



EXECUTIVE OFFICER’S REPORT • September 2018
Covers July 16, 2018 – August 15, 2018

State and Regional

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1. Personnel Report – Eric Shay

New Hires

- Alex Spencer, Water Resource Control Engineer, Cannabis Unit, South Lake Tahoe. In this new position, Mr. Spencer will provide regulatory oversight of cannabis cultivation projects under the statewide Cannabis General Order.
- Katrina Fleshman, Executive Assistant, South Lake Tahoe. In her position, Ms. Fleshman will provide administrative assistance and clerical support to the Executive Officer, the Assistant Executive Officer, and the Regional Board members.

Promotions

- Kathleen Doran, promoted from Scientific Aid in the Non-Point Source Unit to Environmental Scientist, Cannabis Unit, South Lake Tahoe. In this new position, Ms. Doran will provide regulatory oversight of cannabis cultivation projects under the statewide Cannabis General Order.

Transfers

- Emily Cushman, Engineering Geologist, transfer from Cleanup/Site Investigation & Enforcement Unit to Cannabis Unit, South Lake Tahoe. In this new position, Ms. Cushman will provide regulatory oversight of cannabis cultivation projects under the statewide Cannabis General Order.

Vacancies – We are currently recruiting for the following positions:

- Environmental Scientist, North Basin Regulatory Unit, South Lake Tahoe. This new position will primary work on Lake Tahoe water quality issues, including permitting for shoreline projects and scientific research.
- Engineering Geologist, Cleanup/Site Investigation & Enforcement Unit, South Lake Tahoe. This position provides oversight on Underground Storage Tank sites and other sites in the Emergency, Abandoned, and Recalcitrant Fund as well as the Expedited Claim Account Program. Oversight is also provided for mines and a Department of Defense site.
- Scientific Aid, Non-Point Source Unit, South Lake Tahoe. This position compiles and organizes scientific data from water quality investigations and implementation and effectiveness monitoring reports; and assists technical staff in collecting data during field visits for various activities, including timber harvest, stream restoration, meadow restoration, and grazing projects.
- Office Technician, South Lake Tahoe. This position supports our technical staff by finalizing staff correspondence and board agenda packets.
- Associate Governmental Program Analyst, Victorville. This position provides administrative support to the region in the areas of personnel analysis, workforce planning and analysis, contract management, and procurement.
- Seasonal Clerk, Victorville. This position provides basic administrative support, such as typing and reception.

Departures - None

2. **Status of Lead Sampling of Drinking Water in Schools (AB 746) in the Lahontan Region (taken from a SWRCB June 18, 2018, Press Release) – Lisa Dernbach and Patrice Copeland**

National news has highlighted the importance of ongoing water quality testing for lead; and in 2015, Governor Edmund G. Brown Jr. directed the State Water Resources Control Board (State Water Board) to incorporate schools into regular water quality testing that community water systems conduct at customer's taps. Under Assembly Bill 746 (Chapter 746, Statutes of 2017), which took effect January 1, 2018, community water systems statewide are now required to complete lead sampling on the drinking water supplies of K-12 public schools, day care facilities, and preschools that are located on public school properties built before 2010. Water systems must complete this mandatory sampling by July 1, 2019.

Lead sampling is done at drinking fountains and faucets used for consumption and food preparation. The community water system must report test results within two business days if any samples show lead levels above 15 parts per billion (ppb), the state action level. Community water systems have 10 business days to report results if samples show lead levels less than or equal to 15 ppb.

If a public school's water exceeds 15 ppb lead, the community water system is required to sample water entering the school to help determine the possible source of lead. The school must also take several immediate actions, including shutting down all fountains and faucets with high lead levels, providing potable drinking water until the situation is resolved, and notifying student's parents and guardians of any elevated lead levels. Private schools are not required to be sampled under this law, but may request free water quality sampling and analysis under the State Water Board's voluntary Lead Sampling in Schools Program, which remains in effect until Nov. 1, 2019.

One-third of the way towards the deadline, approximately 30 percent of California's 10,000 public schools have been sampled for lead. As of June 1, 2018, less than 1 percent of all public school drinking water samples collected have detected elevated levels of lead. Community water systems that do not complete this mandatory sampling could face enforcement action from the State Water Board's Division of Drinking Water.

To make the status of testing and the results of tests more transparent to the public, the State Water Board has released a new map-based web tool that shows which public schools in California have had their drinking water tested for lead. The tool allows the public to stay informed as the state continue to receive more results from the mandatory testing of public schools. The web tool can be accessed at:

<https://waterboards.maps.arcgis.com/apps/MapJournal/index.html?appid=9d17731cae2c4452957fadc5d8ee2d75>. In addition, a spreadsheet of sampling results is also available.

A review of the map and spreadsheet shows about 41 schools in the Lahontan Region have been tested for lead in drinking water and submitted those results to the state (data current as of June 1, 2018). All results identified lead at levels below 15 ppb state action level. Most of the water systems that have tested drinking water at schools are within the South Lahontan Basin, including City of Adelanto, Apple Valley Ranchos Water Company, Golden State Water Company, Phelan Pinon Hills Community Services District, San Bernardino County Service Area 64, and Victorville Water Department. Only three schools within the North Lahontan Basin have submitted results to the State Water Board: two schools in Kings Beach and one school in the City of Susanville. The total number of public schools built before January 1, 2010, in the Lahontan Region is unknown.

There is concern that schools within disadvantage communities (DACs) might not be sampled by the July 1, 2019, deadline, due to lack of knowledge and/or resources. The Division of Drinking Water plans to continue to reach out to such DAC locations by letters and other notices to ensure compliance with this law. Like public schools, private schools may also request water sampling under the Lead Sampling in Schools Program. Water Board staff will follow this issue and update the Water Board closer to the July 1, 2019 deadline.

3. The 2018 ESRI User Conference – *Jeff Fitzsimmons*

From July 8 through 13, 2018, Water Board Engineering Geologist, Jeff Fitzsimmons, attended the 2018 ESRI User Conference in San Diego, California. "The Science of Where" was the theme of the conference. ESRI is the worldwide recognized abbreviated name for Environmental Systems Research Institute, based in Redlands, California. ESRI is the leading developer and supplier of Global Information Systems (GIS) software. ESRI software serves as an electronic platform that allows for compilation of multiple data sets, either through direct integration or through interfacing with numerous software, into a coherent final product for a specific audience and/or topic. Attendees of the event included representatives from various departments and agencies of foreign governments, the United States Government, California and other state governments, and numerous

counties and municipalities, private companies, academics and students, and many GIS professionals.

The first day of the event served to provide a synopsis of ESRI, their software, applications, potential future uses, a poster session, and the opportunity for all attendees to begin networking. A multitude of presentations, training, and networking opportunities were available for attendees throughout the remainder of the conference, concluding on the fifth day at noon. Topics of presentations included: natural resources such as water, mining, forestry, and agriculture; environmental management; utilities related to water and wastewater; conservation and sustainable development; state and local government applications related to health and human services, law enforcement, planning, public works, utilities; education; business; defense and military; telecommunications; tourism; and transportation.

The ESRI User Conferences have been an annual event since 1981 and are an excellent forum for students, scientists, and professionals to become updated on ESRI software's continuously expanding capabilities. Additionally, the event allows for software developers through the software end-users to interact in person, sharing knowledge and experiences for ultimately improving their respective projects.

Mr. Fitzsimmons was first introduced to ESRI's Arc/Info software in the 1990's, and it was the opening session of the 2018 ESRI User Conference that exemplified the advances of ESRI's software since then. In fact, the potential of ESRI's newest software, ArcGIS(10) and Arc/Pro, is yet to be realized by users, particularly the capabilities to incorporate numerous data sets covering vast geographical areas into comprehensive 2-dimensional and 3-dimensional visual displays such as charts, diagrams, and maps. Because of these integrated features, we anticipate that ESRI's software will become the go-to for planning, designing, and modeling of various types projects that the Water Board might regulate (i.e. urban development, groundwater cleanup both large and small, surface water and habitat restoration, etc.). If ArcGIS and Arc/Pro (and successor software) is to be the new norm, it would benefit the Water Board to not only invest in this software, but to train staff on how to use it.

South Lahontan Region

4. Mojave Water Agency Technical Advisory Committee Meeting – *Patrice Copeland*

Water Board staff attended a meeting of the Mojave Water Agency Technical Advisory Committee (MWA TAC) on August 2, 2018. The MWA TAC is an independent, voluntary group of water purveyors, pumpers, and other interested parties located within MWA's boundaries. The MWA TAC meets in a public forum to discuss common concerns and acts to assist the MWA in pursuit of its legal objectives.

During this meeting, Perry Dahlstrom of Golden State Water gave an update on lead testing of drinking water in California schools, required under Assembly Bill 746 (Chapter 746, Statutes of 2017) and largely driven by the Flint Michigan water crisis. The public utility districts are paying for the costs to sample school sites, where samples are collected from regularly used faucets, drinking fountains, and fill stations. Mr. Dahlstrom also provided information regarding the California Public Utilities Commission fire-threat maps, wherein Cal Fire, utilities, and public safety experts worked together to develop high fire-threat districts. If high winds are forecast, and the area is a high fire danger area, power may be cut off to help prevent wildfires. More information is available at www.cpuc.ca.gov/firethreatmaps.

Chuck Bell of the Mojave Desert Resource Conservation District (MDRCD) presented a 2011 Bureau of Reclamation aerial tour of the Mojave River after removal of the invasive plant, tamarisk. It is estimated that MDRCD's tamarisk removal program has saved

between 800 to 1,000 acre-feet of water annually. The flyover tour begins at Soda Lake and traverses to Silverwood Lake, focusing on areas with riparian habitat.

Lance Eckhart, of MWA, presented an update to the TAC members regarding the Integrated Regional Water Management (IRWM) group's list of approximately 100 approved projects. Approximately half of these projects are completed. Mr. Eckhart stated that MWA's website, www.mywaterplan.com, lists these projects, gives additional information, and will be continuously updated. Additionally, Mr. Eckhart discussed Proposition 1 projects for the IRWM group, citing that \$510 million has been ear-marked for all IRWM groups. An explanation of the region's IRWM funding area was given, as well as additional funding that will be available during 2019. The planning process for new projects starts now, as MWA would like the IRWM group to be ready to go early.

Water efficiency targets and an outreach plan was presented by MWA's Nicholas Schneider. This discussion centered around AB 1668 and Senate Bill (SB) 606 (May 31, 2018), which builds on Governor Brown's ongoing efforts to make water conservation a way of life in California. SB 606 and AB 1668 establish guidelines for efficient water use and a framework for the implementation and oversight of the new standards, which must be in place by 2022. The two bills strengthen the state's water resiliency in the face of future droughts. However, there is apparently a lot of misinformation being discussed in the public sphere, such as "I won't be allowed to shower and do laundry on the same day," and MWA wanted to provide clarification. The two bills provide for the following:

- Establishing water use objectives and long-term standards for efficient water use that apply to urban retail water suppliers; comprised of indoor residential water use, outdoor residential water use, commercial, industrial and institutional irrigation with dedicated meters, water losses, and other unique local uses.
- Creating an indoor, per person water use goal of 55 gallons per day until 2025, 52.5 gallons from 2025 to 2030, and 50 gallons beginning in 2030.
- Providing incentives for water suppliers to recycle water.
- Identifying small water suppliers to recycle water.
- Identifying small water suppliers and rural communities that may be at risk of drought and water shortage vulnerability and provide recommendations for drought planning.
- Requiring both urban and agricultural water suppliers to set annual water budgets and prepare for drought.

Some related standards are still in development by the State Water Board. MWA staff are participating on several stakeholder groups established by the State Water Board to help further refine / set these standards. MWA has outreach goals to help correct any misinformation on efficiency targets; help guide local purveyors through the process of understanding and developing the standards unique to our local environments; and help further educate our communities on water issues, including making presentations, articles in local newspapers, providing information on MWA's website with a link to the State

Water Board's website, as well as updating social media sites such as Facebook and Twitter. Although nothing is currently required, MWA is working to educate communities and working toward meeting the first 2025 deadline. Additional information is available at: www.waterboards.ca.gov/water_issues/programs/conservation_portal/california_statutes.html.

The next TAC meeting is scheduled for October 4, 2018.

5. Standing Item - Sanitation Districts of Los Angeles County (District), District No. 20, Palmdale, Palmdale Water Reclamation Plant, Nitrate Pollution Groundwater Cleanup Status, Los Angeles County – Woonhoe Kim

This is a standing item describing the District's effort to comply with Cleanup and Abatement Order (CAO) No. R6V-2003-056, requiring the District (as discharger) and City of Los Angeles World Airport (as landowner) to restore groundwater quality polluted by nitrate near the Palmdale Water Reclamation Plant (Plant). The CAO requires delineation of the nitrate plume, implementation of a remediation action strategy, and reduction of the amount of nitrogen reaching groundwater.

Nitrate Plume Delineation

An important task completed over the last year was delineating the nitrate plume to the north of Avenue M, an area of irrigated agriculture containing numerous irrigation and residential supply wells. The District submitted a Well Completion Report (Report) to finalize the nitrate plume delineation in the area north of Avenue M with the installation of four monitoring wells (Figure 1, Area A). The four monitoring wells were installed from December 2017 through February 2018.. In addition, the District installed a replacement monitoring well for a dry well located in the agricultural use area and converted two existing extraction wells to monitoring wells.

When the exploratory borings were installed, the District sampled groundwater at discrete depths between the water table, at 330 ft bgs, and 560 ft bgs. Nitrate as nitrogen concentrations in the shallow aquifer near the water table was as high as 7 milligrams per liter (mg/L), but lower than the maximum contaminant level (MCL) of 10 mg/L. At one new well location, two wells were completed with a shallow and deeper well screen. The District acknowledges that groundwater in domestic supply wells north of Avenue M could be affected by elevated nitrate concentrations from the District's nitrate plume. Because of this reason, the District has initiated a source investigation by isotopic analysis to determine the nitrate source contribution to the groundwater.

Extraction Wells Converted to Monitoring Wells

The District operates an extraction well network as part of groundwater remediation. Previously, the District had proposed converting some extraction wells to groundwater monitoring wells because of low groundwater productivity, low mass nitrate removal rates, nitrate concentrations below the MCL, and deep static water depth. This would secure additional cost-effective monitoring locations in an area where declining groundwater elevations are causing monitoring wells to go dry. Four remaining extraction wells continue to deliver extracted groundwater to a neighboring grower.

Other Locations of Concern

Water Board staff are keeping an eye on nitrate plume migration to two other areas. The nitrate plume is migrating towards Air Force Plant 42, Site 4, well DW 4-2 (Figure 1, Area B). This well is owned by Northrup-Grumman, a major aerospace manufacturer, that uses this well for drinking water supply. Figure 2 indicates that nitrate concentrations in well DW 4-2 are elevated, but remain below the MCL. Another area of nitrate plume migration is towards the Palmdale Water District supply well field, southwest of the wastewater treatment plant, and shown on Figure 1, Area C. Nitrate as nitrogen concentrations in Area C are lower than 2 mg/L; however, Water Board staff requested the District to monitor Area C because of a steep hydraulic gradient and high velocity of flow towards this major drinking water supply.

Nitrate Plume Size

Figure 3 delineates the nitrate plume, comparing the 2017 plume configuration to the more defined plume in first quarter 2018. Nitrate delineation north of Avenue M had remained undefined until the new monitoring wells were installed and sampled for nitrates. The current nitrate plume is similar in shape and size to the 2017 plume, although now laterally defined to the north.

Nitrate Remediation Strategy

The District is required to restore groundwater quality in the subject area and has implemented an interim remedial measure including improved effluent management, construction and operation of groundwater extraction wells, and application of extracted groundwater to crop land at agronomic rates. Water Board staff needs to continue evaluating monitoring data and will work with the District to delineate nitrogen in soil available for transport.

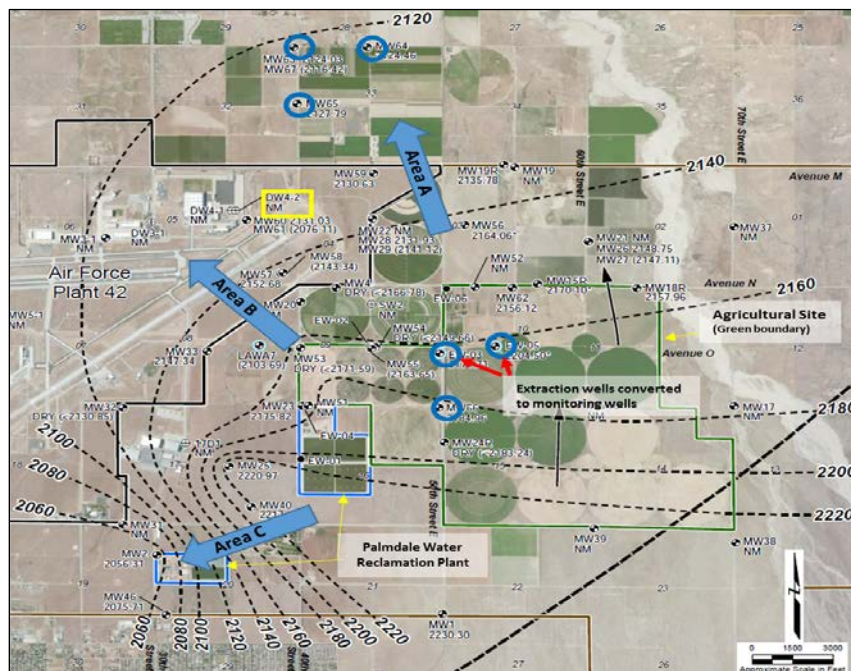


Figure 1 - Palmdale Water Reclamation Plant new monitoring well locations and groundwater elevation contour map (1Q 2018 report). Blue arrows indicate groundwater flow direction and areas of concern; yellow outline indicates drinking water supply well

**Palmdale Water Reclamation Plant
Groundwater Nitrate Concentrations in Supply Well DW 4-2**

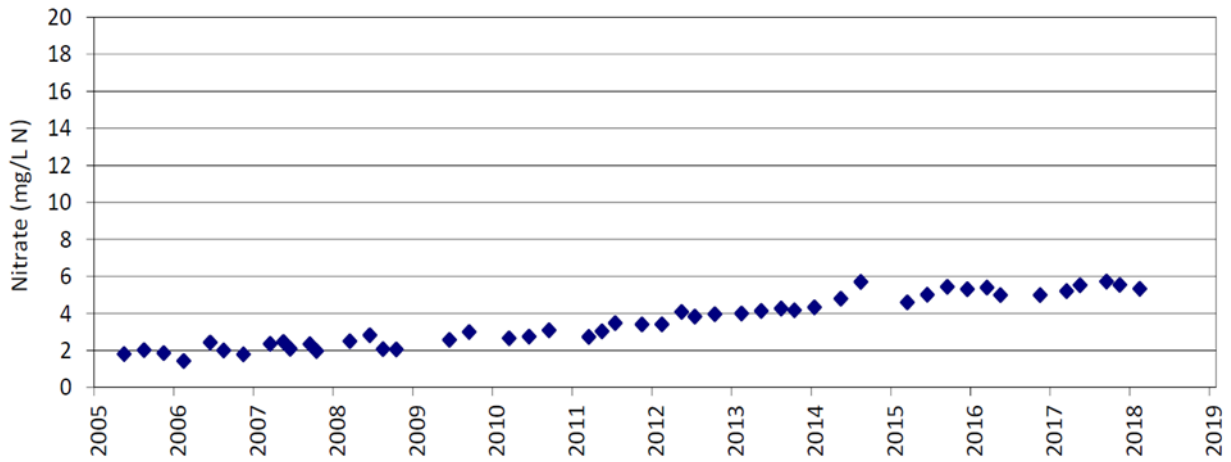


Figure 2 - Nitrate concentration trend at Air Force Plant 42, Site 4, Northrup-Grumman, supply well DW 4-2 (shown with yellow outline in Figure 1 [1Q 2018 report])

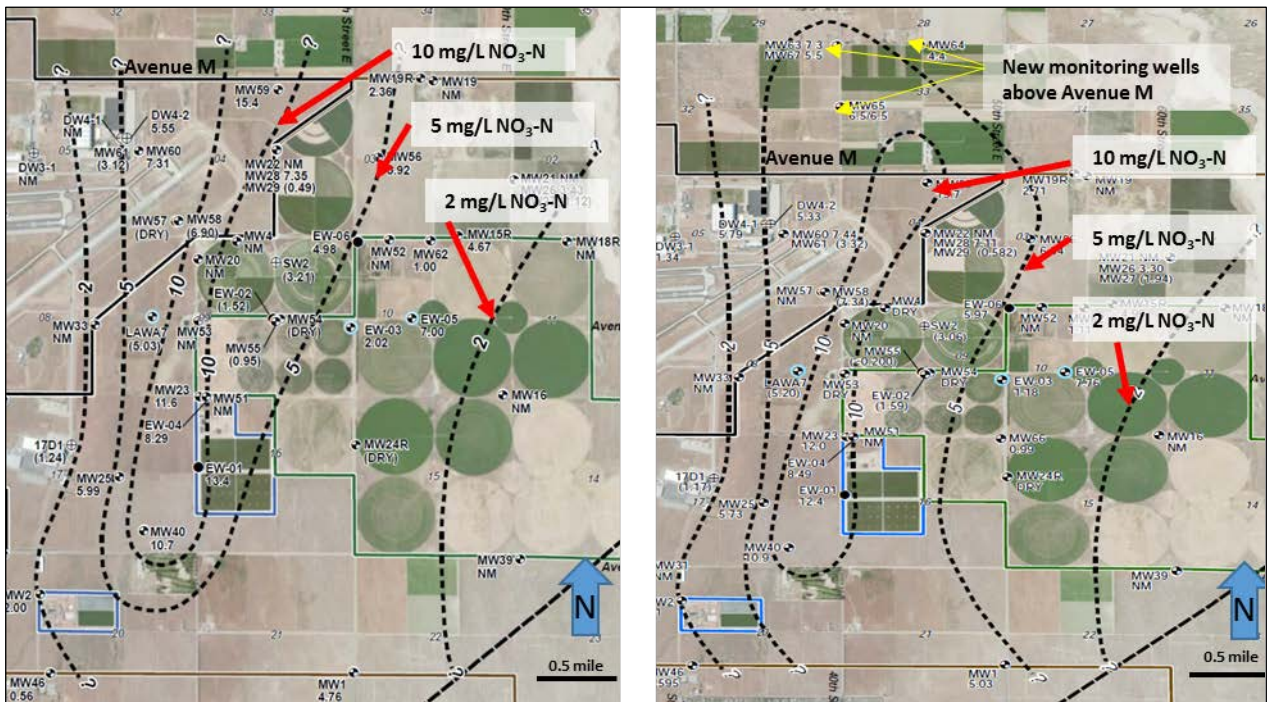


Figure 3 - Nitrate plume delineation in groundwater before and after the installation of monitoring wells (left map from 1Q 2017 report; right map from 1Q 2018 report).

6. Destruction of Bureau of Prisons Water Supply Wells Former George Air Force Base
- Linda Stone



The former George Air Force Base (GAFB) was closed in 1992, and the Air Force transferred the southern portion of the base to the Federal Bureau of Prisons (BOP) in 1994. BOP currently operates two medium security facilities and one high security facility at this location. In 1998, the BOP installed two water supply wells at the northern boundary of the BOP facilities. Instead of using the wells, BOP elected to purchase water from the City of Victorville. The BOP wells were maintained on stand-by until 2016, when the wells' status with the Division of Drinking Water was changed to inactive. The wells were never used as a water supply source.

In the course of investigating groundwater contamination at GAFB and adjacent water supply wells that could be impacted by the contamination, the Air Force and Water Board staff became aware that the BOP wells represented potential conduits for the vertical migration of contamination. The potential for vertical migration of contamination existed because the low-permeability zone that separates the upper aquifer from the lower aquifer (Regional Water Supply Aquifer), was not sealed with grout during well construction as required by the California Well Standards. The fact that the low-permeability zone was not sealed meant that the wells effectively created holes in the low-permeability zone that would allow groundwater from the more contaminated upper aquifer to migrate to the lower aquifer, thus potentially contaminating the lower drinking water aquifer.

In 2017, Water Board staff approved the Air Force's work plan for the destruction of the wells in accordance with California Well Standards to ensure that the low permeability zone breached by the wells was sealed, thus protecting the lower aquifer. The field effort to destroy the wells was completed in July of this year. Because of the critical objective of protecting the lower aquifer from upper aquifer contamination, and the technical challenges with the destruction and sealing of wells that were over 600 feet deep, Water Board staff was present during all critical field activities. Although this field oversight required significant time and effort by Water Board staff, it was necessary to ensure protection of the drinking water aquifer. The field oversight was especially critical since, in past field efforts, as approved work plans and procedures were not strictly followed and Water Board staff were not consulted regarding work plan changes. In some cases, such changes were not in accordance with State requirements, represented increased threat to water quality, and required additional efforts to correct the problems the variances created. Water Board staff intend to continue to oversee critical field efforts at GAFB to ensure field and data objectives are met and provide effective and timely remediation of this facility.

7. The Petersen Ranch Mitigation Bank, Status Update – Jan M. Zimmerman

Mitigation banks are just one of several ways permittees can satisfy compensatory mitigation requirements imposed by regulatory agencies. Mitigation banks are a form of "third-party" compensatory mitigation, in which the responsibility for mitigation implementation and success is assumed by a party other than the permittee. This transfer of liability has been very attractive to permittees that otherwise would be responsible for the design, construction, monitoring, ecological success, and long-term protection of a mitigation site. The Petersen Ranch Mitigation Bank (Bank), at more than 4,000 acres, is the largest mitigation bank in California, the second largest in the United States, and the first mitigation bank in the Lahontan Region (Figure 1). The Bank was approved by our Executive Officer, along with other state and federal partners, on May 11, 2016.

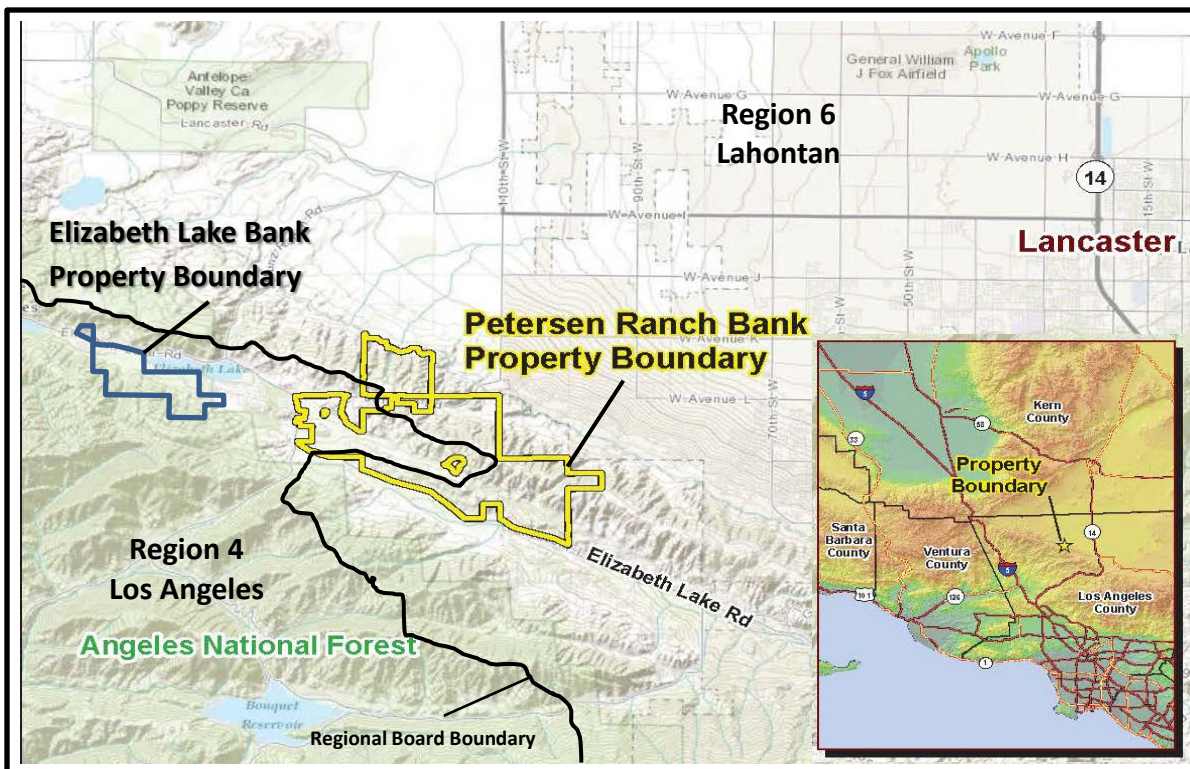


Figure 4 - Petersen Ranch Mitigation Bank Location Map

The Bank is located in Los Angeles County and comprised of two separate properties, the Petersen Ranch property in unincorporated Leona Valley and the Elizabeth Lake property near Lake Hughes. Nearly half of the Petersen Ranch property is located within the Lahontan Region, whereas the remainder of the Petersen Ranch property and the entire Elizabeth Lake property is located within the Los Angeles region.

The Bank focus is on restoration, enhancement, and preservation of wetland and riparian habitats, as well as rare and sensitive wildlife and plant species. Combined, the Bank properties include approximately 120 acres of seasonal and perennial wetlands, over 30 acres of ephemeral streams and dry washes, nearly 2,000 acres of stream buffer habitats, 15 acres of open waters, over 4 acres of emergent marsh land, more than 100 acres of non-wetland riparian habitats, and over 3 acres of alluvial floodplains. One acre of habitat or resource is equal to one credit available as mitigation for any given project. The smallest unit of credit that can be sold is 0.01 acre.

The Petersen Ranch Bank credits have been established for three regulatory programs: United States Army Corps of Engineers permitting under Clean Water Act Section 404; Lahontan Water Board dredge and fill waste discharge permitting under the California Water Code (Porter-Cologne); and California Department of Fish and Wildlife permitting under the California Fish and Game Code and the California Endangered Species Act, and for habitat mitigation required under the California Environmental Quality Act. In many instances, a single credit will qualify for more than one regulatory program; however, when a credit is sold to satisfy one or more regulatory requirements, that credit is no longer available for use under any of the remaining regulatory programs. Each credit will be sold only once.



Wetlands on the Petersen Ranch property (Land Veritas 2016).

The Lahontan Water Board credits are called “Porter-Cologne” credits because these credits are associated with surface waters that are not subject to Clean Water Act Section 401 permitting (i.e. not waters of the United States). Porter-Cologne credits are only available on the portion of Petersen Ranch property that is located within the Lahontan Region (Figure 2). Nearly 915 Porter-Cologne credits are available for use as compensatory mitigation for projects issued dredge and fill waste discharge permits by the Lahontan Water Board. These credits are either re-establishment or preservation of various resource types including ephemeral stream, wetland, open water, and riparian, and associated buffer areas for each of these resource types.

Bank credits are only available to projects located within a Bank’s authorized service area.

Because the Water Board has expressed preference for compensatory mitigation to be located within the same hydrologic unit as the permitted impacts, the Petersen Bank service area for the Lahontan Region is limited to the Antelope and Fremont Hydrologic Units (Figure 3). This service area is divided into primary, secondary, and tertiary service areas. Projects located within the primary service area would require little to no justification to purchase Bank credits for mitigation, as permitted impacts to surface waters in these watersheds will ultimately result in the same or similar functional losses as the functional gains obtained through the restoration actions planned at the Bank. Projects located within the secondary service area are hydrologically connected with the Bank property and would be allowed to purchase Bank credits as mitigation with little to no justification; though mitigation ratios might be higher for projects in the secondary service area compared to ratios for projects in the primary service area. Projects located within the tertiary service area proposing to purchase Bank credits as mitigation will be considered on a case-by-case basis and must be justified. For example, Projects in the tertiary service area may impact similar aquatic and terrestrial resources as those at the Bank and, therefore, restoration actions planned at the Bank may result in a net gain of the same or similar functions and values lost at the project site. If use of the Bank can be justified for a project in the tertiary service area, the mitigation ratios would be higher compared to mitigation ratios for projects in the secondary service area.

Bank credits will be released in phases over a period of time provided the Bank sponsor meets certain criteria such as submitting of as-built drawings for restored areas and providing incremental increases to the Endowment Fund (i.e. financial assurances). The Lahontan Water Board authorized the first release of Porter-Cologne credits on June 16, 2016, and the second release on August 9, 2018. The cumulative total of Porter-Cologne credits released includes 0.35 credits (acre) for re-establishment and 75 credits (acres) for preservation. To date, nearly one full acre of Porter-Cologne credits has been

sold to mitigate for permitted projects. We anticipate that as future development projects are planned and transportation projects are constructed within the service area, Bank credits will be utilized as a convenient and cost-effective way to provide compensatory mitigation for impacts to surface water resources.

Future projects include the master-planned Centennial Project in western Los Angeles County, the High Desert Corridor linking Antelope Valley with Victor Valley, the High-Speed Rail Project connecting northern and southern California, and several photovoltaic alternative energy projects planned north of Rosamond.

Figure 2 – Summary of Porter Cologne Credits in the Petersen Ranch Bank Property

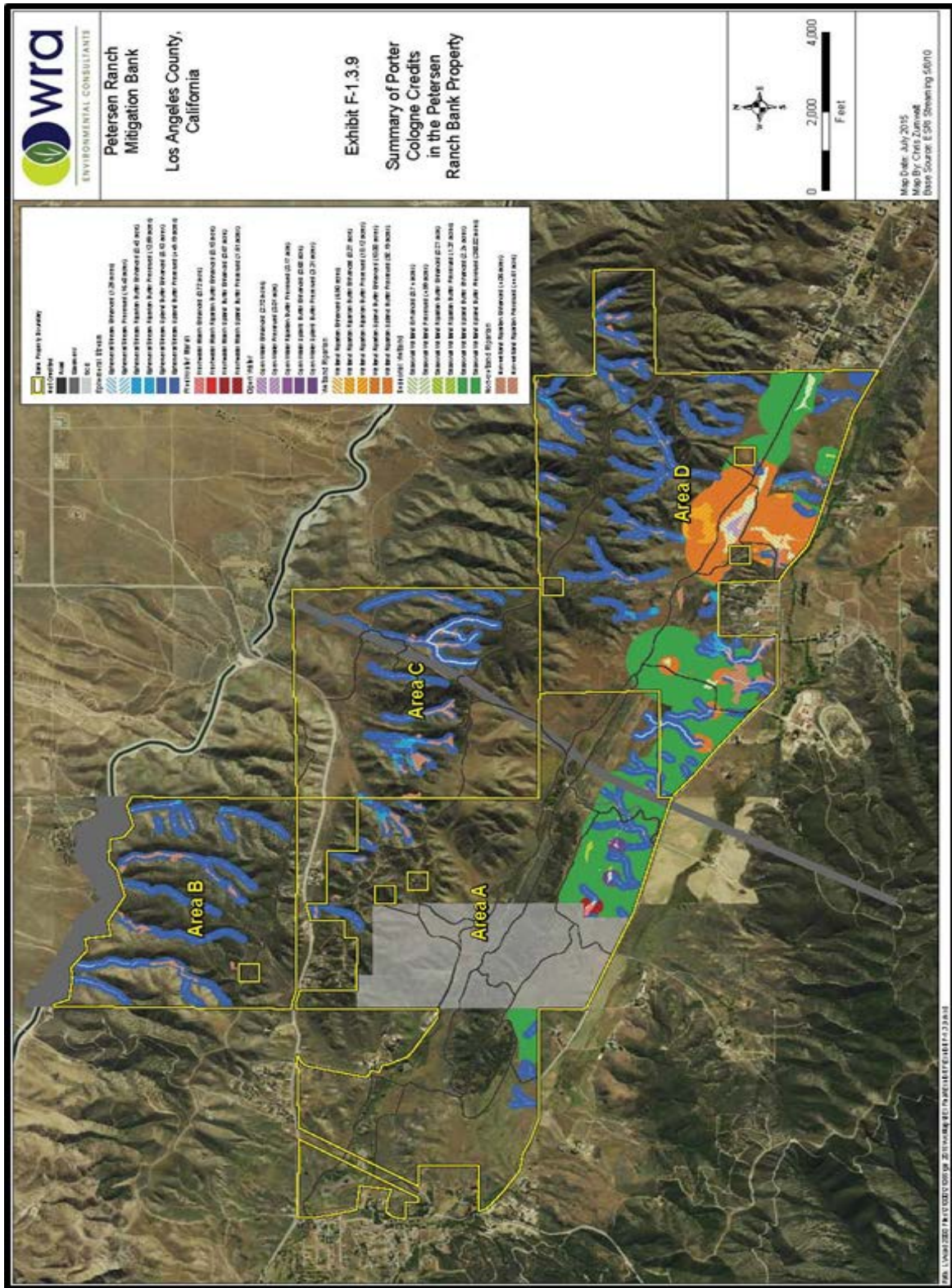
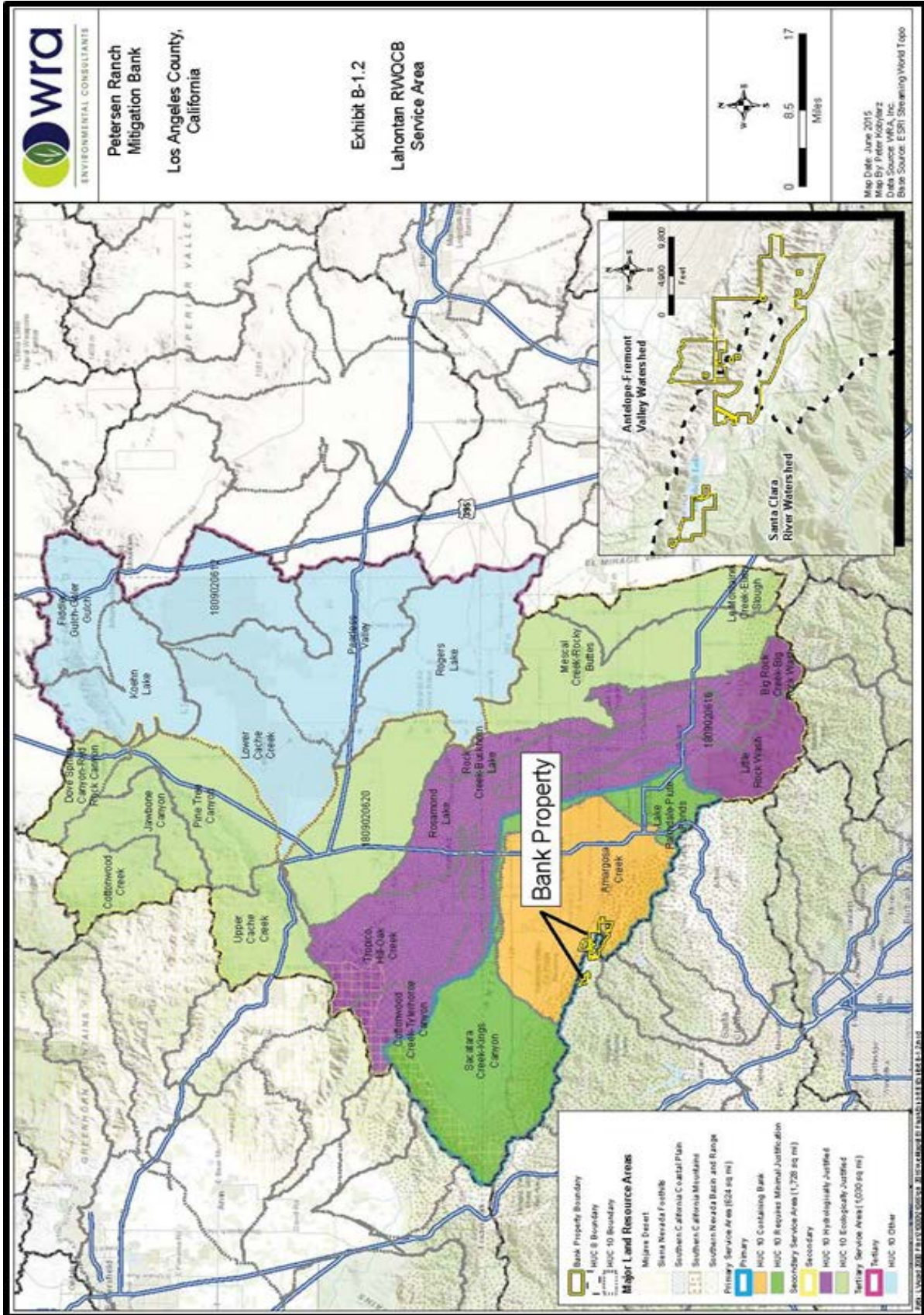


Figure 3 – Lahontan RWQCB Service Area



8. Inyo-Mono Regional Water Management Group – *Jeff Fitzsimmons*

Lahontan Water Board staff attended the Inyo-Mono Regional Water Management Group (Inyo-Mono RWMG) regularly scheduled stakeholder meeting on June 27, 2018. The meeting was hosted by the Mammoth Community Water District in the Town of Mammoth Lakes. These stakeholder meetings serve as an opportunity for representatives and citizens of the Inyo-Mono Integrated Regional Water Management (IRWM) area to voice their concerns, and provides the opportunity for discussion and collaboration of the participant's thoughts and efforts to manage regional water issues, taking into consideration social and economic concerns, within the IRWM area.

Attendees were provided an update of current internal fundraising efforts for the Inyo-Mono RWMG and the projected tasks that present funding would cover. Updates to the IRWM Plan for the region is the current priority. The California Department of Water Resources has required that all IRWM Plans be updated in 2018, to address water quality updates, climate change, and storm water management. Development of a salt nutrient management plan is anticipated to be developed upon completion of the updated IRWM Plan.

Public Affairs and Environmental Specialist, Irene Yamashita, from the Mammoth Community Water District (MCWD) provided a presentation regarding the expansion of geothermal energy resources near the Town of Mammoth Lakes. Ormat Technologies intends to expand the Casa Diablo geothermal facility with up to 18 new wells immediately adjacent to the northeastern and eastern limits of the MCWD service area. MCWD staff asserts that the expansion poses a significant threat to the aquifer from which MCWD provides water for the Town of Mammoth Lakes. MCWD has requested that the Great Basin Unified Air Pollution Control District, as lead agency under the California Environmental Quality Act, re-evaluate the findings of the Final Environmental Impact Report prepared for Casa Diablo IV geothermal expansion project. MCWD is awaiting a response to their request.

Representatives from Inyo and Mono Counties informed the Inyo-Mono RWMG that the City of Los Angeles Department of Water and Power (LADWP) is in the process of revising leases for land currently used for ranching. LADWP is reportedly reassessing the distribution of water to ranches for pasture irrigation, which has been supplied for over 100 years. Inyo and Mono County representatives expressed concern for the potential environmental impacts to current habitat that has developed on these properties for over a century. The next Inyo-Mono RWMG meeting will occur late September or early October 2018.

9. Standing Item - City of Barstow Nitrate/Orphan Perchlorate – *Ghasem Pour-ghasemi and Alonzo Poach*

This standing item describes the status of the City of Barstow efforts to cleanup nitrate pollution from historical disposal practices from its wastewater treatment plant and the related comingled nitrate/orphan perchlorate groundwater plume.

Wastewater Treatment Plant Upgrades Completed

Cease and Desist Order (CDO) R6V-2004-0029 was issued to the City of Barstow (City) requiring the wastewater treatment plant to be upgraded and effluent disposal practices improved. The deadline for the City to complete wastewater treatment plant improvements was July 30, 2009. The City completed upgrades to its wastewater treatment plant as required. Additionally, the City made further wastewater treatment plant improvements that reduced effluent total nitrogen in July 2015. Rehabilitation of Percolation Ponds 1-3 is completed, and Percolation Pond 4 is in the process of cleanup and reconstruction.

Currently, the City uses one primary clarifier, one aeration basin, two digesters, and two secondary clarifiers. The remainder of the wastewater treatment plant is idle due to lack of inflow. The City rotates aeration basins, primary clarifiers, and secondary clarifiers

annually for maintenance and cleanup. The average effluent nitrate concentration for 2018 (Jan-Jul) is 5.34 milligrams per liter (mg/L), and the average total nitrogen concentration is 8.15 mg/L. The treated effluent is discharged to Percolation Ponds 1, 2, and 3, as well as the Southern Irrigation Field.

The last remaining requirement of the CDO is quarterly sampling of monitoring wells. Water Board staff intends to update the current Waste Discharge Requirements (WDRs) contained in order 6-94-26 to incorporate that requirement from the CDO. The revised WDRs will include a revised Monitoring and Reporting Program (MRP) that will include all groundwater monitoring requirements associated with the nitrate pollution groundwater cleanup requirements described below.

Nitrate Pollution and comingled Perchlorate Pollution Groundwater Cleanup

Cleanup and Abatement Order (CAO) No. R6V-2013-0045 required the City to design and construct a system to capture and treat nitrate polluted groundwater downgradient of the Northern Irrigation Field in the Soapmine Road neighborhood. The plumes of orphan perchlorate and City's nitrate are now co-mingled in the Soapmine Road area. Both plumes are moving eastward along the Mojave River. Water Board and City staff agreed that the perchlorate and nitrate groundwater pollution should be addressed simultaneously.

BKT consultants, in cooperation with the City, applied for and received a \$1.7 million grant from the California Energy Commission (CEC) to conduct a small technology pilot test that will extract groundwater to treat and remove both nitrate and perchlorate. The treatment system is in the early stage of treating extracted groundwater from the Soapmine Road area next to Webster Road. The startup of the treatment system was delayed by several months due to arson that cost BKT several hundred thousand dollars to repair damaged storage tanks and other equipment. Figure 1 shows the BKT (also known as Tomorrow Water) pilot project treatment system.

The BKT pilot project system is equipped with continuous sensors to measure oxidation reduction potential (ORP), dissolved oxygen (DO), nitrate as nitrate (NO₃), and pH (see Figure 2). As of August 15, 2018, and based on effluent test results, treated groundwater is being discharged to a leach field about 200 feet upgradient of the extraction well. After the pilot system is proven to achieve discharge concentrations, treated water will be discharged to another infiltration gallery further away from the extraction well and preferably to the Northern Irrigation Field (about 1,500 feet west of the extraction well) to flush available nitrate out of the soil into the groundwater.

Residential Well Sampling in the Soapmine Road Area

The City continues to conduct quarterly sampling of residential drinking water wells in the Soapmine Road area, as required by the CAO. In the second quarter of 2018, the City sampled 36 residential wells. None of the residential wells exceeded the drinking water MCL for nitrate. A total of 9 private wells showed nitrate as nitrogen concentrations exceeding 5 mg/L (level at which the CAO requires replacement drinking water delivery). The nitrate concentration trends are decreasing in some residential wells and increasing in others. The City has been providing 10 residents within the required study area with uninterrupted replacement water service (bottled water). The City has requested to reduce the frequency of the sampling of the number of residential wells that have not exceeded nitrate as nitrogen of 5 mg/L for the last several years. Water Board staff will re-consider this request pending completion of the pilot test to evaluate the effect of flushing nitrate out of the unsaturated soil column and the ability of a revised groundwater cleanup strategy to intercept the nitrate before reaching residential wells.

Perchlorate Source Area

The State Water Resources Control Board entered into a contract with APTIM consultants to design, construct, and operate a pilot-scale treatment system at the perchlorate source area. The Lahontan Regional Board will be doing the day-to-day oversight of the work. The treatability study is designed to evaluate the mass of perchlorate remaining in the soil, determine an effective technology that would remove the perchlorate from the soil, and to collect data to expand the treatment system to include remediation of groundwater downgradient of the source area. The plan is to install an infiltration gallery over the source area, install groundwater extraction wells downgradient of the perchlorate soil source area, extract perchlorate impacted groundwater water, treat the water to remove perchlorate, and discharge treated water back to the source area to continue flushing perchlorate from soil to groundwater until the perchlorate is removed from the soil. On August 23, 2018, Water Board staff met with APTIM staff to discuss the preliminary work plan. The hope is to get to the field in the next couple of months to begin remediation of the source area.

Figure 1 - BKT Pilot Project treatment vessels in the Soapmine Road area that is being tested for nitrate and perchlorate treatment of extracted groundwater.



Figure 2 – Continuous measuring devices on the BKT pilot project equipment panel for testing of ORP, DO, NO₃, and pH.

10. City of Bishop Wastewater Improvement Project Meeting – *Jehiel Cass*

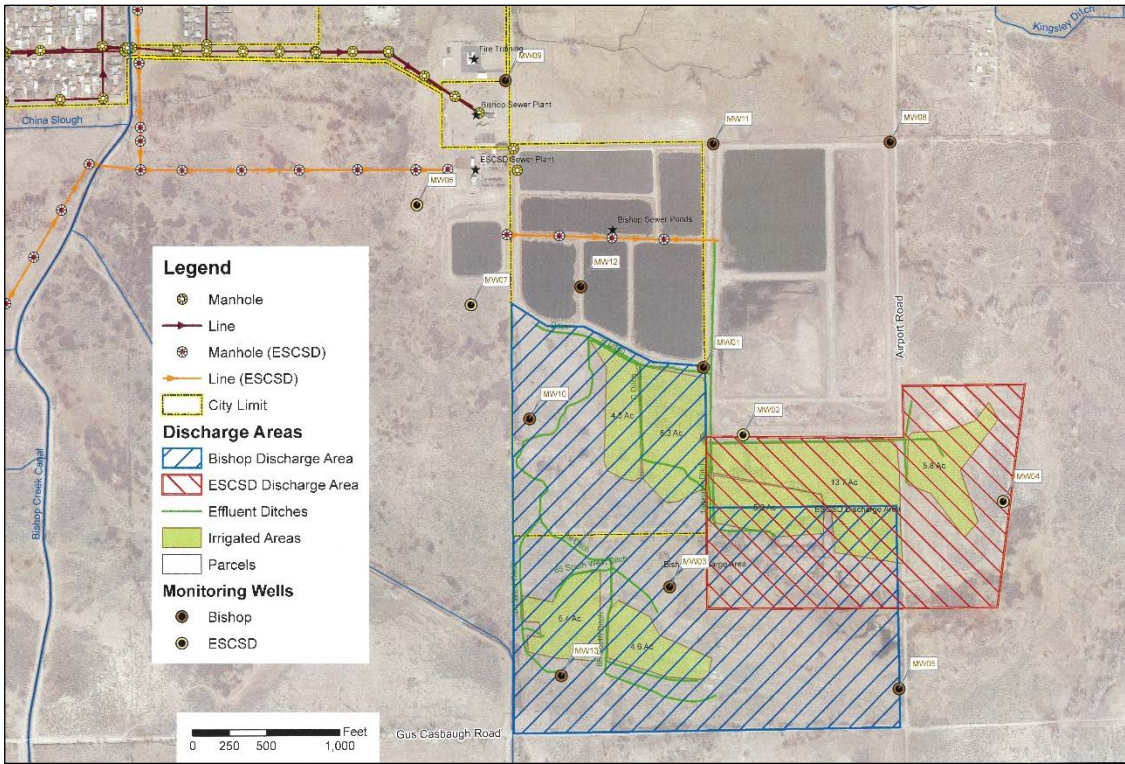
On August 8, 2018, Water Board staff met with City of Bishop (City) staff to discuss the City's improvements to its wastewater effluent management strategy. Since 2015, the City and Eastern Sierra Community Services District (District) have been implementing a Joint Technical Work Plan (Plan). In 2015, both entities had jointly submitted a Feasibility Study evaluating alternatives for improved treatment and effluent management by combining the flow from both entities. After considering the cost of each alternative (just over \$30 million for each), the City and District requested the Water Board allow them to implement a Plan consisting of numerous small-cost projects that they believed would accomplish the same objective. They have provided semi-annual status reports.

The City informed us that it intends to take over the Plan because the District is taking a different approach. The City believes that continuing to make incremental improvements described in the Plan will reduce overall nitrate concentrations in groundwater beneath the disposal areas (ponds and irrigated pastureland).

The City's next steps are to re-compact the City's percolation ponds 4, 5, and 6 bottoms to reduce percolation. Added piping in these ponds will allow the City to better control flow between the ponds and enhance flood irrigation of the pastureland by keeping water at a higher hydraulic head elevation. We requested a work plan for the re-compaction activity. Additionally, the City will improve the irrigated pastureland by planting mixed grasses to improve pasture value and pursue a project to laser-level additional land for surface spreading. Figure 1 shows the City and District recycled water use areas on irrigated pastureland, partially owned by the Los Angeles Department of Water and Power (Department).

Water Board staff questioned whether implementing Plan elements would have a lasting improvement on groundwater quality. The City is working with the Natural Resources Conservation District (NRCS) to develop a Farm Management Plan for ensuring water and nutrients are not applied above the crop agronomic rate. The Department historically has been reluctant to allow an expansion of irrigated areas. Recently however, the City indicated that the Department may be willing to reconsider and allow the City (and possibly District) to utilize an area north of the wastewater treatment plants for crop irrigation.

We informed the City that we would like to see more pro-active improvements to the wastewater treatment and disposal facilities and/or effluent management such as improved wastewater treatment operations to further reduce nitrate levels in groundwater. We reiterated Water Board staff's desire that eventually there be a joint wastewater treatment plant and consolidated operations to treat both City and District wastewater flow.



Map showing the effluent management area used by the City and District. The northwestern portion of the blue-hatched area is owned by the City. The southern portion of the blue-hatched area and the red-hatched area are owned by the Department.

