



EXECUTIVE OFFICER’S REPORT • September 2019

Covers July 16, 2019 – August 15, 2019

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State and Regional

1. Personnel Report – Eric Shay

New Hires – None

Vacancies – We are currently recruiting for the following positions:

- Scientific Aid, Planning & Assessment Unit, South Lake Tahoe. This position assists with the collection, preparation, and chemical analysis of water samples; creates maps to display and analyze data; updates TMDL reporting products; and assists staff with data management and analysis tasks.
- Graduate Student Assistant, South Regulatory Division, Victorville. This position uses computer programming languages, key datasets, and an interactive mapping tool to assist staff in visualizing water quality data.
- Seasonal Clerk, Victorville. This position provides basic administrative support, such as typing and reception.

- Scientific Aid, Cleanup/Site Investigation & Enforcement Unit, South Lake Tahoe. This position assists staff with administering the site cleanup, underground storage tank, land disposal, and enforcement programs; reviewing reports, and maintaining databases; reviews self-monitoring reports for cases, permits and enforcement actions; reviews project files and water quality data to prepare for field inspections and permit updates; assists with field inspections; and reviews California Environmental Quality Act documents.

Departures – None

North Lahontan Region

2. Standing Item – Grazing Update – Ben Letton & Bruce Warden

Since the adoption of State Water Resource Control Board (State Board) Resolution 2015-0062, which discontinued a statewide approach to regulating livestock grazing in favor of a regional approach, Water Board staff have been engaged in several new and on-going activities associated with grazing related water quality issues. Consistent with the State Board Resolution, staff will continue to work collaboratively with interested stakeholders to determine which actions are best suited to protect water quality and the beneficial uses of water from pollution associated with livestock grazing. Staff continue to identify site specific livestock grazing issues in the Lahontan Region that are causing water quality impacts and impairments based on unique hydrology, topography, climate, and land use. This article summarizes the major actions that Water Board staff are taking to address specific water quality issues in the region.

Eagle Lake

Under authority granted by California Water Code section 13267, I issued eight Investigative Orders in May 2019 that require grazing operations with access to the shore zone of Eagle Lake to submit a Ranch Water Quality Management Plan (RWQMP) for private ranchers, and an updated Allotment Management Plan (AMP) or Annual Operating Instructions (AOI) for federal grazing allotment permit issuers (i.e., USFS and BLM), to help address documented water quality impacts. This request for information was based on: (1) concerns and photographic evidence from local citizens documenting impacts of shore zone grazing on water quality of Eagle Lake; (2) a review of decades-long Department of Water Resources database of Eagle Lake water quality monitoring; and (3) a long-standing history of other documented water quality issues in Eagle Lake, including perennial Harmful Algal Blooms (HABs) since the early 1980's and a Clean Water Act Section 303(d) listing as impaired for Total Nitrogen and Total Phosphorus in the year 2000.



Figure 2.1 - Cattle grazing at the shore zone of Eagle Lake is a potential source of nutrient loading

In accordance with the issued Orders, all eight parties have provided a response within the required 60-day timeframe. Staff are currently reviewing those submittals for content and completeness and will be working with each party individually to develop plans, or updates to existing plans, that adequately address grazing related water quality concerns along the shoreline of Eagle Lake.

Federal Lands Non-Point Source (NPS) Permit Development

Water Board staff are working on developing a Federal Lands NPS permit that would apply to certain NPS activities on US Forest Service and BLM managed lands. Several categories of activities are being considered for permit inclusion, including grazing, timber harvest and fuel reduction, road system management, and small restoration projects. Water Board staff are collaborating with staff from the Central Valley Water Board staff on permit development as many federal agency administrative units cross both Water Board regions. In 2018 Water Board staff conducted numerous field visits with federal agency staff throughout both Water Board Regions to better understand their development, implementation, and monitoring of best management practices. Water Board staff visited grazing allotments on both USFS and BLM lands during this effort. Water Board staff are currently preparing a summary of the field visits, key findings, and conclusions from those field visits that will be captured in in final BMP Assessment Report and made available in Fall 2019.

As part of the Federal NPS Permit development Water Board staff are engaging with State Board and UC Cooperative Extension (UCCE) staff to update the California Rangeland Water Quality Management Plan (1995). We hope to work with UCCE staff to expand this document to include best management practices and additional guidance to address water quality protection on federal rangelands. As part of this effort UCCE, staff assisted in coordinating field visits with grazing allotment

permittees and hosted a field tour of Pine Creek allotments in the Eagle Lake Basin on June 25, 2019.

Los Angeles Department of Water and Power (LADWP)

LADWP owns large areas of land in the Owens Valley and has approximately 50 grazing leases on parcels ranging in size from 33 to 26,065 acres. Extensive water quality sampling indicates that livestock with unrestricted access to surface waters has caused exceedance of water quality standards for nutrients, bacteria (100 cfu/10 ml *E.Coli*) and turbidity along Bishop, Horton, and Lower Pine Creeks within lands owned by LADWP. Hundreds of water quality samples and genetic microbial source tracking studies confirm that ruminant livestock are the predominant source of bacteria in waters that have a high degree of contact by the public. As a result, Water Board staff has required LADWP to submit a Report of Waste Discharge (ROWD) with the intent to develop Waste Discharge Requirement (WDR) permit for grazing lands owned by LADWP within the Lahontan Region. The draft WDR may categorize livestock leases into tiers based on the threat to water quality. The higher threat leases would require more oversight, monitoring and reporting, while lower threat leases will have less stringent requirements. Some of the factors determining threat to water quality may include proximity to surface water, tail water return flows, surface water hydrologic connectivity, direct livestock contact with perennial surface waters, and 303(d) listed water within the lease.

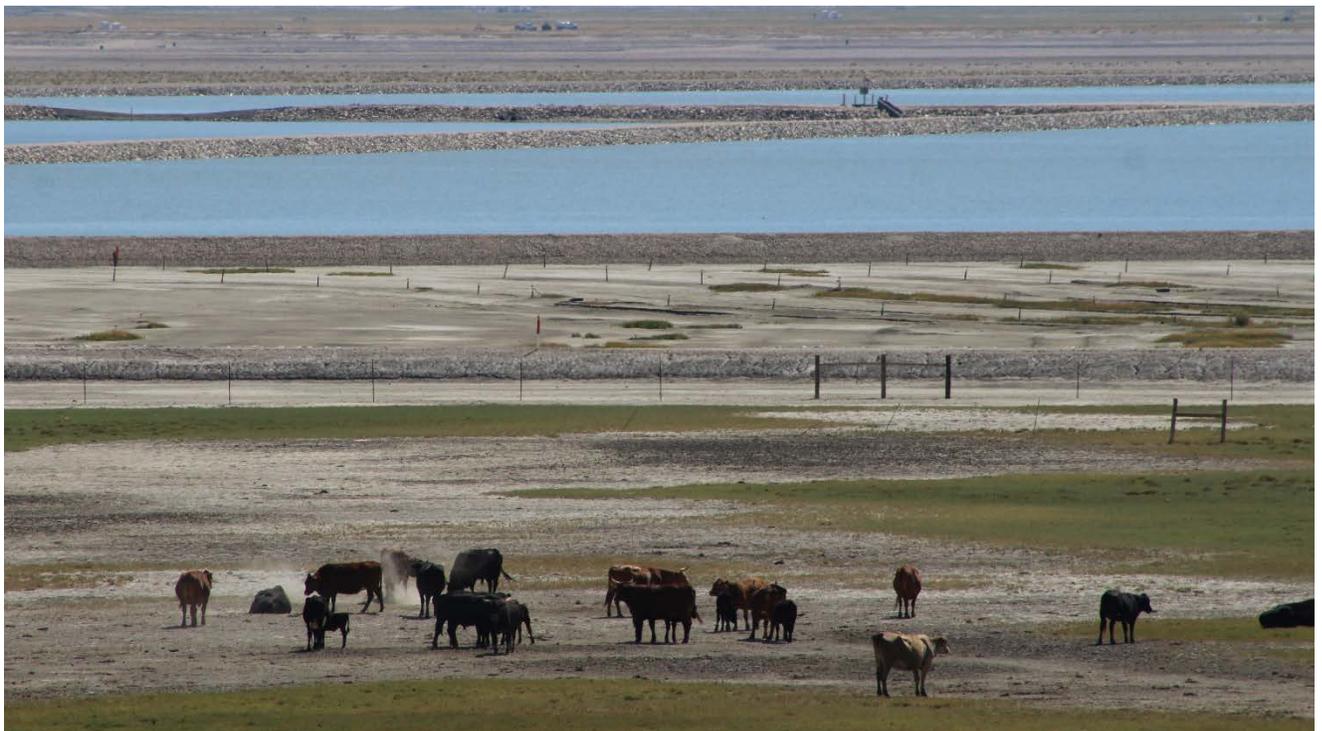


Figure 2.2 Livestock grazing operations on LADWP lands along Owens Lake, Inyo County (6/14/2019).

Bridgeport Valley

On August 7, 2019, Water Board staff attended a field tour with ranchers from the Bridgeport Rancher's Organization (BRO), the Natural Resource Conservation Service (NRCS), and Mono County Board of Supervisor, John Peters, for District IV to view the proposed location for an end-of-valley wetland treatment site where Buckeye and Robinson Creek meet Bridgeport Reservoir. The wetland treatment site is proposed to

consist of a series of rock diversions that will convey a portion of the flow laterally from the main channel of these creeks into shallow, bermed basins that will serve as the wetland treatment cells. It is anticipated that these wetland treatment cells will help to improve water quality by filtering out suspended sediment, absorb excess nutrients, and reduce high bacteria concentration through increased UV light exposure prior to reaching Bridgeport Reservoir. Implementation of this end-of-valley wetland treatment project is anticipated for Fall of 2020 or Winter 2021. The BRO is working directly with NRCS on finalizing engineering plans and has already received approval from the Walker River Irrigation District (WRID) to construct the project on WRID lands. Applications for secured NRCS funding will be submitted in 2020.

In the second half of the field tour, Water Board staff visited several sites on private ranches to look at off-site watering troughs, wetland pasture exclusion fencing, vegetative buffer strips, hardened livestock crossings, improved irrigation control structures, improved livestock rotation practices, and other management measures that have been implemented by the BRO in recent years.



Figure 2.3 Water Board staff and a member of the Mono County Board of Supervisors listen to members of BRO describe grazing management in the Bridgeport Valley along Robinson Creek (8/7/2019).

In early 2019, the BRO submitted water quality data for the 2017/2018 grazing seasons. During the period between July 10 and August 18, 2017, UC Davis staff analyzed for *E. coli* twice a week and analyzed for fecal coliform once a week at three bottom-of valley sites. Buckeye and Robinson Creeks were compliant with the 30-day fecal coliform interim geomean standard of 200 CFU/100 mL; however, the East Walker River was in

exceedance of the interim standard by a factor of about three. Robinson Creek met the 6-week Statewide Recreation *E. coli* geomean standard of 100 CFU/100 ml. Buckeye Creek was slightly in exceedance of the Statewide *E. coli* standard, but consistent with the results of fecal coliform, the East Walker River was in exceedance of the Statewide *E. coli* standard by a factor of around two-fold. The 2018 bacteria data found all three monitoring sites were in exceedance of the grazing waiver interim geomean standard of 200 cfu/100 mL for fecal coliform (range 252-455), and the Statewide geomean *E. coli* standard of 100cfu/100 mL (range 228-308). Overall, the BRO remains compliant with the 2017 Bridgeport Waiver, which sets a deadline of March 15, 2022 to submit a report demonstrating fecal coliform concentrations downstream of operations is meeting an interim water quality target of 200 fecal coliform/100 mL.

3. Fraudulent Reimbursement Requests to the Underground Storage Tank Cleanup Fund – Kerri O’Keefe

Reimbursement from the Underground Storage Tank Cleanup Fund (UST Fund) has historically tempted environmental consultants and UST Fund claimants to submit fraudulent invoices for investigation and cleanup of petroleum hydrocarbons from leaking underground storage tanks. In April 2013, the State Water Resources Control Board authorized its Office of Enforcement to permanently staff a unit to identify fraud, waste and abuse by environmental consultants and UST Fund claimants submitting false, misleading, or inflated invoices for reimbursement. The Fraud, Waste, and Abuse Prevention (FWA) Unit identifies patterns of fraud then investigates and develops cases to refer to the State Attorney General’s (AG’s) Office for potential criminal and/or civil prosecution.

New safeguards to fight against fraudulent activities were included in SB 445 (Chapter 547, Statutes of 2014), which gave the State Water Board the authority to bar UST Fund claimants and consultants from participating in the UST Fund and impose penalties of up to \$500,000 per violation. The law also allows the recovery of costs for investigation and prosecution, and it grants administrative authority to the AG’s office to prosecute cases.

When Water Board staff suspect that fraud may be occurring, they may report the activity directly to the Office of Enforcement. Fraudulent activity can be reported to the FWA Unit anonymously by any concerned party via email, calling a toll-free message line, or completing a complaint form and mailing it to the Office of Enforcement.

Fraudulent activities related to the Lahontan region include a 2016 judgement against a Placer county environmental firm. Applied Engineering and Geology (AEG) entered a settlement agreement in 2016 over allegations of billing for remediation equipment that was not used and ineligible markup on subcontractor invoices for many different UST cases throughout the state, including Placer County in the Lahontan Region. AEG was ordered to pay \$200,000 and cease work on projects funded by the UST Fund.

More information related to fraud prevention and judgments for fraudulent activities within the Lahontan region can be found on the State Water Resources Control Board website at https://www.waterboards.ca.gov/water_issues/programs/ustcf/fraud.html.

4. Standing Item - Eastern California Cannabis Unit Status Report - April 15, 2019 - June 14, 2019 – Eric Taxer

Enrollment

The Eastern California Cannabis Unit staff issued five new Notices of Applicability (NOAs) for indoor cannabis cultivation facilities. Staff also issued one revised NOA,

reflecting a change from outdoor to indoor cultivation. To date, we have issued a total of 82 indoor and 15 outdoor cannabis cultivation NOAs.

Onsite Wastewater Treatment and Disposal Permitting

Many indoor cannabis cultivators wish to dispose cannabis cultivation wastewater (classified as industrial waste) to onsite wastewater disposal systems (such as septic tanks). Additionally, the Water Board identified a need to effectively regulate wastewater discharges to small wastewater treatment systems, including both domestic and nondomestic wastewater not regulated by a Local Agency Management Program.

The existing State Board Small Domestic System Order adopted in 2014 does not provide coverage for small nondomestic wastewater discharges that have average flow rates under 20,000 gallons per day (gpd), nor does it provide nitrogen effluent concentration limits for domestic wastewater systems. In response, Eastern California Regional Cannabis Unit staff are drafting general permits (Small Nondomestic Order for industrial discharges and a Limited Domestic Order for domestic discharges less than 20,000 gpd) for the Lahontan Region.

Eastern California Regional Cannabis Unit hosted a stakeholder outreach event for the Small Nondomestic Order for industrial discharges in Apple Valley on June 13. Additional workshops will be held June 18 in Bishop and June 20 in Susanville. Following the completion of outreach, it is anticipated that the draft Order will be published for public comment in the fall. Cannabis unit staff anticipate the Order, if adopted, would be used by cannabis cultivators for onsite wastewater treatment systems.

Inspection Program

Eastern California Regional Cannabis Unit staff has developed a digitized inspection form in coordination with the State Water Board's Office of Enforcement. The form standardizes and streamlines data collection efforts during site inspections, allowing staff to collect precise GPS points and measurements on individual computer tablets. Staff inspected eight facilities using the streamlined method.

South Lahontan Region

5. Standing Item – City of Barstow Wastewater Nitrate – *Ghasem Pour-ghasemi*

This article describes the compliance status for the City of Barstow (City) with newly adopted waste discharge requirements (WDR), Board Order No.

R6V-2019-0252, and various compliance orders issued by the Lahontan Water Quality Control Board (Water Board) regarding historical disposal practices from the City's wastewater treatment plant. These discharges polluted receiving groundwater with nitrate. Actions taken by the Water Board directed the City to address this nitrate pollution.

Wastewater Treatment Plant Upgrades Completed

The City completed upgrades to its wastewater treatment plant as required by Cease and Desist Order (CDO) No. R6V-2004-0029. Additionally, the City continues to make additional improvements to its wastewater treatment plant that reduced effluent total nitrogen from 30 milligrams per liter (mg/L), prior to CDO issuance, to less than 5 mg/L during the first half of 2019.

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

clarifiers, aeration basins, and secondary clarifiers annually for maintenance and cleanup. The average effluent nitrate concentration for 2019 (Jan-June) is 1.97 mg/L and the average total nitrogen concentration is 4.83 mg/L. The treated effluent is currently discharged to Percolation Ponds 2 and 3 as well as to the South Irrigation Field where recycled water is used for fodder crop irrigation.

Board Order No. R6V-2019-0252 was adopted by the Water Board on July 10, 2019, rescinding previous Board Order No. 6-94-026. The new WDR established a new total nitrogen effluent limit of 10 mg/L and combined the requirements for monitoring well sampling from the CDO into this WDR and the Monitoring and Reporting Program into a single groundwater sampling program.

By incorporating the CDO requirements of quarterly monitoring well sampling into the new WDR, the City met all requirements of the CDO. Therefore, the Water Board rescinded the CDO on July 10, 2019.

Nitrate 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 North Irrigation Field in the Soapmine Road neighborhood. Since issuance, four amendments to this CAO provided the City additional time to comply with CAO requirements because a perchlorate plume was discovered near the City's nitrate groundwater plume. The perchlorate plume is migrating from a contaminated property about three miles upgradient of the City's nitrate source area (formerly used North Irrigation Field). The City is not responsible for the perchlorate pollution, but the two plumes of perchlorate and nitrate are now co-mingled in the Soapmine Road area. Both plumes are moving eastward along the north side of the Mojave River. Water Board and City staff agreed that the perchlorate and nitrate groundwater pollution should be addressed simultaneously. Because the Water Board is separately pursuing action to address perchlorate, the City has taken no action to address nitrate at this time.

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 CAO No. R6V-2007-0017. During Third Quarter 2019, the City sampled 37 residential wells. Analytical results show that all residential wells measured nitrate as nitrogen concentrations below the drinking water maximum contaminant level for nitrate as nitrogen (10 mg/L). A total of 10 residential 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 requested revision to the CAO to: 1) reduce the frequency of groundwater sampling from quarterly to semi-annual sampling for nine of the residential wells that have not exceeded 5 mg/L nitrate as nitrogen for the last several years, and 2) provide bottled water to the residents with the residential well nitrate concentrations of 10 mg/L or more instead of providing bottled water for residents with the residential well nitrate concentrations of 5 mg/L or more as required by the CAO. This request is currently under Water Board staff review.

6. Agreement to Jointly Manage Domestic Wastewater in the City of Bishop and Eastern Sierra Community Services District Areas – Jehiel Cass and Patrice Copeland

For several decades, domestic wastewater collected in the larger Bishop area has been separately managed by either the City of Bishop (City) or the Eastern Sierra Community Services District (District). These facilities are co-located south of the Bishop Airport. Over the years, Water Board staff has questioned why these wastewater treatment facilities were constructed and operated separately when the discharges and treatment processes are very similar. Water Board staff voiced these questions during recent meetings with the City and the District (April 1, 2019), and with the Los Angeles Department of Water and Power (LADWP [May 8, 2019]). During these meetings, Water Board staff explored the opportunities available to the City and the District to combine their wastewater treatment efforts, with assistance from LADWP as a major landowner near the facilities. The planning horizon being considered would take these facilities into the future by 50 to 100 years.

On July 11, 2019, Water Board staff attended a meeting with the City, the District, and LADWP, and learned the City and District intend to form a Joint Powers Authority (JPA) to manage domestic wastewater in the larger Bishop area. As the landowner, LADWP plans to sell / transfer an adequate quantity of land to the new JPA that will enable the continued beneficial reuse of treated wastewater.

On August 5, 2019, Water Board staff received a letter, signed jointly by the City, the District, and LADWP (see attachment 6.1), providing us with the outcome of these mutual discussions and future plans. Water Board staff will continue to work collaboratively with the City and the District to establish key milestone dates for implementing this new approach and to obtain additional information in support of the JPA's future submittal of a Report of Waste Discharge for the joint project. Water Board staff expect that new waste discharge requirements will need to be prepared for this project.

7. Advanced CEQA Training – Sergio Alonso

As more and more of our work includes both reviews and writing documents to comply with the California Environmental Quality Act (CEQA), the State Water Board has offered more CEQA related training courses to help educate and train Water Board staff. Water Board staff attending the training included Sergio Alonzo, John Morales, and Ghasem Pour-ghasemi. During August 5-6, 2019, Water Board staff attended an Advanced CEQA training course, hosted by the Water Board's Training Academy. The purpose of this training course was to inform staff about the CEQA project review process. Topics of discussion included the roles of lead agencies and responsible agencies, limitations of CEQA, and the types of reports that are appropriate for CEQA.

CEQA establishes procedures and directives to require state and local agencies to adopt feasible alternatives or mitigations to avoid or reduce environmental impacts by a proposed project. A project under CEQA submitted for environmental analysis should include a description of the proposed project, list all potential significant impacts, and propose alternatives to avoid further impacts. Environmental impacts are discussed in different types of reports such as initial studies, negative declarations, and environmental impact reports. Once the report has been reviewed by an authorized agency, that agency has the ability to require changes to a project to lessen environmental impacts, disapprove of a project if there are unavoidable environmental impacts, or approve a project if the project's benefits outweigh the project's environmental impacts.

All CEQA projects have a lead agency; the lead agency has the greatest responsibility for supervising or approving the project. Responsible agencies consist of all state or local agencies that are not the lead agency. When the Water Board acts as a responsible agency, it focuses on commenting about any shortcomings in a CEQA document pertaining to water quality and other areas that coincide with the agency's regulatory area. They may impose additional conditions on the projects based on its regulations or require further studies under its own authority.

Overall, the course helped to inform Water Board staff regarding any fundamental changes to the CEQA process and introduced newer staff to CEQA. It gives a wider perspective as to how multiple sister agencies impact the development of a project and how Water Board staff can better protect water quality for each proposed project.

8. Standing Item – Barstow Perchlorate Cleanup – *Alonzo Poach*

Site characterization work at the Barstow Perchlorate source area property was conducted in May and June 2019 to further delineate the extent of perchlorate-impacted soil and groundwater in the source area. Results showed that soil samples from two locations were above the screening level for perchlorate of 55,000 micrograms per kilogram ($\mu\text{g}/\text{kg}$). Groundwater samples collected in the source area yielded results at a maximum concentration of 2,010 micrograms per liter ($\mu\text{g}/\text{L}$), well above the State's maximum concentration level (MCL) of 6 $\mu\text{g}/\text{L}$.

Soil Sampling Results

Two areas of interest were identified during this investigation as additional perchlorate release areas. As part of the investigation, a geophysical utility survey located rusted (disintegrated) steel containers and a white substance mixed in soil. A soil sample collected from this area yielded a perchlorate result of 57,100 $\mu\text{g}/\text{kg}$. An additional soil sample from a depth of 6 feet in the southeastern corner of the property showed perchlorate concentrations of 72,400 $\mu\text{g}/\text{kg}$. Additional soil sampling is proposed in various locations on the site to further delineate perchlorate in soil. Figure 8.1 shows the current and previous sampling locations in the source area. The proposed locations are denoted on Figure 8.1 as light blue triangles.

Groundwater Results

During the investigation, groundwater was encountered approximately 20 feet deeper than originally encountered during the 2012 investigation. The deeper groundwater is consistent with a regional drop in groundwater levels. Perchlorate was detected in groundwater at levels ranging from 11.3 to 2,010 $\mu\text{g}/\text{L}$. Based on the May and June 2019 results, it appears that the perchlorate is remaining in the shallow portion of the aquifer, and the lateral extent of perchlorate in groundwater has been further defined. Based on the groundwater results, APTIM and Water Board staff propose 5 groundwater monitoring well locations on the source area property. The proposed groundwater wells are denoted by purple triangles on Figure 8.1.

Additional soil samples, groundwater monitoring well installation, and aquifer testing is scheduled to take place the week of August 19, 2019 and is expected to take approximately 2 weeks to complete.

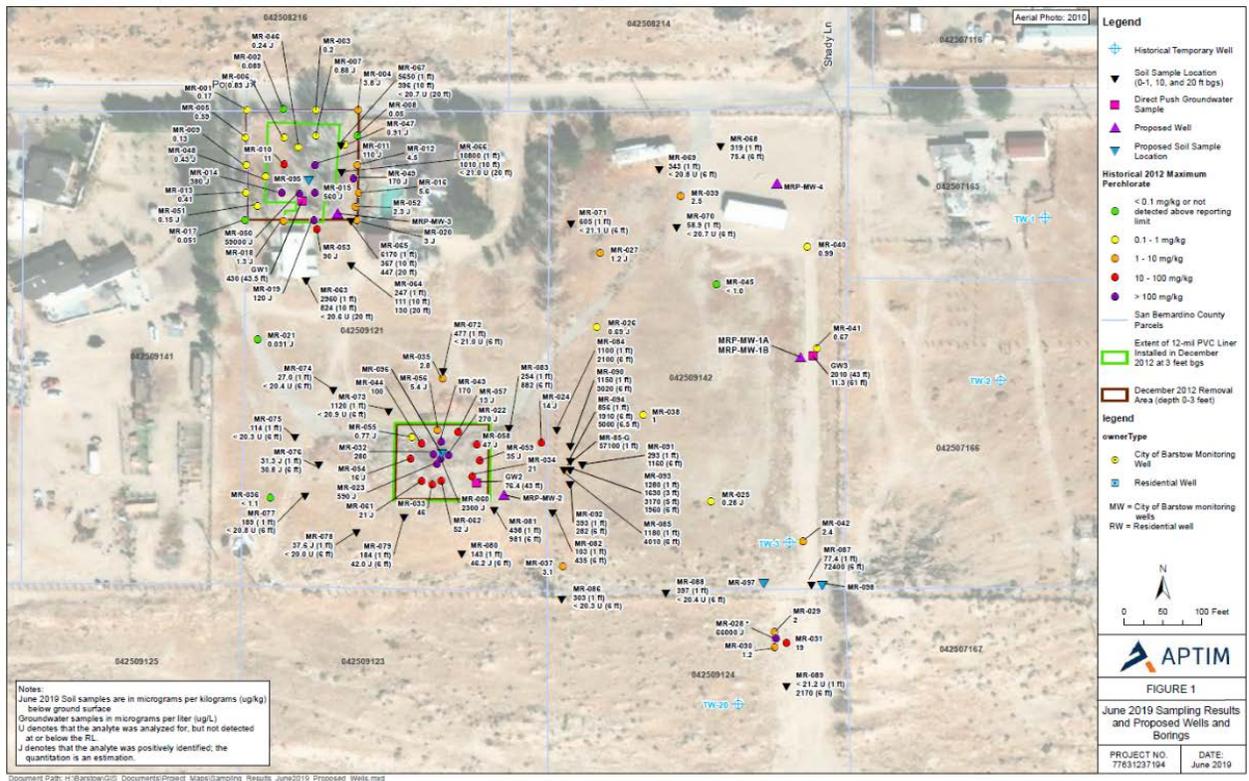


Figure 8.1 shows the source area property and the sampling that has been conducted to date, as well as proposed new groundwater monitoring well locations.

9. Explanation of Significant Differences (ESD) for Marine Corps Logistics Base (MCLB), Barstow – *Christopher Avalos*

CAOC N-2 Area 1 (Site) is a 17-acre vacant piece of land located at MCLB Barstow, Nebo Main Base, and is wholly contained within the military base boundary (Figures 9.1 and 9.2). Military equipment was stored at the Site from the early 1950s until 1966. The area was repurposed as a skeet and trap shooting range and operated from 1982 to 1999. As a result of these past activities, lead, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) contaminate the soil at the Site at concentrations above industrial cleanup levels (unsafe levels for industrial/construction workers, as well as potential residential inhabitants).

On December 12, 2014, a Record of Decision (ROD) was signed by the Department of the Navy (DON) and regulatory agencies, outlining remedies for all sites within OU 7, including the Site. The remedy proposed in the ROD for the Site includes collecting lead shot, PAH-bearing clay target fragments and PAH-contaminated surface soils by vacuuming; separation of materials; recycling of lead shot; excavation of soil from PCB-contaminated areas; off-site disposal of remaining wastes; and implementation of land use controls (LUCs). Soil from the three contaminants (lead, PAHs, and PCBs) would be cleaned to industrial levels (safe for industrial/construction workers, but not safe for residential use). Land use controls (LUCs) would be required throughout the site to prohibit residential use of the property.

During the remedial design, the DON and its contractor determined that the remedy outlined in the ROD would not meet remedial action objectives (RAOs). Specifically, while surface vacuuming would collect loose lead pellets on the surface, it would not collect large clay target fragments (which contain PAHs) or be adequate to address contaminated soils or lead pellets below the ground surface. Additionally, the technique of using a rare earth magnet to separate the lead pellets from soils proved to be impractical. These findings prompted the DON to reach out to the regulatory agencies to determine a better remedy path.

On November 21, 2017, the DON submitted a draft ESD to document significant changes to the site remedies outlined in the ROD that could be implemented to achieve RAOs.

The draft ESD proposed the following modified approach:

- 1) Excavation of shallow lead shot, clay target material, and lead/PAH-contaminated soil
- 2) On-site sieving to remove oversized materials (cobbles) to minimize the volume of uncontaminated material to be transported to a permitted facility
- 3) Grading and restoration of the ground surface to facilitate proper drainage
- 4) Replanting of native vegetation in excavated areas to restore habitat

To minimize the footprint of LUCs needed at the site, the DON decided to clean up lead and PCB-contaminated soil to more protective standards (residential levels, i.e., safe for potential residential inhabitants) than originally agreed to in the ROD. Areas with PAH-contaminated soils will be cleaned up to industrial levels as outlined in the 2014 ROD and will still require that LUCs be implemented.

With input from the United States Environmental Protection Agency (USEPA), California Department of Toxic Substances Control (DTSC), and Water Board, the DON submitted a final ESD on June 25, 2019 for the regulatory agencies' consideration. Representatives from the above-mentioned agencies are co-signatory agencies for this ESD.

Commanding Officer for the DON, Colonel Craig C. Clemans, signed the final ESD on June 13, 2019. On July 31, 2019, Water Board Executive Officer, Patty Kouyoumdjian, signed the final ESD authorizing the change in remedy for the Site. USEPA and DTSC representatives (other signatories to the Federal Facility Agreement) are expected to sign the ESD as well. Following full approval of this ESD, the DON will implement the final remedy at the Site.

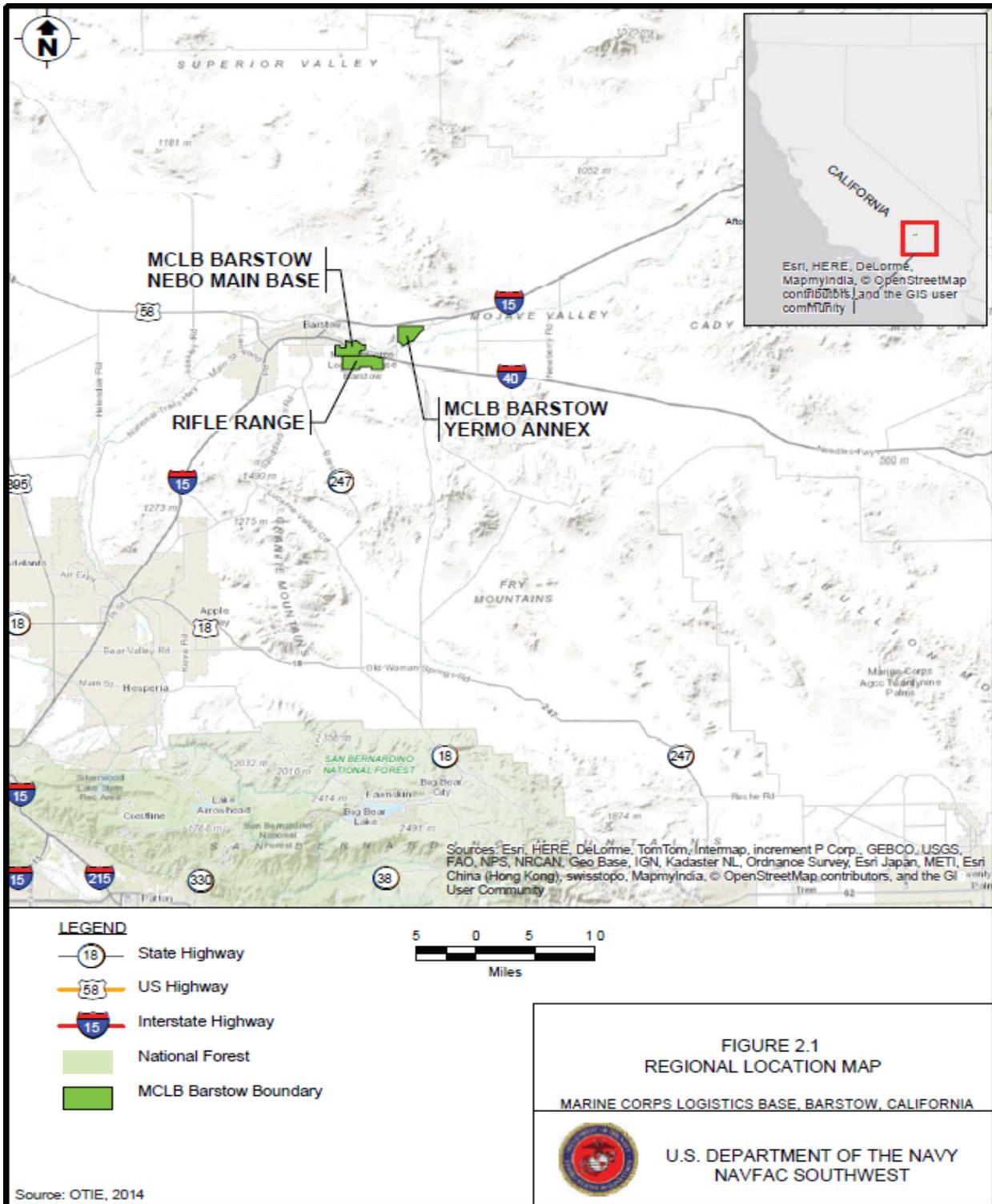


Figure 9.1 – Regional Location Map of MCLB Barstow

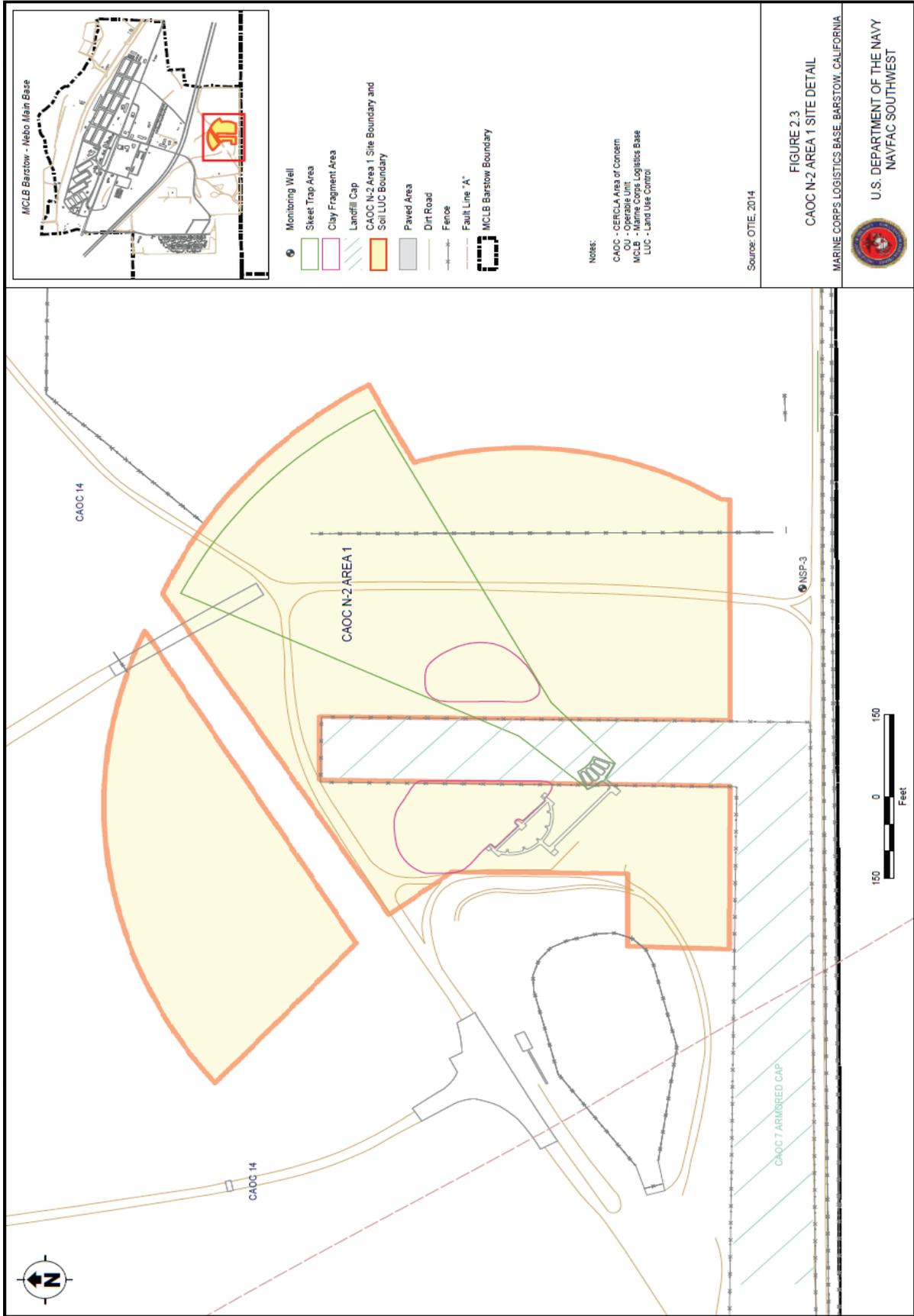


Figure 9.2 – CAOC N-2 Area 1 Site Map

10. Water Board Staff Meeting with Lake Arrowhead CSD on I/I Reduction – Sergio Alonso

On August 14, 2019, Water Board staff met with Lake Arrowhead Community Services District (District) staff to discuss the progress of inflow/infiltration (I/I) reduction and plans for the new fiscal year. The District is subject to a Cease 2013 and Desist Order (CDO) issued by the Water Board due to excessive influent flow during large storm events that exceeds the capacity of the outfall. As a result of this excess, the District had to bypass flows in excess of the outfall capacity by discharging to Grass Valley Creek, as described below.

The CDO has set June 30, 2026 as the date for the community sewer system's maximum daily flow to not exceed the final standard of 5.8 million gallons per day (MGD). In the meantime, the CDO also included interim standards with the most recent being that the sewer system must not exceed 8.2 MGD by March 31, 2018. Because of the drought during recent years, it was difficult for the District to determine if the attempts to meet the interim standards had been successful. The highest daily flow recorded was 6.3 MGD during the storm event on February 14, 2019. This reading is below the interim standard that went into effect in March 2018, a positive sign that the District's I/I reduction efforts have brought positive change.

The 2019 wet season brought more storm events than previous years resulting in controlled discharges by the District into Grass Valley Creek. The first of two controlled discharges into Grass Valley Creek occurred on February 4-5, 2019, with a total discharge of 342,000 gallons. The second controlled discharge occurred on February 14-17, 2019, with a total discharge of 2.756 million gallons. The cause for these controlled discharges is that the outfall capacity is rated at 4 MGD. However, during the wet season storm events the District was not able to pump 4 MGD down the outfall due to flow restrictions in the piping. There are long stretches of the outfall pipe where the pipe diameters are reduced, leading to hydraulic overloading during a severe storm event. The District is evaluating the best process for alleviating flow restrictions at the outfall line.

As part of the I/I reduction process, the District conducts inspections and maintenance of the Lake Arrowhead collection system. The District uses closed-circuit television, smoke tests, and visual inspections to determine which sections of the collection system require repairs or rehabilitation. During the 2018/2019 fiscal year, the District inspected thousands of linear feet of collection system and is currently identifying new sections to inspect for the 2019/2020 fiscal year. One of the objectives is to replace sections of the sewer system that have been in place since the 1940s.

Overall, the steps taken by the District to reduce I/I are on-track to meet the maximum daily flow final standard in the CDO. Water Board staff is satisfied with the repair and rehabilitation the District has conducted up to date and plans for the 2019/2020 fiscal year. Water Board staff look forward to reviewing alternatives the District presents for dealing with the reduction in pipe diameters for the outfall system, given its effect on controlled discharges to Grass Valley Creek.

11. Long Valley Hydrologic Advisory Committee Meeting, Mammoth – Tom Browne

On Wednesday, August 7, 2019, Tom Browne, Water Resource Control Engineer, attended the meeting of the Long Valley Hydrologic Advisory Committee (Long Valley HAC) in the Town of Mammoth. The Long Valley HAC is an open public forum that holds two meetings a year; the agenda is prepared by Mono County (chairperson Nick

Chriss) and has always included presentations by the US Geological Survey (USGS), Menlo Park office (Jim Howle and Dave Evans).

The USGS speakers gave an update on changing water levels in monitoring well 14A-25; well 14A-25 has screens in “shallow” and “deep” zones. Mammoth Community Water District (MCWD) has long claimed that pumping geothermal waters has influenced water levels and concentrations of arsenic, chloride, bromide, and boron in the shallow zone.

Mr. Howle and Mr. Evans presented a summary of the long-awaited USGS report on the interpretation of groundwater levels and chemistry in the Basalt Canyon area, where the geothermal company, Ormat, wants to install 13 more geothermal wells. The report concluded that “...water chemistry data from MCWD Well P-17 contained a small percentage of thermal water, which was consistent with a limited hydraulic connection between the shallow non-thermal and deep geothermal systems...” Representatives from Ormat disputed the report’s conclusions. Representatives of the Bureau of Land Management said they have always suspected there was communication between deep geothermal water and the shallow waters, but that they are convinced that increased geothermal extraction will not significantly impact water quality in MCWD’s supply wells.

Water Board staff recommended that the original environmental document may need to be revised and recirculated for public comment in consideration of these USGS findings. Water Board staff also noted that water utilities, in general, must be very cautious about operations that may impact water quality – in this case, increased geothermal pumping that could increase chloride, bromide, boron, and arsenic concentrations in a drinking water aquifer.

MCWD Board Vice President, Thomas Cage, recommended that an additional dual completion monitoring well be installed and offered a proposed located for a new monitoring well. MCWD Well 17 is their largest water producer with a typical summer output of 450 gallons per minute. Water Board staff supported the proposal to install another dual-completion monitoring well (screened in the shallow and deep zones).

No action was taken by the Long Valley HAC. The next meeting of the Long Valley HAC is scheduled for February 5, 2020, at the same location.

12. Standing Item – County Sanitation Districts of Los Angeles County, District No. 20 – Palmdale – *Woonhoe Kim*

This article describes the Sanitation Districts of Los Angeles County (District’s) effort to comply with Cleanup and Abatement Order (CAO) No.

R6V-2003-056 that requires the District (as discharger) and City of Los Angeles World Airport (as landowner) to remediate groundwater polluted by nitrate near the Palmdale Water Reclamation Plant (Facility). The CAO requires cleanup of the nitrate plume through delineation, containment, and remediation. It also requires abatement actions through implementation of a remedial action strategy to reduce the amount of nitrogen reaching groundwater.

Nitrate Plume Delineation

During the last year, the District initiated several efforts to further delineate the extent of the nitrate plume and determine nitrate source contributions to groundwater, particularly in the northern area of the Facility near Avenue M, northeast of Air Force Plant 42. First, the District began a source investigation study using isotopic analyses to determine the relative contribution of nitrate to groundwater from the District’s operations. In May 2019, groundwater samples were collected from several monitoring wells for analysis of

hydrogen, oxygen, sulfur, strontium, and boron isotopes. Results are anticipated in the fall or winter 2019 and may help to differentiate sources of nitrate in groundwater in the proximity of the Facility and the Palmdale agricultural site (e.g., sources such as historical Facility effluent disposed by land application and percolation, septic systems, or agriculture fertilizers reaching groundwater).

Additionally, the District coordinated with the City of Lancaster to sample additional drinking water supply wells north of the Facility site for nitrate. Samples were collected from two drinking water supply wells located at the Lancaster National Soccer Center near 30th Street East and Avenue L. Nitrate concentrations were less than the maximum contaminant level (MCL) of 10 milligrams per liter (mg/L) nitrate as nitrogen in both wells (non-detect and 2.7 mg/L, respectively). The District is also installing a new groundwater monitoring well in the vicinity of an existing dry monitoring well to refine the nitrate concentration delineation in an area with sparse monitoring data. An exploratory boring will also be installed southeast of the Facility to help establish current background concentrations of nitrate upgradient of the site. The District is preparing a workplan for submittal to the Water Board for installing the well and boring.

Extraction Strategy

Since 2007, the District has operated a groundwater extraction system as part of its cleanup strategy to remediate nitrate polluted groundwater. In 2017, two of the extraction wells were converted to monitoring wells due to decreased nitrate concentrations in those wells and diminishing extraction efficiency. As shown in Table 12.1, total groundwater pumping volumes decreased in 2017 and 2018 to 63 and 77 million gallons (MG), respectively, following the conversion of the two extraction wells. However, the efficiency of the extraction system in 2017 and 2018 (as measured by pounds [lbs] of nitrate removed per MG of extracted groundwater) remained approximately steady. The nitrate extraction efficiency was approximately 30 lbs/MG in 2017 and 2018, whereas the average extraction efficiency from 2007 to 2016 was approximately 33 lbs/MG. This suggests that the groundwater extraction system continues to operate as intended. Although total mass removal of nitrate has decreased from 2007 to 2018, the District stated that this is expected as the groundwater concentrations of nitrate have decreased over time, the area of the nitrate plume has shrunk, and some extraction wells have been taken off-line. Water Board staff recommended a review of the current extraction strategy. The District will reevaluate the extraction system after the isotopic analyses are submitted and new monitoring well installation is complete.

Table 12.1. Extraction performance since 2007

Year	Total volume extracted (MG)	Total mass nitrate removed (lbs)	Average concentration of nitrate removed (lbs/MG)
2007 ^a	179	5,859	32.7
2008 ^a	156	5,580	35.8
2009 ^a	151	5,201	34.4
2010 ^a	241	7,767	32.2
2011 ^a	214	6,687	31.2
2012 ^a	171	7,524	44.0
2013 ^a	146	5,367	36.8
2014 ^a	174	5,155	29.6
2015 ^a	132	3,662	27.7

2016 ^a	113	2,718	24.1
2017 ^b	63	1,916	30.4
2018 ^b	77	2,282	29.6

a: Operated six extraction wells (EW-1, EW-2, EW-3, EW-4, EW-5, and EW-6)

b: Operated four extraction wells (EW-1, EW-2, EW-4, and EW-6)

Furthermore, in 2019, all operating extraction well meters were switched to McCrometer magmeters, and the associated upstream and downstream piping was modified, in order to comply with the Antelope Valley Watermaster’s requirements for groundwater extractions to be recorded and reported in the recently adjudicated Antelope Valley groundwater basin.

Nitrate Plume Remediation

Isoconcentration contour maps from 2007, 2013, and 2019 show that the east-west extent of the nitrate plume (as measured by the 10 mg/L nitrate as nitrogen contour line) has decreased over time, while the north-south extent of the plume appears to have increased slightly (see Figure 12.2). The decrease in the plume’s width is attributed to ongoing monitored natural attenuation of the nitrate as well as the groundwater extraction operations. The apparent increase in the plume’s length is due to the installation of an additional monitoring well in 2014 to the north of the site. Because nitrate concentrations greater than the MCL were found at this well, an expansion of the monitoring network occurred in 2017 and 2018 to fully delineate the elevated concentrations observed in this area. The southern boundary of the 10 mg/L nitrate contour line appeared to grow from 2007 to 2013 due to use of conservative interpolation estimates.

However, the nitrate plume does not appear to be migrating downgradient and its areal extent has decreased by approximately 60 percent from 2007 to 2019 (as measured by the 10 mg/L nitrate contour). The nitrate concentrations in groundwater at the site have concomitantly decreased. The three locations where Water Board staff closely monitors nitrate plume movement are: 1) to the north, towards domestic residential wells; 2) to the northwest and the Northrup-Grumman industrial and domestic water supply wells on Air Force Plant 42; and 3) to the southwest, towards the Palmdale Water District well field, south of Air Force Plant 42.

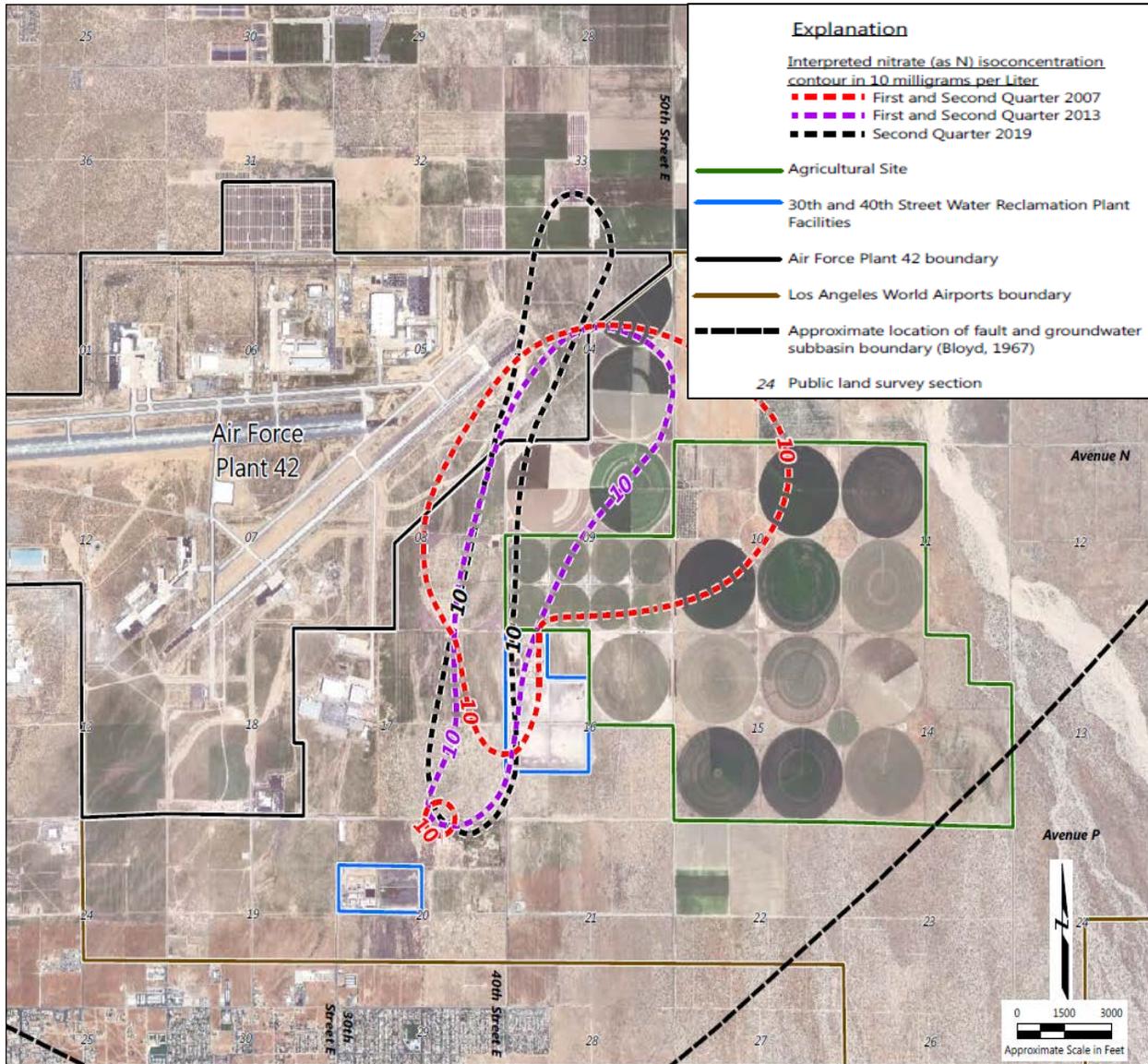


Figure 12.2 – Interpreted distribution of nitrate as nitrogen in groundwater.

13. Antelope Valley Integrated Regional Water Management Group – Prop 1 Implementation Schedule and Projects – Tiffany Steinert

The Antelope Valley Integrated Regional Water Management (IRWM) group held a stakeholder meeting in Palmdale on August 7, 2019, to discuss the Proposition (Prop) 1 implementation schedule, Prop 1 implementation projects, and comments from the pre-application workshop. The meeting was organized and attended by members of the Antelope Valley IRWM group, as well as Water Board staff, Tiffany Steinert, Engineering Geologist. Approximately 20 Antelope Valley IRWM stakeholders attended the meeting. The meeting began by informing stakeholders that grant applications for projects would likely be due by October 21, 2019, based on past funding timelines.

Prior to the August Antelope Valley IRWM meeting, the Department of Water Resources (DWR) held a meeting with the Southern Lahontan Funding Region on July 30, 2019 in Palmdale, to discuss the strengths and weaknesses of the projects applying for Prop 1 funding. The meeting was organized and attended by members of the Antelope Valley IRWM group, Fremont IRWM group, Mojave IRWM group, as well as Water Board staff,

Christina Guerra, Engineering Geologist, who spoke to the group about the Governor's Water Resiliency Order. DWR supplied each applicant with suggestions to strengthen their projects competitiveness in the Prop 1 funding process.

The Antelope Valley IRWM group discussed the general feedback received from the July meeting with DWR on Prop 1 projects and the ineligibility of the Rosamond Community Services District's (RCSD) Wastewater Rehabilitation and Groundwater Protection Project. The group was informed that DWR would be releasing a Frequently Asked Questions (FAQs) document addressing this issue along with other issues raised at the July 30th meeting with DWR.

The discussion turned to the redistribution of Prop 1, round 1, funds with RCSD now out of the running. The group decided that all funds for round 1 that were allocated to RCSD should be split evenly amongst the remaining applicants. The stakeholders applauded Water Board staff's efforts at the July 30th meeting with DWR to get the RCSD Project included for Prop 1 funds and were thankful to have our support. They also thanked Water Board staff, from the Victorville Office, for all the help provided.

The meeting concluded with Water Board staff inviting the Antelope Valley IRWM group to present the group's progress to date regarding implementation of their Salt and Nutrient Management Plan at a future Water Board meeting, to which they agreed. Water Board staff will be scheduling this Board meeting presentation in the near future. The next Antelope Valley IRWM meeting will be held on October 2, 2019.