water Resources Control Board Resolution 92-49, but at a minimum, the cleanup levels must meet Basin Plan objectives. Therefore, even without the de-designation, the Water Board could not require the Navy (discharger) to clean up naturally-occurring constituents to make the water suitable for MUN uses; however, the Water Board could set cleanup levels for contaminants caused by the Navy's activities at NAWS China Lake at levels that exceed levels that protect MUN. Nonetheless, all remaining beneficial uses would have to be protected. It is too speculative at this time; however, to know what the Water Board will set the cleanup levels at. Thus, the consequence of this de-designation is not a significant departure from existing requirements as the water would still not be suitable for MUN use without treatment.

Because MUN uses would not have to be protected, there is a potential that the Water Board could allow increased water quality impacts from new industrial discharges to the area. Because there are no specific proposals for new or expanded discharges of industrial waste or for construction or expansion of industrial facilities within the area, such impacts are speculative at this time, and the likelihood of new industrial discharges are small because the current land use is limited to that related to its use by the military. Even if any such project that included a discharge of industrial waste were proposed in the area, the discharge would have to meet effluent limits that protect beneficial uses and meet anti-degradation requirements, making any such impact less than significant to water quality.

The project, and the reasonably foreseeable methods of compliance with the project, will not result in any reasonably foreseeably significant adverse environmental impacts. Because the analysis here and in the environmental checklist supports a fair argument that there are no significant adverse environmental impacts related to either the project or the reasonably foreseeable methods of compliance with the changes to the Basin Plan, no alternatives to the project that would have less significant impacts to the environment, or mitigation measures to reduce significant adverse environmental impacts, were considered.

REFERENCES

Carollo. 2010. “Pilot Testing of Zero Liquid Discharge Technologies Using Brackish Groundwater for Inland Desert Communities.” May.

Tetra Tech. 2003. “Final Basewide Hydrogeologic Characterization Summary Report, NAWS China Lake, California.” July. (BHC Report)

TriEcoTt. 2013. “Technical Justification for Beneficial Use Changes for Groundwater in Salt Wells Valley and Shallow Groundwater in Eastern Indian Wells Valley.” February. (Technical Justification Report)

USEPA. 2012. “Water Quality Standards, Second Edition.” March. http://water.epa.gov/scitech/swguidance/standards/handbook/index.cfm

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

Analyte	CA MCL	CA SMCL	Water Board TDS Criterion	Number of Detections	Number of Samples	% Detections	Minimum Detection	Maximum Detection	Number Exceeding CA MCL	Number Exceeding CA SMCL	Number Exceeding TDS Criterion	Minimum RL	Maximum RL	Mean [4]	Standard Deviation	95th Percentile	Geometric Mean	Median	Q25	Q75
ANIONS, mg/L																				
CHLORIDE	–	250	–	47	47	100	137	15,100	–	46	–	–	–	6,040.80	4,008.14	13,520.00	4,595.31	5,010.00	3,455.00	8,085.00
SULFATE	–	250	–	47	47	100	35.8	4,460	–	40	–	–	–	1,319.40	1,009.01	3,527.00	888.88	1,100.00	782.50	1,555.00
SOLIDS, mg/L																				
TOTAL DISSOLVED SOLIDS [3]	–	500	3,000	47	47	100	924	29,800	–	47	43	–	–	14,522.00	8,868.43	28,800.00	11,296.74	12,500.00	9,400.00	22,650.00
TOTAL METALS, µg/L																				
ALUMINUM	1,000	200	–	9	47	19	37.3	1,110	1	3	–	5.6	63.6	NA	NA	NA	NA	NA	NA	NA
ARSENIC	10	–	–	37	47	79	4.2	443	34	–	–	1	9.5	74.40	97.92	316.70	27.87	49.00	7.85	79.15
BORON	–	–	–	38	38	100	2,620	189,000	–	–	–	–	–	61,767.00	55,749.94	#####	32,983.03	47,000.00	13,625.00	87,150.00
CHROMIUM	5	–	–	12	47	26	2.6	60	11	–	–	–	–	NA	NA	NA	NA	NA	NA	NA
IRON	–	300	–	41	47	87	14.6	5,450	–	18	–	8.6	45	630.77	1,092.66	2,849.00	151.37	151.00	31.40	558.50
LEAD	15	–	–	1	47	2	9	9	0	–	–	0.7	7	NA	NA	NA	NA	NA	NA	NA
MANGANESE	–	50	–	44	47	94	2	750	–	20	–	3	13.2	158.87	208.86	555.80	38.59	19.30	8.70	310.00
MOLYBDENUM	–	–	–	44	46	96	31.2	166	–	–	–	15.9	50.1	76.25	37.80	152.75	66.56	74.25	47.78	91.70

Notes:

1. Historical monitoring data are statistically summarized for 10 background monitoring wells in Salt Wells Valley as shown on Figure 2-6: 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 concentrations (or for analytes where means were not calculated, the maximum concentration) 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
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 1

TABLE 3-4: 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	Water Board TDS Criterion	Number of Detections	Number of Samples	% Detections	Minimum Detection	Maximum Detection	Number Exceeding CA MCL	Number Exceeding CA SMCL	Number Exceeding TDS Criterion	Minimum RL	Maximum RL	Mean [4]	Standard Deviation	95th Percentile	Geometric Mean	Median	Q25	Q75
ANIONS, mg/L																				
CHLORIDE		250		170	172	99	21	6,300	–	87	–	100	190	725.79	1,083.76	3,223.50	312.28	257.00	136.75	866.00
SULFATE		250		173	175	99	10	7,210	–	109	–	2,500	2,500	1,052.47	1,251.60	3,158.00	517.51	451.00	210.00	1,695.00
SOLIDS, mg/L																				
TOTAL DISSOLVED SOLIDS [3]	–	500	3,000	164	167	98	360	56,000	–	161	66	5	4,800	3,317.51	4,754.57	7,552.00	2,170.37	2,440.00	1,005.00	4,355.00
TOTAL METALS, µg/L																				
ALUMINUM	1000	200	–	47	162	29	12	14,100	11	17	–	5.6	391	NA	NA	NA	NA	NA	NA	NA
ARSENIC	10	–	–	154	163	95	2.3	1,190	138	–	–	4.7	774	229.57	284.95	925.60	87.08	97.60	29.55	349.00
BORON	–	–	–	105	105	100	340	163,000	–	–	–	–	–	11,866.80	23,076.57	61,080.00	3,993.36	3,600.00	1,290.00	12,000.00
CHROMIUM	5	–	–	77	163	47	0.52	148	16	–	–	0.39	50	NA	NA	NA	NA	NA	NA	NA
CHROMIUM HEXAVALENT	–	–	–	1	16	6	10	10	–	–	–	10	10	NA	NA	NA	NA	NA	NA	NA
IRON	–	300	–	71	163	44	4.6	21,900	–	21	–	2.2	214	NA	NA	NA	NA	NA	NA	NA
LEAD	15	–	–	20	163	12	0.8	37.1	2	–	–	0.6	15	NA	NA	NA	NA	NA	NA	NA
MANGANESE	–	50	–	115	162	71	0.28	1,260	–	45	–	0.24	96.2	62.26	152.14	267.15	9.17	13.00	2.03	58.60
MOLYBDENUM	–	–	–	147	154	95	2.8	6,880	–	–	–	0.27	9.1	641.50	1,167.22	3,051.00	113.96	72.50	27.53	926.75

Notes:

1. Historical monitoring data are statistically summarized for 53 background monitoring wells in Indian Wells Valley (Figure 3-11). 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) and the Michelson Laboratory/Publicc Works Remedial Investigation Report (2010).
2. Analytes for which mean concentrations (or for analytes where means were not calculated, the maximum concentration) 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

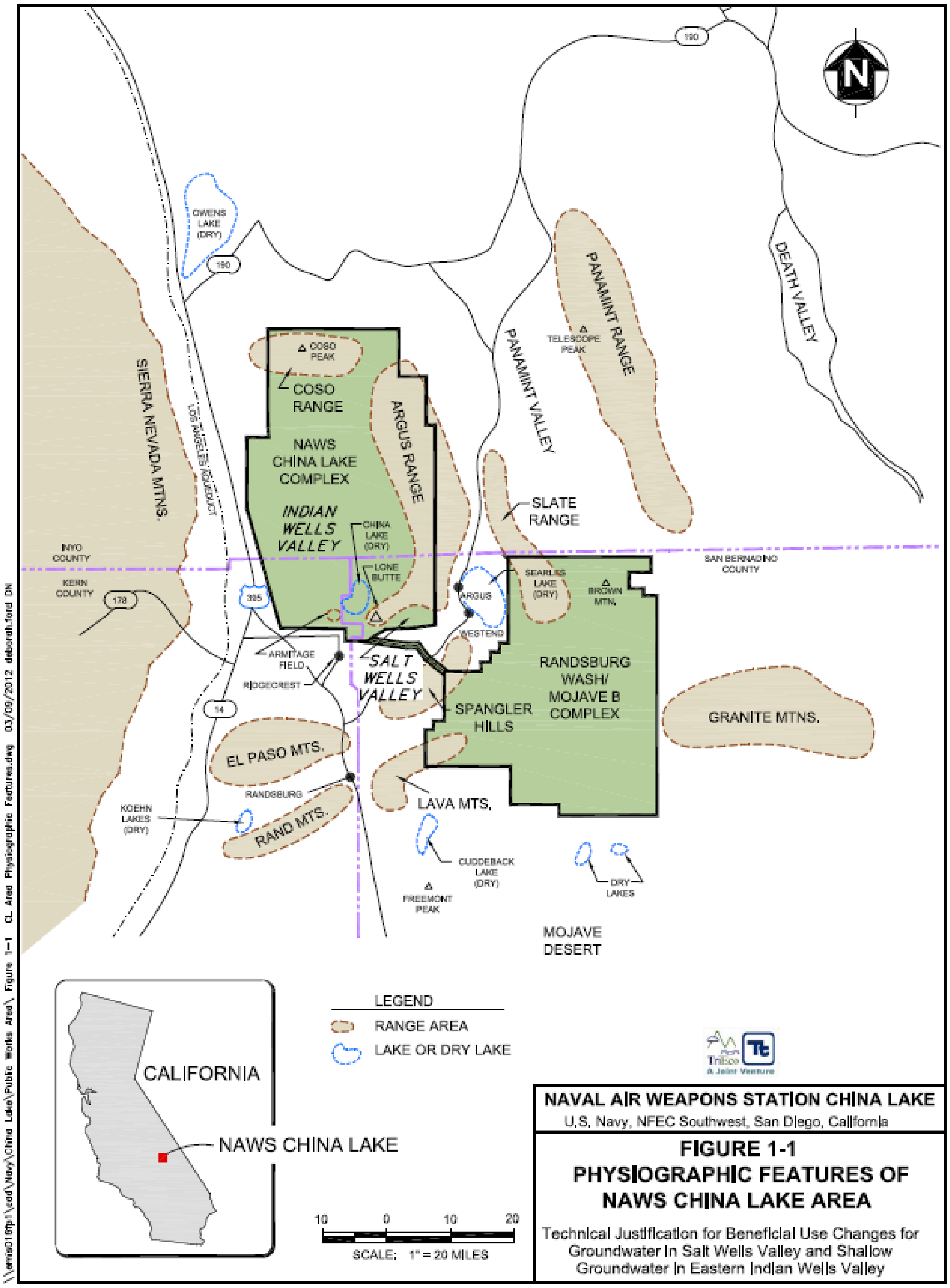
%	Percent
µg/L	Micrograms per liter
CA	California
IWV	Indian Wells Valley
MCL	Maximum contaminant level
mg/L	Milligrams per liter
NA	Not applicable; summary statistics are calculated only for analytes with percent detections greater than 50%.
RL	Reporting limit
SMCL	Secondary maximum contaminant level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

COMPARISON OF DRINKING WATER ALTERNATIVES – INDIAN WELLS VALLEY

Alternative	Effectiveness	Implementability	Minimum Estimated Cost ($ per year)
POU/POE RO	Effective for all primary constituents. Meets all MCLs. Effectiveness is tempered by a byproduct of waste brine.	Not implementable. Relatively complex to install and maintain for typical homeowner. For existing construction, retrofitting may prove difficult. If owner is not vigilant, lapses in treatment effectiveness can have health effects. Waste brine can only be hauled to a Class I landfill facility as a liquid or solid industrial waste.	$555
Source Blending	Effective if enough source water of higher quality is blended with water of poor quality. For the IWV study area, some groundwater is degraded enough to render this alternative ineffective. May not meet all MCLs, depending on available sources.	Prohibitive if another, higher quality source is not relatively close. Careful water quality monitoring is required to ensure blended drinking water meets MCLs. Negative health effects possible. Availability of an alternative, higher quality source may negate need to blend and abandonment of lower quality source.	NA
Bulk Water Hauling	Effective. This method avoids beneficial use of groundwater as municipal or domestic supply. Water supply meets all MCLs.	Contract trucking and delivery is very implementable. Associated tank, feed pump, pressure tank, and piping may be more difficult to site and install.	$4,270
Public Water System	Effective. This method avoids beneficial use of groundwater as municipal or domestic supply. Water supply meets all MCLs.	Easy implementation at boundary of service areas of existing public water systems, although additional piping would be necessary to extend the service area. At all other areas within the study area, connection to the nearest public water system would be prohibitive.	$460

Notes:

IWV	Indian Wells Valley	POE	Point of entry treatment (typically a whole-house filter)
MCL	Maximum contaminant level	POU	Point of use treatment (typically an under-sink filter)
NA	Not applicable	RO	Reverse osmosis



N
OWENS LAKE (DRY)
190
COSO PEAK
COSO RANGE
NAWS CHINA LAKE COMPLEX
INDIAN WELLS VALLEY
CHINA LAKE (DRY)
LONE BUTTE
ARGUS RANGE
SIERRA NEVADA MTNS.
LOS ANGELES AQUEDUCT
PANAMINT VALLEY
PANAMINT RANGE
TELESCOPE PEAK
DEATH VALLEY
SLATE RANGE
INYO COUNTY
KERN COUNTY
SAN BERNARDINO COUNTY
178
395
SEARLES LAKE (DRY)
ARGUS
BROWN MTN.
WESTEND
ARMITAGE FIELD
RIDGECREST
SALT WELLS VALLEY
RANDSBURG WASH/ MOJAVE B COMPLEX
SPANGLER HILLS
GRANITE MTNS.
14
EL PASO MTS.
RANDSBURG
RAND MTS.
KOEHN LAKES (DRY)
LAVA MTS.
CUDDEBACK LAKE (DRY)
DRY LAKES
FREEMONT PEAK
MOJAVE DESERT
CALIFORNIA
NAWS CHINA LAKE
LEGEND
RANGE AREA
LAKE OR DRY LAKE
10 0 10 20
SCALE: 1" = 20 MILES
NAVAL AIR WEAPONS STATION CHINA LAKE
U.S. Navy, NFEC Southwest, San Diego, California
FIGURE 1-1
PHYSIOGRAPHIC FEATURES OF NAWS CHINA LAKE AREA
Technical Justification for Beneficial Use Changes for Groundwater in Salt Wells Valley and Shallow Groundwater in Eastern Indian Wells Valley

Figure 1

China Lake Complex
Randsburg Wash/ Mojave B Complex
395
14
40
Boundary for Removal of Municipal or Domestic Water Supply Beneficial Use Designation for Groundwater in the Salt Wells Valley and Shallow Groundwater in the Indian Wells Valley Groundwater Basins
Indian Wells Valley Groundwater Basin
Salt Wells Valley Groundwater Basin
Lake or Lakebed
Wastewater Treatment Pond
Light duty road
Runway
Naval Air Weapons Station (NAWS) China Lake Boundary
N
1 0 1 2
Miles
Naval Air Weapons Station China Lake
U.S. Navy, NAVFAC Southwest, San Diego, California
REVISED DELINEATED LATERAL EXTENT OF SALT WELLS VALLEY AND SHALLOW GROUNDWATER IN EASTERN INDIAN WELLS VALLEY PROPOSED FOR DE-DESIGNATION
Technical Justification for Beneficial Use Changes for Groundwater in Salt Wells Valley and Shallow Groundwater in Eastern Indian Wells Valley
Indian Wells Valley
Inyo County
Airport Lake Fault Zone
Argus Frontal Fault Zone
Argus Range
Kern County
San Bernardino County
China Lake Playa
G-1 Seep
G-1 Channel
Lark Seep
Little Lake Fault Zone
Salt Wells Valley
Mirror Lake
Satellite Lake
City of Ridgecrest
Poison Canyon
Spangler Hills
2014-11-25 C:\chinaLk\Aquifer De-designation\mxd\De-designation Map 112514.mxd TriEco-Tt Michelle.Handley

Figure 2

APPENDIX A
ENVIRONMENTAL CHECKLIST

The checklist below is based on Appendix I to the CEQA Guidelines. There are no direct impacts related to the proposed Basin Plan Amendment for the de-designation of the MUN beneficial use from the Indian Wells Valley and Salt Wells Valley groundwater basins beneath the Naval Air Weapons Station (NAWS) China Lake. The groundwater is currently unusable for MUN use because of high concentrations of TDS and arsenic, and this Basin Plan Amendment will better align the Water Quality Control Plan for the Lahontan Region (Basin Plan) with the quality of the groundwater in these basins. Arguably, the de-designation will also have limited effects on cleanup of existing contamination. The Water Board can only require cleanup to background levels, and therefore, could not require the Navy to cleanup TDS and arsenic levels that were not caused by their discharge in order to make the basins available for MUN use.

The only potential impacts to water quality from the de-designation would be from new industrial discharges to the area. Because there are no specific proposals for new or expanded discharges of industrial waste or for construction or expansion of industrial facilities within the area, such impacts are speculative at this time, and the likelihood of new industrial discharges are small because the current land use is limited to that related to its use by the military. Even if any such project that included a discharge of industrial waste were proposed in the area, the discharge would have to meet effluent limits that protect beneficial uses and meet anti-degradation requirements, making any such impact less than significant to water quality.

I. Background

Project Title:
De-designation of the MUN water quality beneficial use of the Salt Wells Valley and Indian Wells Valley ground water basins that are below the Naval Air Weapons Station (NAWS) China Lake

Contact Person: Richard Booth

Project Description:
The project is adoption by the Lahontan Regional Water Quality Control Board (Water Board) of an amendment to the Basin Plan that will remove the Municipal and Domestic Supply (MUN) beneficial use designation from certain ground waters located beneath the NAWS China Lake. The ground waters affected are those located in portions of the Salt Wells Valley and for shallow groundwater in the eastern Indian Wells Valley basins. The primary reason for de-designating these ground waters for MUN is that the naturally-

occurring constituents, such as arsenic and TDS, exceed the municipal drinking water standards.

II. Environmental Impacts

The environmental factors checked below could be potentially affected by this project. See the checklist on the following pages for more details.

☐	Aesthetics	☐	Agriculture and Forestry Resources	☐	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Geology/Soils
☐	Greenhouse Gas Emissions	☐	Hazards & Hazardous Materials	☒	Hydrology/Water Quality
☐	Land Use/Planning	☐	Mineral Resources	☐	Noise
☐	Population/Housing	☐	Public Services	☐	Recreation
☐	Transportation/Traffic	☐	Utilities/Service Systems	☐	Mandatory Findings of Significance

1. AESTHETICS. Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

a-d) The project will not affect scenic vistas, as no viewsheds will be impeded. No scenic resources will be damaged.

2. AGRICULTURAL AND FOREST RESOURCES. In determining whether impacts to agricultural resources are significant environmental impacts, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping & Monitoring Program of the California Resources Agency, to non-agricultural uses?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)) or timberland (as defined by Public Resources Code section 4526)?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

a-e) Adoption of this action will not result in the loss of farmland or forest lands or the conversion of farmland to non-agricultural use or forest land to non-forest use. The action will not affect existing zoning for agriculture or forest land or timberland.

3. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
d) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

a-e) There will be no effect on air quality.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
4. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the DFW or USFWS?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the DFW or USFWS?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally-protected wetlands as defined by Section 404 of the federal Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, *etc.*) through direct removal, filling, hydrological interruption or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

a-f) There will be no effect on biological resources.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
5. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

a-d) There will be no effect on cultural resources.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
6. GEOLOGY and SOILS. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☒
i) Rupture of a known earthquake fault, as delineated in the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines & Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
d) Be located on expansive soils, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternate wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

a-e) There will be no effect on geology or soils.

7. GREENHOUSE GAS EMISSIONS -- Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	☒
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

a-b) There will be no effect on greenhouse gas emissions.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
8. HAZARDS and HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or to the environment?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or a public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

a-h) There will be no effect from hazardous materials. The adoption of this Basin Plan Amendment will provide the Water Board the discretion to allow contaminants to remain in groundwater above the Maximum Contaminant Levels for a long period of time. No contamination exists at the site in concentrations at hazardous levels. The levels of contamination in groundwater will not pose a significant hazard or risk to the public or the environment.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
9. HYDROLOGY and WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (*e.g.*, the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

a-j) There is a potential for future industrial discharges to groundwater of Salt Wells Valley and the shallow groundwater of Indian Wells Valley, which would not otherwise had been possible if the MUN designation remained. However, any such potential impacts are speculative, as there are no such projects proposed at this time, and current military use of the area makes it unavailable for development. Even if any such industrial discharges were to occur, they must meet the requirements of the Lahontan Basin Plan, including a review and permitting process for such discharges. Such a process is intended to ensure that impacts to groundwater quality will be less than significant.

De-designation could also potentially affect cleanup levels for contaminated groundwater; however, it is speculative whether those levels would be significantly different because of the de-designation. Pursuant to State Water Board Resolution 92-49, the Water Board can only require cleanup of contamination to background levels. This means that the Water Board cannot require the Navy or others to clean up levels of TDS or arsenic that are caused by their discharge, and even if de-designation did not occur, cleanup would only be to background levels.

Because MUN is generally the most sensitive use, removing the MUN use could result in allowing the Water Board to require less stringent cleanup levels for some constituents. Under the requirements of State Water Board Resolution 92-49, the Water Board may allow the Navy to cleanup to water quality objectives that are less stringent than background if it is not feasible to clean up water to background levels. In that case, the Water Board may reduce cleanup to "the best water quality which is reasonable… considering all demands being made and to be made on those waters and the total values involved…" This alternative to background levels cannot result in water quality less than that in the Basin Plan. This means that if the MUN beneficial use designation is removed, alternative groundwater cleanup levels could be set at levels necessary to protect industrial uses, which would likely be less stringent than the levels necessary to protect MUN beneficial uses for most constituents. It is speculative, however, to know at what levels the final cleanup levels would be set after the Water Board applied the factors set forth in State Board Resolution 92-49. It is certain, however, that consistent with State Board Resolution 92-49, it would not be less than the levels necessary to protect the remaining beneficial uses.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
10. LAND USE AND PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

a-c) There will be no effects on land use and planning.

11. MINERAL RESOURCES. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

a-b) There will be no effect on mineral resources.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
12. NOISE. Would the project result in:				
a) Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing in or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing in or working in the project area to excessive noise levels?	☐	☐	☐	☒

a-f) There will no effect on noise.

13. POPULATION AND HOUSING. Would the project:				
a) Induce substantial population growth in an area either directly (*e.g.*, by proposing new homes and businesses) or indirectly (*e.g.*, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a-c) There will be no effect on population and housing.

14. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service rations, response times or other performance objectives for any of the public services:

a) Fire protection?	☐	☐	☐	☒
b) Police protection?	☐	☐	☐	☒
c) Schools?	☐	☐	☐	☒
d) Parks?	☐	☐	☐	☒
e) Other public facilities?	☐	☐	☐	☒

a-e) There will be no effect on public services.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
15. RECREATION. Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

a-b) There will no effect on recreation.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
16. TRANSPORTATION / TRAFFIC. Would the project:				
a) Exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designated in a general plan policy, ordinance, etc.), taking into account all relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

a-f) There will be no effect on transportation or traffic.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
17. UTILITIES AND SERVICE SYSTEMS. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

a) The project will not directly result in exceedance in wastewater treatment requirements and will allow contaminants to remain in groundwater without requiring treatment.

(b-g) There will be no effect on utilities and service systems. The community receives its water supply from groundwater unaffected by the area proposed for de-designation; otherwise, the groundwater area would not qualify for de-designation. In addition, a Water Treatability Analysis was performed which showed that treating the water and disposing of treatment byproducts is not feasible.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
18. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of potential future projects)	☐	☐	☐	☒
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

I find that the project COULD NOT have a significant impact on the environment, and the functional equivalent of a NEGATIVE DECLARATION will be prepared. _X_

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures included in the project description have been added to the project. The functional equivalent of a MITIGATED NEGATIVE DECLARATION will be prepared. ___

I find that the proposed project may have a significant impact on the environment, and the functional equivalent of an ENVIRONMENTAL IMPACT REPORT is required. ___

Prepared By:

[signature] 2/11/15

Richard W. Booth — Date
Senior Engineering Geologist

Reviewed by:

[signature] 4/9/15

Lauri Kemper — Date
Assistant Executive Officer

Authority: Public Resources Code Sections 21083, 21084, 21084.1, and 21087.

Reference: Public Resources Code Sections 21080(c), 21080.1, 21080.3, 21082.1, 21083, 21083.1 through 21083.3, 21083.6 through 21083.9, 21084.1, 21093, 21094, 21151; *Sundstrom v. County of Mendocino*, 202 Cal. App. 3d 296 (1988); *Leonoff v. Monterey Board of Supervisors*, 222 Cal. App. 3d 1337 (1990)