

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION**

**CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS
BOARD ORDER NO. R6V-2006-0052
WDID NO. 6B150609001**

FOR

**BORON COMMUNITY SERVICES DISTRICT
WELL NO. 15 PILOT AQUIFER STORAGE RECOVERY PROJECT**

Kern County

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

1. Discharger

On September 20, 2006, the Boron Community Services District (CSD) submitted a Report of Waste Discharge, for the Well No. 15 Pilot Aquifer Storage Recovery Project (Project). For the purpose of this Conditional Waiver of Waste Discharge Requirements (Waiver), the Boron CSD is referred to as the "Discharger." Attachment A (Table 1) contains a list of items provided to support the Report of Waste Discharge and other references used to develop this Conditional Waiver of Waste Discharge Requirements.

2. Pilot Project Summary

The Project is a an aquifer storage recovery test involving delivery of up to 60 acre-feet of State Water Project (SWP) water from Antelope Valley/East Kern Water Agency (AVEK) Water Agency distribution system for injection into existing Boron CSD Well No. 15 at a rate of about 1 acre-foot/day. After completing the injection period and waiting about two months, water will be recovered for use in the Boron CSD potable water distribution system. A comparison of AVEK Water Agency and Boron CSD water quality is shown on Attachment B.

3. Pilot Project Location

Well No. 15 is located at the northeast corner of Section 32, T11N, R8W, San Bernardino Baseline and Meridian, as shown on Attachment "C." Well No. 15 is located on Kern County Assessor's Parcel No. 23222031005 at Latitude 35d 00' 48.95"N and Longitude 117d 44' 19.33"W.

4. Reason for Project

On January 23, 2006, a revised (lower) federal maximum contaminant level (MCL) for arsenic in drinking water of 10 ug/L became effective. Boron CSD obtains municipal drinking water from two sources that are blended; a) local groundwater production

wells located about three miles northwest of Boron and b) treated State Water Project (SWP) water imported and delivered by the AVEK Water Agency. The existing Boron CSD wells contain arsenic in excess of the MCL ranging from 60 – 80 ug/L. Since the new arsenic MCL became effective, Boron CSD has relied exclusively on imported SWP water. On March 23, 2006, the California Department of Health Services (DHS) required Boron CSD to develop a secondary water supply source because the AVEK Water Agency source (SWP water) may be disrupted due to plant or canal maintenance, earthquake damage, severe droughts or other unforeseeable reasons. Both the DHS and AVEK Water Agency support the proposed pilot project to collect data for determining if a longer term Feasibility Study should be pursued that may lead to a secondary water source in the form of an aquifer storage and recovery system. The AVEK Water Agency reports that SWP water quality during 2006 has been excellent, containing lower than average concentrations of total organic carbon, and as a result of reduced disinfection demand, lower concentrations of disinfection byproducts. Boron CSD desires to pursue this pilot project in a timely manner to utilize the higher quality SWP water.

5. AVEK Water Agency Treatment and Delivery System

AVEK Water Agency delivers SWP water from pipelines connected to the Eastern Branch of the California Aqueduct west of Lancaster, Los Angeles County. This water is treated at the Rosamond Treatment Plant using flocculation and sedimentation with alum and polyelectrolytes, pre-filter chlorination, multimedia filtration and chlorination disinfection using liquid chlorine. Treated water is further stored in large reservoirs located south of Mojave (north of Rosamond) where additional chlorine may be added to achieve necessary disinfection. Treated AVEK Water Agency water meets drinking water standards but contains disinfection byproducts such as trihalomethanes and haloacetic acids that are not naturally present in groundwater. Water is delivered to Boron CSD through the AVEK Water Agency's "North Feeder" pipeline that varies in diameter from 36 to 12 inches. Boron CSD Wells No. 13 and No. 15 and AVEK Water Agency water is blended in a 1.0 million gallon storage tank located 3.75 miles east of the wells before delivery to customers in the Community of Boron water distribution system. Boron CSD has agreed to dechlorinate injected water before injection to remove disinfection byproduct generation potential in the aquifer after injection.

6. Surface Topography and Hydrology

Surface drainage in the vicinity of Well No. 15 is to the southwest, towards Rogers Dry Lake, located on Edwards Air Force Base. The average annual rainfall is about 5 inches with an annual evaporation rate of about 100 inches per year. Stormwater crosses the area as sheet flow into numerous parallel swales near Well No. 15 trending from the northeast to the southwest.

7. Geology and Hydrogeology

The North Muroc Hydrologic Subarea (also known as the Kramer Basin) is located northeast of Rogers Dry Lake. Igneous quartz monzonite forms the basement bedrock and is evident as numerous surface intrusions surrounding the basin. Sedimentary older alluvium comprised of poorly sorted gravels and arkosic sand, silt and clay overly the bedrock to approximately 2,000 feet at the project site. Numerous south-east to north-west trending right-lateral faults transect the basin. The deep aquifer in the Antelope Valley extends beneath Rogers Dry Lake into the North Muroc Hydrologic Subarea, where it is unconfined. Specific aquifer properties in the vicinity of Boron CSD Well No. 15 are unknown at this time. The Discharger reported the groundwater flow gradient to the northwest. Data reviewed by Water Board staff indicate the groundwater flow direction may be dominated by a pumping depression centered on Well No. 15 that extends over a mile in either direction. No estimates or other information was provided by the Discharger or was found during research by Water Board staff, regarding aquifer properties that could be used to determine the expected distance COCs might travel from Well No. 15 during the project.

8. Well 15 and Temporary Improvements

The depth to groundwater in Well No. 15 is about 190 feet below ground surface (fbgs). The Discharger reports that Well No. 15 has 253 feet of perforated casing and was drilled to 530 fbgs. The strainer on the pump is located at a depth of 215 to 235 fbgs. Temporary modifications will be made to deliver SWP water to Well No. 15. and return extracted water to the Boron CSD blending reservoir. The Discharger also proposes to remove free chlorine residual in AVEK Water Agency delivered water prior to injection by adding calcium thiosulfate at the rate of about 7 gallons per 325,000 gallons (acre-foot) of water injected.

9. Analysis of Existing Water Quality Compared to AVEK Water Quality and Proposed Remaining Groundwater Quality

Groundwater in the North Muroc basin is generally marginal to inferior for domestic uses and is the reason that the AVEK Water Agency supplies imported SWP water to customers in the area. Well No. 15 contains concentrations of the following constituents that are near, or above, their respective drinking water standards: total dissolved solids of 930 mg/L (500 mg/L Secondary MCL), chloride of 250 mg/L (250 mg/L Secondary MCL), sulfate of 180 mg/L (250 mg/L Secondary MCL), arsenic of 87 ug/L (10 ug/L Primary MCL), fluoride of 1,000 ug/L (200 ug/L Primary MCL) and iron of 280 ug/L (300 ug/L Secondary MCL).

As shown on Attachment B, the quality of AVEK Water Agency's SWP water is generally of better quality than the receiving groundwater quality in Boron CSD's Well No. 15, with a few exceptions. For antimony, barium, silver and methyl blue active substances (MBAS) it appears that the analytical laboratory detection limits used by the AVEK Water Agency laboratory were higher than used for the samples collected in

Well No. 15. The magnesium concentration in SWP water appears about twice the concentration in Well No. 15 while zinc is about 16 times the level in Well No. 15. Disinfection by-products in groundwater from Well No. 15 have not been analyzed, but are not expected to be present because they are not naturally occurring in groundwater. The AVEK Water Agency's SWP water contains concentrations of trihalomethanes and haloacetic acids because these constituents are by-products of chlorination. The AVEK water supplied meets drinking water standards.

10. Constituents of Concern (COC)

Pursuant to definitions contained in Water Code section 13050, the COCs are magnesium, zinc and the disinfection by-products comprising total trihalomethanes (THMs) and haloacetic acids (HAAs). Because these constituents are present in the SWP water greater than expected background receiving water concentrations, they are considered waste subject to regulation under the Water Code. These constituents are considered waste because: (1) the receiving waters do not contain these constituents, (2) the concentration of COCs in the receiving waters are generally less than the concentration of COCs within the SWP water, and (3) the presence of any residual COCs remaining at the end of the project shall be considered a "disposal." The concentrations of COCs in the treated SWP water meet standards established by the Department of Health Services for domestic supply.

11. US Borax Groundwater Cleanup Project

The US Borax mine had a historical release of contaminants from surface impoundments that polluted groundwater approximately 1.25 miles north (up gradient) of Well No. 15. The US Borax plume is not expected to impact the pilot project, but should be considered for a long-term project, should it occur. Groundwater extraction wells are operated by US Borax to contain and remediate this polluted groundwater. In the area of the extraction wells, this plume contains total dissolved solids at about 50,000 mg/L, boron at about 4,000 mg/L and arsenic 10 mg/L (10,000 ug/L).

12. Authorized Injection Sites

Boron CSD Well No. 15 is the only authorized injection/extraction well.

13. Land Uses

The land use immediately surrounding well No. 15 is open desert land. Surrounding the site are the following:

- a. Desert Lake community is two miles southeast;
- b. Edwards Air Force Base is 1.5 miles south;
- c. U.S. Borax mine is about 1.5 miles northeast; and
- d. Boron community is 5.0 miles east.

14. Receiving Water Beneficial Uses

The receiving waters are the groundwaters of the North Muroc Hydrologic Area of the Antelope Hydrologic Unit (Department of Water Resources No. 626.26). The groundwater basin is the Antelope Valley (Department of Water Resources No. 6-44). The present and probable beneficial uses of the groundwaters of Antelope Valley Groundwater Basin as set forth and defined in the Basin Plan are:

- a. Municipal and domestic supply (MUN);
- b. Agricultural supply (AGR);
- c. Industrial service supply (IND); and
- d. Freshwater replenishment (FRSH).

15. Basin Plan

On March 31, 1995, the Regional Board adopted a Water Quality Control Plan for the Lahontan Region (Basin Plan). This Waiver implements the Basin Plan as amended.

16. Degradation Analysis

In accordance with State Water Resources Control Board Resolution No. 68-16 (*Statement of Policy With Respect to Maintaining High Quality of Waters in California*) and the Basin Plan, the Water Board may allow degradation of a water of the State. The Discharger is proposing to discharge waste in a manner that will result in some degradation of groundwater quality for some constituents in the area near Well No. 15. The Water Board has evaluated the various options available to the Discharger and has determined that allowing some level of degradation is appropriate, consistent with Resolution No. 68-16.

In order to allow any degradation, the Water Board must make all of the four findings contained in Resolution No. 68-16. The analysis of the conditions will also dictate the amount of degradation to be allowed. This analysis is project-specific as degradation may be justified in some cases but not in others. The four findings that must be made are as follows:

- The water quality changes are consistent with maximum benefit to the people of the State;
- The water quality changes will not unreasonably affect present and anticipated beneficial uses;
- The water quality changes will not result in water quality less than that prescribed in the Basin Plan; and

- Consistent with the use of best practicable treatment or control to avoid pollution or nuisance and maintain the highest water quality consistent with maximum benefit to the people of the State.

The Water Board considered the following information in determining if it could make the above findings related to the discharge to groundwater.

Limited Extent of COCs Remaining

While the extent of degraded water that would result during the project implementation has not been determined, the Discharger has proposed to recover, by extraction, groundwater until the concentration of disinfection byproducts are non-detectable. The Discharger estimates that the 60-acre feet of injected water would contain approximately 10.1 pounds of total trihalomethanes based on an estimated 62 ug/L concentration that may be present in the injected water. Up to 13 pounds of total trihalomethanes could be injected if the total trihalomethane concentration is at the injection limit of 80 ug/L contained in this Order. During extraction, the mass removed would be determined. Under this proposal, the amount of contaminants that might remain in the aquifer is expected to be small and the concentration would not exceed MCLs. The concentration of COCs that may remain in groundwater escaping the extraction well capture zone at the end of the project would be less than water quality standards necessary to protect beneficial uses established in the Basin Plan because the concentrations in the injected water meet the beneficial use standard of less than or equal to the MCL.

Use of the Groundwater Basin

The Water Board is aware of various projects being considered in the Antelope Valley for groundwater recharge or banking that will use imported water, including this project. These projects would supplement municipal drinking water supplies benefiting both the residents of the Antelope Valley and potentially a larger number of Californians. The groundwater basin in the Antelope Valley is a closed basin. Salts are a conservative constituent. This project may decrease the overall TDS concentration locally in receiving water (except for magnesium and zinc) because the TDS concentration of imported SWP water is lower than the receiving water. The Water Board believes that this project would not affect the Antelope Valley groundwater basin salt loading because the Boron CSD currently imports AVEK water used for all domestic consumption.

It is appropriate to control, through dechlorination as proposed by the Discharger, generation of additional THMs in groundwater. The California Water Code section 13263(b) indicates that the Water Board "need not authorize the utilization of the full waste assimilation capacities of the receiving waters" when prescribing waste discharge requirements. Removing added THMs through groundwater extraction, will maintain the assimilative capacity of the aquifer for groundwater recharge or banking projects. This analysis indicates that if the project is successful the beneficial uses of the groundwater basin may be enhanced.

Technology and Economics

The Discharger is proposing to dechlorinate injected water to remove the potential for additional disinfection byproducts to be formed in the aquifer. The Discharger is not proposing to remove the disinfection byproducts already formed and contained in the AVEK Water Agency water supply distribution system because of the relatively high costs associated with such treatment. Exact costs for removing the THMs already in SWP water were not provided by the Discharger. The Discharger is proposing to pump groundwater from Well No. 15 until concentration of disinfection byproducts are non-detectable or no longer recoverable.

The project is short-term and the condition of degradation will be hydraulically contained through extraction except for a limited portion of injected water that may not be fully captured during pumping. The treated SWP water meets State standards for municipal, domestic, and agricultural supply. The Discharger will monitor extracted groundwater to verify that haloacetic acids and trihalomethanes are removed to the extent feasible.

The Discharger is implementing treatment and control technologies that reduce the amount of degradation that would be caused by the project. The above factors demonstrate that the level of degradation that would result from the project is low and will not adversely impact the beneficial uses of the groundwater.

In consideration of these technical, economic, and social factors, the Water Board finds that the condition of degradation during the Project life is appropriate. Conditions such as injection limits, monitoring, and periodic review are necessary and appropriate to ensure the Project is conducted to protect beneficial uses. Conditions to control receiving and injection water quality are needed to allow reasonable degradation while still maintaining a measure of safety to protect beneficial uses. The degradation is appropriate because: (1) the test and water quality degradation is of short duration (2) the condition will be controlled, (3) the Project will assist in providing the Discharger with an alternate water source.

17. California Environmental Quality Act

Boron CSD is the California Environmental Quality Act (CEQA) lead agency for the Project. Boron CSD determined that the project was subject to CEQA as described in California Code of Regulations, title 14, sections 15060(c) and 15378. It filed a Notice of Exemption for the project dated June 27, 2006, as a Categorical Exemption (Class 6 – Pilot Project) under California Code of Regulations, title 14, section 15306. This exemption allows basic data collection, research, experimental management and resource evaluation activities that do not result in serious major disturbances to an environmental resource. Information gained from the project is part of a study that may lead to a potential full-scale project that is not yet funded, approved, adopted, or funded.

The Water Board also finds that the project does not have the potential to cause a significant effect on the environment pursuant to California Code of Regulations, title 14, section 15061, subdivision (b)(3) because the project is short-term and affected groundwater will meet all beneficial uses. Pursuant to California Code of Regulations, title 14, section 15061, subdivision (b)(2), the Water Board further finds that this project is subject to categorical exemption Class 6 found in California Code of Regulations, title 14, section 15306. This exemption is appropriate because (1) Boron CSD's data collection activities and evaluation of water resource management options will not result in a serious or major disturbance to an environmental resource and (2) the project is short-term and affected groundwater will meet all beneficial uses.

18. Intent to Issue Waiver

Water Code section 13269, subdivision (a) states that a waiver may be granted if it is (1) consistent with the Basin Plan and (2) in the public interest. This Waiver is consistent with the Basin Plan because the discharge would not result in COC concentrations above those needed to protect beneficial uses. This Waiver is in the public interest because Boron CSD will obtain information allowing them to assess whether a future aquifer storage and recovery project is warranted that will allow them to develop a secondary water source as required by the State Department of Health Services. The Water Board has notified the Discharger and all known interested agencies and persons of its intent to issue a Conditional Waiver of Waste Discharge Requirements for the Project.

19. Public Meeting

The Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

20. Technical and Monitoring Reports

Water Code section 13267, subdivision (b) provides that "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."

The technical reports required by this Conditional Waiver and the Monitoring and Reporting Program are necessary to assure compliance. The Discharger operates the facility that discharges the waste subject to this Conditional Waiver.

THEREFORE BE IT RESOLVED: Pursuant to Water Code, section 13269 subdivision, (a) Waste Discharge Requirements are waived for the Boron CSD Well No. 15 Pilot Aquifer Storage Recovery Project provided the following conditions are met.

1. Failure to adhere to any of the following conditions will cause this Conditional Waiver to become void.
2. This Waiver expires on **November 8, 2008** unless terminated at an earlier date by the Water Board. The Regional Board may renew this Waiver.
3. The discharge of water during injection and/or extraction shall not create a condition of pollution or nuisance as defined in Water Code section 13050.
4. Only treated water from the AVEK Water Agency distribution system may be injected into well No. 15 at a flow rate not to exceed 1 acre foot per day (about 226 gallons per minute).
5. Boron CSD must properly operate and maintain the injection/extraction well system in a manner to achieve the conditions of this waiver.
6. The treated SWP water that will be injected into the groundwaters of the Antelope Valley Groundwater Basin shall not contain the following constituent concentrations:

<u>Constituent</u>	<u>Concentration</u>	<u>Basis</u>
Trihalomethanes	80 ug/L	Primary MCL
Haloacetic Acids	60 ug/L	Primary MCL
Bromate	10 ug/L	Primary MCL
Total Residual Chlorine	0.1 mg/L	Laboratory Reporting Limit

7. The groundwater remaining at the end of the project shall not contain constituent concentrations in excess of those listed under the column "Groundwater Quality Limit" of Attachment B.
8. The Discharger shall comply with the "Standard Provisions for Waste Discharge Requirements," dated September 1, 1994, in Attachment "D", which is made part of this Conditional Waiver. Standard Provisions 12 and 15 shall not apply for the purposes of this Waiver.
9. Pursuant to the Water Code, section 13267, subdivision (b), the Discharger shall comply with Monitoring and Reporting Program No R6V-2006-0052 as specified by the Executive Officer. Reports required under the Monitoring and Reporting Program are

being required to monitor the effects on water quality from known or suspected discharges of waste to waters of the State from the proposed project.

10. The Discharger shall comply with the "General Provisions for Monitoring and Reporting," dated September 1, 1994, which is attached to and made part of the Monitoring Program.
11. This Waiver only authorizes the Project described in the September 20, 2006 Report of Waste Discharge and any proposed modifications must be submitted for review. Future injection/extraction phases, should they be proposed, will include conditions requiring the Discharger to collect monitoring data to establish basic aquifer properties and to evaluate the concentrations of constituents of concern in the aquifer.
12. Within 90 days of completing the project, the Discharger shall submit a technical report to the Water Board describing how the Discharger has complied with this Conditional Waiver including an analysis of water quality and elevation monitoring data collected to verify compliance with this Conditional Waiver. This report shall be signed by a California registered Civil Engineer or Geologist and shall reference this Conditional Waiver and its WDID No. (6B150609001). The report shall contain the following:
 - a. Tabular, graphical and scaled maps displaying data collected during the Project;
 - b. Findings and conclusions regarding the data; and
 - c. Certification that the condition of groundwater degradation has been abated **or** a description of actions which are being taken to abate the condition of degradation or a reasonable effort has been made.

I, Harold J. Singer, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a Waiver adopted by the California Regional Water Quality Control Board, Lahontan Region, on November 8, 2006.

"Original Signed by"

HAROLD J. SINGER
EXECUTIVE OFFICER

- Attachments:
- A. References
 - B. Comparison of AVEK and Well No. 15 Water Quality and Groundwater Limits
 - C. Boron CSD Well No. 15 ASR Project Location
 - D. Standard Provisions for Waste Discharge Requirements

ATTACHMENT A - REFERENCES
BORON COMMUNITY SERVICES DISTRICT
WELL NO. 15 PILOT AQUIFER STORAGE RECOVERY PROJECT

Table 1 – Report of Waste Discharge (RWD) or California Environmental Quality Act (CEQA) Information

Part of	Date	Author	Title
RWD	June 22, 2006	Provost & Pritchard	Aquifer Storage Recovery Pilot Project for Boron, CA
Info	June 22, 2006	DHS	Support for Boron ASR Pilot Project
CEQA	June 27, 2006	Boron CSD	Notice of Exemption for CEQA
RWD	July 6, 2006	Provost & Pritchard	Technical memorandum on Proposed ASR Recovery Pilot Project for Boron CSD
RWD	September 8, 2006	AVEK	Proposed Boron ASR Pilot Project
RWD	July 24, 2006	Provost & Pritchard	Email – with updated AVEK THMs
RWD	August 23, 2006	AVEK	Discussion items for Conference Call
RWD	September 17, 2006	Provost & Pritchard	Email – Responses to Water Board staff questions
RWD	September 20, 2006	Provost & Pritchard	Application for Report of Waste Discharge (Form 200)
RWD	October 12, 2006	AVEK	\$872.00 Filing Fee
RWD	October 16, 2006	Boron CSD	THM and HAA data from Boron CSD Distribution System
RWD	October 20, 2006	Boron CSD	Well No. 15 Log data
RWD	October 20, 2006	Provost & Pritchard	Well No. 15 Pump Test data

Table 2 - Supplemental Information Used by Water Board staff in Preparing Conditional Waiver

Date	Source	Title
February 1969	Lahontan RWQCB	Report on Arsenic Occurrence in the North Muroc Hydrologic Basin, Kern Co, California
1973	USGS	Boron Quadrangle, California, 7.5 Minute Series
1973	USGS	North Edwards Quadrangle, California, 7.5 Minute Series
1993	USGS	Water Resources Investigations Report 93-4114, Hydrogeology and Land Subsidence, Edwards Air Force Base, Antelope Valley, California, January 1989- December 1991
2001	USGS	Water Resources Investigations Report 01-4038, Numerical Simulations of Groundwater Flow and Land Subsidence at Edwards AFB, CA
2003	USGS	Water Resources Investigations Report 03-4062, Processes Affecting the Trihalomethane Concentrations Associated with the Third Injection, Storage and Recovery Test at Lancaster, antelope Valley, CA, March 1998 through April 1999
2003	USGS	Water Resources Investigations Report 03-4016, Simulation of Groundwater Flow and Land Subsidence in the Antelope Valley Groundwater Basin
September 2003	US Borax	Supplemental Hydrogeologic Assessment Report – 2003, Condor Earth Technologies Inc.
2003	USGS	Water Resources Investigations Report 03-4019, Determination of specific Yield and Water-Table Changes Using Temporal Microgravity Surveys Collected During the Second Injection, Storage and Recovery Test at Lancaster, Antelope Valley, California November 1996 through April 1997
January 31, 2005	U.S. Borax	Annual Report, Evaluation Monitoring and Corrective Actions Impoundment Vicinity Groundwater Fourth Quarter 2003 to Third Quarter 2004
July 24, 2006	Superior Court of the State of California, County of Los Angeles	Supplemental Declaration of Bruce N. Nelson, P.E. for Hearings on Jurisdictional Boundaries (U.S. Borax) ref: Case No. 1-05-CV-049053

Attachment B
Comparison of Well No. 15 & AVEK Water Quality and Groundwater Limits ^{1, 2}

Constituent	Units	Primary MCL	Secondary MCL	Well No. 15	SWP Water	Groundwater Quality Limit ⁴
Physical Parameters						
Color	Units		15	NR	NR	Not Conditioned
Odor	Units		3	1.0	NR	Not Conditioned
PH	units			8.0	6.1 – 7.4	Not Conditioned
Turbidity	NTU		5	2.0	0.01 - 0.25	Not Conditioned
General Minerals						
Alkalinity, total (as CaCO3)	mg/L			160	57	Not Conditioned
Total Dissolved Solids (TDS)	mg/L		500 – Rec 1,000 – Up 1,500 – Sht	930	310	Not Conditioned
Calcium, dissolved	µg/L			50,000	20,000	Not Conditioned
Chloride, dissolved	mg/L		250 – Rec 500 – Up 600 – Sht	250	95	Not Conditioned
Boron, dissolved	µg/L			NR	NR	Not Conditioned
Bromide, dissolved	µg/L			NR	NR	Not Conditioned
Fluoride, dissolved	µg/L	200		1,000	< 100	Not Conditioned
Hardness, total as CaCO3	m/L			NR	100	Not Conditioned
Phosphate, dissolved	µg/L			NR	NR	Not Conditioned
Sodium, dissolved	mg/L			260	64	Not Conditioned
Sulfate, dissolved	mg/L		250 – Rec 500 – Up 600 - Sht	180	60	Not Conditioned
Sulfite, dissolved	µg/L			NR	NR	Not Conditioned
Potassium, dissolved	µg/L			3,900	3,100	Not Conditioned
Metals						
Aluminum, dissolved	µg/L	200	200	< 50	< 50	Not Conditioned
Antimony, dissolved	µg/L	6		< 2	< 6	Not Conditioned
Arsenic, dissolved	µg/L	10		87	< 2	Not Conditioned
Barium, dissolved	µg/L	1,000		< 50	< 100	Not Conditioned
Beryllium, dissolved	µg/L	4		< 1	< 1	Not Conditioned
Cadmium, dissolved	µg/L	5		< 1	< 1	Not Conditioned
Chromium, dissolved	µg/L	50		< 10	< 10	Not Conditioned
Cobolt, dissolved	µg/L			NR	NR	Not Conditioned
Copper, dissolved	µg/L	1,300	1,000	< 50	< 50	Not Conditioned
Iron, dissolved	µg/L		300	280	< 300	Not Conditioned
Lead, dissolved	µg/L	150		< 5	< 5	Not Conditioned
Manganese, dissolved	µg/L		50	< 10	< 50	Not Conditioned
Magnesium, dissolved	µg/L			7,800	13,000	≤ 13,000
Mercury, dissolved	µg/L	2		< 0.4	< 2	Not Conditioned
Molybdenum, dissolved	µg/L			NR	NR	Not Conditioned
Nickel, dissolved	µg/L	100		< 10	< 10	Not Conditioned
Selenium, dissolved	µg/L	50		9.9	< 5	Not Conditioned
Silica, dissolved	µg/L			NR	NR	Not Conditioned
Silver, dissolved	µg/L		100	< 10	< 100	Not Conditioned
Thallium, dissolved	µg/L	2		< 1	< 1	Not Conditioned
Tin, dissolved	µg/L			NR	NR	Not Conditioned
Vanadium, dissolved	µg/L			NR	NR	Not Conditioned
Zinc, dissolved	µg/L		5,000	< 50	780	≤ 780
Nitrogen Series						
Ammonia, dissolved	mg/L			NR	NR	Not Conditioned
Total Kjeldahl Nitrogen	mg/L			NR	NR	Not Conditioned

Constituent	Units	Primary MCL	Secondary MCL	Well No. 15	SWP Water	Groundwater Quality Limit ⁴
Nitrate as N, dissolved	mg/L	10		1.3	0.9	Not Conditioned
Nitrite as N, dissolved	mg/L	1		< 0.05	< 0.4	Not Conditioned
Nitrate/Nitrite, total as N	Mg/L	10		NR	NR	Not Conditioned
Other						
Asbestos	MFL	7		NR	NR	Not Conditioned
Dissolved Total, Organic Carbon (TOC)	mg/L			NA	1.3 – 4.4	Not Conditioned
Coliform, total organisms	MPN/100 mL			NA	0	Not Conditioned
Cyanide, dissolved	µg/L	150		NA	< 100	Not Conditioned
Methyl Blue Active Substances (MBAS)	µg/L		500	< 50	< 500	Not Conditioned
Disinfection By-Products (DBPs)						
Bromate	µg/L	10		NR	NR	Not Conditioned
Chlorine, Total Residual	mg/L			NA	0.5 – 1.7	Not Conditioned
Chlorite	µg/L	1,000		NR	NR	Not Conditioned
Total Trihalomethanes	µg/L	80		NA	62-82	< 0.5
Chloroform	µg/L			NA	13.0	< 0.5
Bromoform	µg/L			NA	3.87	< 0.5
Bromodichloromethane	µg/L			NA	17.3	< 0.5
Dibromochloromethane	µg/L			NA	13.8	< 0.5
Fluorobenzene	µg/L			NA	NA	< 0.5
Total Haloacetic Acids	µg/L	60		NA	30-32	< 1.0
Dichloroacetic acid	µg/L			NA	9.21	< 1.0
Trichloroacetic acid	µg/L			NA	6.05	< 1.0
Dibromoacetic acid	µg/L			NA	8.35	< 1.0
Bromoacetic acid	µg/L			NA	1.5	< 1.0
Chloroacetic acid	µg/L			NA	2.09	< 1.0
N-Nitrosodimethylamine (NDMA)	µg/L			NA	NA	Not Conditioned
Volatile Organic Compounds						
Volatile Organic Compounds ³	µg/L	Various, not separately listed		ND	ND	Not Conditioned
Semi-Volatile Organic Compounds						
Semi-Volatile Organic Compounds ³	µg/L	Various, not separately listed		ND	ND	Not Conditioned
Organophosphorous Pesticides						
Organophosphorous Pesticides ³	µg/L	Various, not separately listed		ND	ND	Not Conditioned

Attachment B: Footnotes:

- Well No. 15 water data from samples collected on April 26, 2006, analyzed by BSK Analytical Laboratories, report dated May 16, 2006, SWP water dated from AVEK Water Agency 2005 and 2006 reports.
- Items in **bold** are constituents in AVEK Water Agency supply water that are elevated above natural background water quality.
- Individual constituents of Volatile Organic Compounds, Semi-Volatile Organic Compounds and Organophosphorous Pesticides were not detected above their respective detection limits. Individual compounds are not separately listed.

4. Basis for Conditioned Limits
 - a. pH – natural background water quality
 - b. TDS – Upper Secondary MCL – above natural background water quality
 - c. Chlorine, Total Residual – SM 4500-G, Laboratory Reporting Limit
 - d. Trihalomethanes (THMs) – EPA 502.2 – Laboratory Detection Limit
 - e. Haloacetic Acids (HAAs) – EPA 552, Laboratory Detection Limit
5. ND = Not Detected
6. NA = Not Analyzed
7. NTU – Nephelometric Turbidity units
8. MFL – Million Fibers per Liter
9. NR – Not Reported
10. Rec – Recommended Secondary MCL
11. Up – Upper Secondary MCL
12. Sht – Short-term Secondary MCL

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

STANDARD PROVISIONS
FOR WASTE DISCHARGE REQUIREMENTS

1. Inspection and Entry

The Discharger shall permit Regional Board staff:

- a. to enter upon premises in which an effluent source is located or in which any required records are kept;
- b. to copy any records relating to the discharge or relating to compliance with the Waste Discharge Requirements (WDRs);
- c. to inspect monitoring equipment or records; and
- d. to sample any discharge.

2. Reporting Requirements

- a. Pursuant to California Water Code 13267(b), the Discharger shall immediately notify the Regional Board by telephone whenever an adverse condition occurred as a result of this discharge; written confirmation shall follow within two weeks. An adverse condition includes, but is not limited to, spills of petroleum products or toxic chemicals, or damage to control facilities that could affect compliance.
- b. Pursuant to California Water Code Section 13260 (c), any proposed material change in the character of the waste, manner or method of treatment or disposal, increase of discharge, or location of discharge, shall be reported to the Regional Board at least 120 days in advance of implementation of any such proposal. This shall include, but not be limited to, all significant soil disturbances.
- c. The Owners/Discharger of property subject to WDRs shall be considered to have a continuing responsibility for ensuring compliance with applicable WDRs in the operations or use of the owned property. Pursuant to California Water Code Section 13260(c), any change in the ownership and/or operation of property subject to the WDRs shall be reported to the Regional Board. Notification of applicable WDRs shall be furnished in writing to the new owners and/or operators and a copy of such notification shall be sent to the Regional Board.
- d. If a Discharger becomes aware that any information submitted to the Regional Board is incorrect, the Discharger shall immediately notify the Regional Board, in writing, and correct that information.

- e. Reports required by the WDRs, and other information requested by the Regional Board, must be signed by a duly authorized representative of the Discharger. Under Section 13268 of the California Water Code, any person failing or refusing to furnish technical or monitoring reports, or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars (\$1,000) for each day of violation.
- f. If the Discharger becomes aware that their WDRs (or permit) are no longer needed (because the project will not be built or the discharge will cease) the Discharger shall notify the Regional Board in writing and request that their WDRs (or permit) be rescinded.

3. Right to Revise WDRs

The Regional Board reserves the privilege of changing all or any portion of the WDRs upon legal notice to and after opportunity to be heard is given to all concerned parties.

4. Duty to Comply

Failure to comply with the WDRs may constitute a violation of the California Water Code and is grounds for enforcement action or for permit termination, revocation and re-issuance, or modification.

5. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of the WDRs which has a reasonable likelihood of adversely affecting human health or the environment.

6. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the WDRs. Proper operation and maintenance includes adequate laboratory control, where appropriate, and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by the Discharger, when necessary to achieve compliance with the conditions of the WDRs.

7. Waste Discharge Requirement Actions

The WDRs may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for waste discharge requirement modification, revocation and re-issuance, termination, or a notification of planned changes or anticipated noncompliance, does not stay any of the WDRs conditions.

8. Property Rights

The WDRs do not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

9. Enforcement

The California Water Code provides for civil liability and criminal penalties for violations or threatened violations of the WDRs including imposition of civil liability or referral to the Attorney General.

10. Availability

A copy of the WDRs shall be kept and maintained by the Discharger and be available at all times to operating personnel.

11. Severability

Provisions of the WDRs are severable. If any provision of the requirements is found invalid, the remainder of the requirements shall not be affected.

12. Public Access

General public access shall be effectively excluded from treatment and disposal facilities.

13. Transfers

Providing there is no material change in the operation of the facility, this Order may be transferred to a new owner or operation. The owner/operator must request the transfer in writing and receive written approval from the Regional Board's Executive Officer.

14. Definitions

a. "Surface waters" as used in this Order, include, but are not limited to, live streams, either perennial or ephemeral, which flow in natural or artificial water courses and natural lakes and artificial impoundments of waters. "Surface waters" does not include artificial water courses or impoundments used exclusively for wastewater disposal.

b. "Ground waters" as used in this Order, include, but are not limited to, all subsurface waters being above atmospheric pressure and the capillary fringe of these waters.

15. Storm Protection

All facilities used for collection, transport, treatment, storage, or disposal of waste shall be adequately protected against overflow, washout, inundation, structural damage or a significant reduction in efficiency resulting from a storm or flood having a recurrence interval of once in 100 years.

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION**

**MONITORING AND REPORTING PROGRAM NO. R6V-2006-0052
WDID NO. 6B150609001**

FOR

**BORON COMMUNITY SERVICES DISTRICT
WELL NO. 15 PILOT AQUIFER STORAGE RECOVERY PROJECT**

Kern County

I. Preliminary Monitoring and Reporting

A. Well No. 15 Background Water Quality

At least 30 days prior to injection, submit the laboratory analytical results of samples collected from Well No. 15 for boron and the disinfection by products listed in Attachment B.

B. Groundwater Elevations

Groundwater elevations in Well No. 15 shall be determined: a) before the test, b) during the injection process, c) at the conclusion of injection, and d) at the conclusion of extraction. The transmissivity of the aquifer at Well No. 15 shall be calculated if sufficient data exist.

II. Injection Phase Monitoring

A. Daily: The volume of SWP water injected to Well No. 15 and the injection rate used each day. The data should be recorded in gallons for each day.

B. Bi-Weekly: Every two weeks during water injection a sample of the injected water shall be collected and analyzed for the following constituents.

Table 1 – Injection and Extraction Phase Sampling

Constituent	Notes
PH	
Dissolved Oxygen	
Electrical Conductivity	
Total Trihalomethanes (THMs)	
Total Haloacetic Acids (THAs)	
Arsenic	
Bromate	
Calcium	1-time, each phase
Chloride	
Boron	
Bromide	
Fluoride	
Antimony	1-time, each phase
Barium	1-time, each phase
Cobalt	1-time, each phase
Manganese	1-time, each phase
Magnesium	1-time, each phase
Molybdenum	1-time, each phase
Selenium	1-time, each phase
Silver	1-time, each phase
Tin	1-time, each phase
Vanadium	1-time, each phase
Zinc	1-time, each phase
Nitrate (as N)	
Total Dissolved Solids	
Total Organic Carbon	
Total Residual chlorine	
Note: The minimum reporting limits shall be the lowest practicable level achievable for the appropriate analytical method.	
Note: Individual trihalomethane and haloacetic acid constituents shall be reported along with the total concentration of each type.	

- C. Within 30 days of concluding the Injection phase, submit a report describing the above information.

III. Extraction Phase Monitoring

- A. Daily: The volume of groundwater extracted and extraction rate from Well No. 15 each day. The data should be recorded in gallons for each day.
- B. Bi-Weekly: Every two weeks during extraction a sample of the extracted water shall be collected and analyzed for the constituents listed in Table 1, above. If extraction continues beyond 60 days, analysis every two weeks only for THMs and THAs are required.
- C. Within 90 days of concluding the extraction phase, submit a report describing 1) the above information, 2) information requested in the Conditional Waiver, Condition No. 15, and 3) include a narrative analysis of the Project with respect to compliance with the Conditional Waiver.

IV. General Provisions

The Discharger shall comply with the "General Provisions for Monitoring and Reporting," dated September 1, 1994, which is attached to and made part of this Monitoring and Reporting Program.

Ordered by: "Original Signed by" _____
HAROLD J. SINGER
EXECUTIVE OFFICER

Dated: **November 8, 2006**

Attachments: A. General Provisions for Monitoring and Reporting

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION

GENERAL PROVISIONS
FOR MONITORING AND REPORTING

1. SAMPLING AND ANALYSIS

- a. All analyses shall be performed in accordance with the current edition(s) of the following documents:
 - i. Standard Methods for the Examination of Water and Wastewater
 - ii. Methods for Chemical Analysis of Water and Wastes, EPA
- b. All analyses shall be performed in a laboratory certified to perform such analyses by the California State Department of Health Services or a laboratory approved by the Regional Board Executive Officer. Specific methods of analysis must be identified on each laboratory report.
- c. Any modifications to the above methods to eliminate known interferences shall be reported with the sample results. The methods used shall also be reported. If methods other than EPA-approved methods or Standard Methods are used, the exact methodology must be submitted for review and must be approved by the Regional Board prior to use.
- d. The Discharger shall establish chain-of-custody procedures to insure that specific individuals are responsible for sample integrity from commencement of sample collection through delivery to an approved laboratory. Sample collection, storage, and analysis shall be conducted in accordance with an approved Sampling and Analysis Plan (SAP). The most recent version of the approved SAP shall be kept at the facility.
- e. The Discharger shall calibrate and perform maintenance procedures on all monitoring instruments and equipment to ensure accuracy of measurements, or shall insure that both activities will be conducted. The calibration of any wastewater flow measuring device shall be recorded and maintained in the permanent log book described in 2.b, below.
- f. A grab sample is defined as an individual sample collected in fewer than 15 minutes.
- g. A composite sample is defined as a combination of no fewer than eight individual samples obtained over the specified sampling period at equal intervals. The volume of each individual sample shall be proportional to the discharge flow rate at the time of sampling. The sampling period shall equal the discharge period, or 24 hours, whichever period is shorter.

2. OPERATIONAL REQUIREMENTS

a. Sample Results

Pursuant to California Water Code Section 13267(b), the Discharger shall maintain all sampling and analytical results including: strip charts; date, exact place, and time of sampling; date analyses were performed; sample collector's name; analyst's name; analytical techniques used; and results of all analyses. Such records shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.

b. Operational Log

Pursuant to California Water Code Section 13267(b), an operation and maintenance log shall be maintained at the facility. All monitoring and reporting data shall be recorded in a permanent log book.

3. REPORTING

- a. For every item where the requirements are not met, the Discharger shall submit a statement of the actions undertaken or proposed which will bring the discharge into full compliance with requirements at the earliest time, and shall submit a timetable for correction.
- b. Pursuant to California Water Code Section 13267(b), all sampling and analytical results shall be made available to the Regional Board upon request. Results shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.
- c. The Discharger shall provide a brief summary of any operational problems and maintenance activities to the Board with each monitoring report. Any modifications or additions to, or any major maintenance conducted on, or any major problems occurring to the wastewater conveyance system, treatment facilities, or disposal facilities shall be included in this summary.
- d. Monitoring reports shall be signed by:
 - i. In the case of a corporation, by a principal executive officer at least of the level of vice-president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge originates;
 - ii. In the case of a partnership, by a general partner;
 - iii. In the case of a sole proprietorship, by the proprietor; or

- iv. In the case of a municipal, state or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.
- e. Monitoring reports are to include the following:
 - i. Name and telephone number of individual who can answer questions about the report.
 - ii. The Monitoring and Reporting Program Number.
 - iii. WDID Number.
- f. Modifications

This Monitoring and Reporting Program may be modified at the discretion of the Regional Board Executive Officer.

4. NONCOMPLIANCE

Under Section 13268 of the Water Code, any person failing or refusing to furnish technical or monitoring reports, or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars (\$1,000) for each day of violation under Section 13268 of the Water Code.

x:PROVISIONS WDRS

file: general pro mrp