



State and Regional

1. Personnel Report – *Eric Shay*

New Hires – Sandra Lopez, Seasonal Clerk, Victorville.

Sandra has been employed with Phoenix Engineering Co. as a Staffing Specialist for almost 14 years in Carson. Sandra has experience with administrative duties in her former office and also at Justin Bentley for 9 years. She has personnel recruitment, computer and general office skills.

Vacancies – We are currently recruiting for an Executive Assistant in our South Lake Tahoe office.

Departures – Sue Genera, Executive Assistant, South Lake Tahoe.

Sue has taken a position as the Assistant City Clerk with the City of South Lake Tahoe.

2. First Confined Animal Facility Technical Advisory Committee – *Jehiel Cass*

The first Confined Animal Facility (CAF) Technical Advisory Committee (TAC) meeting was held in the Victorville office on May 6, 2016. Excluding Water Board staff, present were 15 persons. These included six from the U.S. Department of Agriculture, Natural Resources Conservation Service, three consultants, two representing the Western United Dairymen, two representing the Mojave Desert Resources Conservation, one professor from the University of California – Davis, and one U.S. Department of Agriculture Cooperative Extension Farm Advisor. No CAF operators were present.

Water Board staff explained the background that brought us to developing a CAF General Order. While three CAFs are currently under individual waste discharge requirements, and a few provide residential well replacement water cleanup and abatement orders, the CAF General Order would apply to about 10 facilities and their operations.

Three areas where the TAC can assist in developing the CAF General Order are:

1. Nutrient Balance - Formulating the best approach to ensure that nutrients are not applied to crops in amounts exceeding the crop agronomic rate,
2. Nutrient Balance Measurement - Formulating the best approach to assess and measure waste nutrients applied to crops and the uptake of nutrients from the crop yield for comparison, and

3. Groundwater Monitoring – Assessing when, where, and how to best measure receiving groundwater to ensure farm practices are protective of water quality.

Following a good interchange of ideas, the principal points gleaned from the discussion were:

- Technical data studies for high desert farming practices in regard to crop water and nutrient demand and along with the amount of salt and nutrients in dairy wash water are lacking;
- Principles for farm nutrient management plans are generally understood;
- Applied vs. removed nutrient ratios should not be prescribed, but must be periodically assessed and adjusted;
- The range of crops grown in the high desert is generally understood to be alfalfa, sorghum and Sudan grass, and grains such as oats and barley;
- Deficit irrigation is the best way to apply water and nutrients to crops so that over application does not occur;
- Data reporting should be simple; and,
- Groundwater monitoring is expensive and will not immediately result in the performance monitoring data that demonstrate proper farming practices are being employed. It will establish historical impacts that have occurred.

Staff requested the TAC provide recommendations for performance metrics and performance monitoring that result in defensible, believable data. The next TAC meeting is planned for late June 2016. An outline of the principle General Order elements related to performance monitoring and a time line for when input is requested will be available for discussion at the June TAC meeting.

3. California Correctional Center and High Desert State Prison

- Tom Gavigan and John Steude

Water Board staff were recently informed of concerns by State Water Board, Division of Drinking Water (DDW) staff about drinking water quality at the California Correctional Center (CCC) and High Desert State Prison (HDSP). The DDW staff was asked by CCC/HDSP to approve a blending plan to mitigate elevated levels of tetrachloroethylene (PCE) in raw water at two important supply wells for the two adjoining facilities. DDW's concerns included recently rising concentrations of PCE and cis-1,2-dichloroethylene (DCE), a breakdown product of PCE. While the raw water in the wells is impacted at levels above drinking water standards, the drinking water served at the facility meets standards through on-going treatment and blending.

Staff from CCC, HDSP, California Department of Corrections and Rehabilitation (CDCR), and CDCR's environmental consultant met with DDW and Water Board staff on May 4, 2016 to collectively collaborate on how to address the PCE and DCE issues.

All parties agreed the next steps should be investigating potential sources of PCE and DCE, mapping of potential pathways between the source areas and the supply wells, and delineating the PCE and DCE contamination. Potential sources of PCE and DCE were preliminarily identified as historical dry cleaning practices, bulk chemical storage areas, and automobile service garages. CDCR staff agreed to seek funding to develop a work plan, conduct a field investigation, and prepare a report. The initial investigation is expected to be completed during the 2016/2017 fiscal year.

On May 19, 2016, Water Board staff requested a work plan from CDCR to undertake the initial investigation of PCE and DCE. Water Board staff are working on a cost recovery agreement with the CDCR to pay for regulatory oversight.

DDW staff will continue to conduct regulatory oversight of the supply water to ensure that water served meets drinking water standards. All parties will continue to collaborate to provide information to each other and develop effective methods to protect the beneficial use of groundwater as a drinking water supply.

Water Board staff are pleased to be working with DDW staff on this issue. DDW staff is interested in information typically under the Water Board's purview such as the state of the dissolved plume, and amount of residual contamination to help them evaluate the blending plan request. Water Board staff are interested in information from DDW staff, such as concentrations of chemicals in the supply wells, and supply well construction details. By working together, we can all be more informed and thereby provide better service and water quality protection.

4. (Standing Item) 2016 Bridgeport Grazing Waiver Status, Mono County - Bruce Warden

On July 11, 2012, the Water Board renewed the Bridgeport Valley Grazing Waiver for a five year term. The renewed Grazing Waiver required the enrollees to focus efforts on implementing grazing best management practices during the first four years and monitor water quality during the last year. The Grazing Waiver requires enrollees to demonstrate attainment of the interim water quality objective of 200 fecal coliform colony forming units/100 ml. Waiver enrollees have the 2016 grazing season to demonstrate attainment of the interim water quality objective of 200 fecal coliform colony forming units/100 ml or fully implement all feasible management practices. Water quality monitoring must be conducted during the 2016 grazing season to indicate if the interim water quality objective is being attained.

The Grazing Waiver requires enrollees to submit a Grazing Management Practice Implementation Annual Report by March 15 of each year, providing information on practices implemented and planned through 2017. All seven enrolled ranches submitted the required annual reports. In 2015, enrollees reported spending \$150,000, for a total of \$964,000 since 2006, on grazing management practices and structural improvements in the Bridgeport Valley. Management Practices included stock rotation, salt placement, improved fencing, filter strips, increased herding, limited pasture, armoring stream crossings, off-stream watering, stream exclusion fencing, wetland enhancement, irrigation tail water recovery, and contour borders. Stream exclusion fencing and improved fencing were the largest capital improvements at \$375,000 and \$179,000, respectively. Future planned capital improvements at the cattle ranches include:

- Three tail water retention ponds (\$30,000)
- 3000 linear feet of exclusion fencing (\$5,000)
- Two additional stream crossings (\$10,000),

Two of the seven ranches are sheep operations that discharge to Green Creek. Surface water monitoring has shown that Green Creek is in compliance with the Water Quality Objectives contained in the Basin Plan and no further management practice implementation actions are required for those two ranches.

Water Board staff met with members of the Bridgeport Ranchers Organization (BRO) on March 7, 2016 to discuss implementation of grazing management practices, and future strategies for water quality improvements. A second meeting sponsored by BRO is scheduled for May 17, 2016 to discuss a watershed approach for coordinating grazing management practice implementation between enrolled ranches in Bridgeport Valley.

Staff anticipates more interaction with the BRO during the coming year as the next steps in the regulatory process for ranch and water quality management in the Bridgeport Valley proceed.

South Lahontan Region

5. Soledad Mountain Project – Tammy Lundquist

The Golden Queen Mining Company, LLC recently began producing gold and silver at the Soledad Mountain Project (Project), becoming California’s newest gold mine. The Project is approximately four miles south of the town of Mojave in Kern County, and is an area that has been mined sporadically for over 100 years. Golden Queen Mining Company, LLC has spent over \$140 million dollars to build the Project and will employ 180 persons as part of day to day operations.

The Water Board first adopted waste discharge requirements for the project in 1997 but plans changed and the permit was never implemented. The Water Board adopted the current waste discharge requirements in 2010. The permitted mine operations use conventional open pit mining to recover the ore, cyanide heap leach to extract the gold from the ore, and a Merrill-Crowe processing plant to recover gold and silver from the cyanide solution.



Figure 2: Soledad Mountain in background; Merrill-Crowe Plant in foreground; heap leach pad with ore to the left of the plant, and ready for ore behind and to the right of the plant

In February 2016, Golden Queen began application of a dilute cyanide solution to extract the gold and silver from the ore. The metal-bearing solution is conveyed in pipes placed beneath the heap to the facility’s Merrill-Crowe plant, which removes

In March 2015, Golden Queen secured financing to implement the Project and began mining ore, and constructing the heap leach pad and cyanide collection system. In December 2015, Golden Queen began loading the heap leach pad with crushed ore.



Figure 1: Heap leach pad being loaded with ore; black surface impoundment visible to the upper right of the heap; old mine works in foreground.



Figure 5: Cyanide solution conveyance piping. The black pipe conveys metal-bearing solution from the leach pad to the Plant, and the brown pipe conveys barren solution from the Plant back to the heap.

heap leach facility including the conveyance piping, and storm water conveyance and detention facilities. No violations were observed, and the facility was in good working order. Potential threats to surface water are unlikely as the nearest intermittent stream is located approximately 3 miles from the Project.



Figure 3: Surface Impoundment holding storm water run-off from the heap leach pad and groundwater used as "make-up" water for the cyanide solution.

has been conducted since 2007 at site monitoring wells and nearby production and domestic wells. Depth-to water measurements in the wells range from approximately 180 to 260 feet below ground surface. Vadose zone monitoring and leak detection monitoring is also conducted at certain facilities at the Project, such as the cyanide conveyance channel, to prevent potential leaks from becoming groundwater problems.

the gold and silver from the cyanide solution. After removal of the precious metals, the barren cyanide solution is returned to the heap to leach gold and silver from the ore.

In April 2016, Water Board staff inspected the Soledad Mountain Project for compliance with the Waste Discharge Requirements. Water quality compliance inspections included visual monitoring of the maintenance shop,



Figure 4: Close-up of heap leach pad being loaded with ore.

Numerous geologic studies prepared for the Project have found no evidence of shallow groundwater beneath the Soledad Mountain Project, and Soledad Mountain rises almost 1,400 feet above the surrounding desert floor. Therefore, no groundwater is expected during mining. Because the area surrounding Soledad Mountain overlies the Fremont Valley Groundwater Basin, groundwater monitoring

6. Barstow Perchlorate - *Bill Muir*

In response to the perchlorate contamination in groundwater near Barstow, Lahontan Water Board staff submitted a preliminary grant application to the State Water Board for a pilot scale system to clean up the source of perchlorate originating at 30433 Poplar Road. Recently, the State Board invited the Lahontan Water Board Region to submit a detailed application to the Site Cleanup Subaccount Program (SCAP). This application included a detailed cost estimate, a statement of work, a schedule, and a Project Execution Plan that defines the proposed scope of work. The scope of work includes the installation of a pilot scale soil flushing system at the perchlorate source area. The goal of the pilot scale system is to demonstrate the effectiveness of the proposed cleanup technology while working to achieve cleanup of the soil source area. The work would include a pilot scale soil flushing unit and groundwater extraction wells to contain any perchlorate released to the aquifer during the soil flushing process. The extracted groundwater will be treated onsite and reintroduced to the soil flushing cell to continue flushing perchlorate out of the vadose zone. The grant application was submitted on April 20, 2016. State Board staff is scheduled to update their Board on progress of the SCAP at its June 7, 2016 meeting.

In April 2016, Water Board staff conducted another quarterly sampling event of private residential wells and select City of Barstow monitoring wells to monitor the movement of the perchlorate plume from the source area southeast into the lower Soapmine Road area. Water Board staff sampled 20 City of Barstow monitoring wells and 30 private domestic wells. Based on the sampling results, the plume continues to move southeast from the source area. One private residential well south of Interstate 15 (I-15) is currently over the maximum contaminant level (MCL) for perchlorate of 6 microgram per liter ($\mu\text{g/L}$). The Lahontan Water Board currently provides bottled water to 2 residences that exceed the MCL north of I-15 near the source area. The City of Barstow currently provides bottled water to residents south of I-15 as a condition of their Cleanup and Abatement Order related to their nitrate problem. However, the City is revising their bottled water program as of July 1. Additional residents will be removed from the program due to their wells exhibiting nitrate concentrations below the 5 mg/L nitrate as nitrogen limit (averaged over four consecutive quarters) established in the Cleanup and Abatement Order. There is currently one residence that will not receive bottled water from the city beginning July 1 who has perchlorate concentrations in their private domestic well in excess of the perchlorate MCL of 6 $\mu\text{g/L}$ and, the Lahontan Water Board staff are requesting State Board staff amend the contract to add this residence for receipt of bottled water.

7. City of Victorville, Department of Fish and Wildlife, David Evans Associates, and Lahontan Water Board Field Meeting to Discuss Post-Construction Best Management Practice Options – *Tom Browne and Jehiel Cass*

Collaboration between Lahontan Water Board staff and the City of Victorville (City) through the Mojave River Watershed Group (MRWG) and the MS4 stormwater program yielded another positive outcome. David Evans and Associates, one of the largest

housing tract designers in the high desert (formerly Hall and Foreman), is planning to develop approximately 165 acres of native desert into single family homes in northern Victorville. The area is crossed by three significant ephemeral stream channels, the largest one approximately 100 feet wide. A civil engineer working for David Evans and Associates, had met with a plan check engineer with the City, to discuss various street and housing layouts that include detention basins, parks, and channel designs for the three ephemeral stream beds.

The new City stormwater ordinance passed in 2014 (required by the MS4 Phase II permit) requires new developments and re-developments to submit a water quality management plan, to provide more area for infiltration, and to install more post-construction stormwater best-management practices (BMPs), such as detention basins. The ordinance requires owners to maintain those post-construction BMPs as long as they own the property. The project also requires a Water Board Clean Water Act 401 water quality certification and a Department of Fish and Wildlife (DFW) streambed alteration agreement for modifying the ephemeral stream beds. City staff knew from presentations Lahontan staff have given to the MRWG that channels *erode rapidly and accelerate sediment transport* when built with unprotected sandy bottoms, narrow flow cross-section, no regular flow energy reducers, no sediment traps, and no permanent vegetation on the banks or bottom. The City engineer wanted the developers engineer to hear first-hand Water Board staff's input on what channel designs work best to minimize erosion, and to hear DFW staff's input on what channel designs work best to preserve plant and animal habitats.

The onsite meeting on April 21, 2016 with Water Board and DWF staff, (see photo) produced a very fruitful exchange of ideas, and was a more efficient and collaborative way to exchange ideas than the back-and-forth letter-writing that typically occurs during CEQA comment periods.

One of the ephemeral streams has already been channelized upstream of the project site through a housing tract immediately south of the Site for approximately 3,000 of its length, built in 2006. Intermittent storm flows are already causing unnatural erosion on the subject property. Everybody could look at the engineered channel features – steep concrete walls, unprotected sandy bottom, no flow-energy reducers, no sediment traps, little vegetation - and see how the design was contributing to erosion over the last ten years. Having the meeting in the field was the best way to share with the City and with the developer our interpretation of the term *Low-Impact Design* (LID). DFW staff stated that they prefer an engineered channel that mimics the natural course, width, and slope of the banks of the stream as much as possible - in other words, constant width, straightening, and steep concrete walls are bad designs. They also stated that adding public walk ways on the banks and intermittent pedestrian crossings enhance the aesthetic quality of the channel and encourage protection of biological diversity.



April 21 Site meeting with (from left to right) Lahontan Water Board staff Jan Zimmerman, Fish and Wildlife staff Rebecca Jones, Fish and Wildlife staff Heather Weiche (standing behind Rebecca), Victorville engineer Carlos Saenez, and David Evans Associate civil engineer Dean Paradise. Photo: Tom Browne, Lahontan Water Board staff.

8. Former George Air Force Base Land Transfer - Todd Battey

The Air Force plans to transfer a 77-acre parcel of land from the former George Air Force Base in Victorville, California, to an un-named entrepreneur. The property being considered for transfer consists of land that is undeveloped other than groundwater monitoring wells installed by the Air Force, related to the groundwater contaminant plume being addressed by the Air Force. Groundwater at the site has been impacted by trichloroethylene that migrated under the property from an adjacent site at the former air force base. There is no other history of development or hazardous materials usage or storage at the property, which is zoned for commercial and industrial use. This property is located immediately north and east of the flight line areas, and west of the Victor Valley Water Reclamation Authority treatment plant at the north end of Shay Road and just west of the Mojave River. The planned use of the property after transfer is currently unknown, but the planned land use controls are protective of all possible land uses.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) normally requires a covenant indicating that all remedial actions necessary to protect human health and the environment, with respect to any hazardous substances remaining on the property, has been taken prior to a property transfer. The Air Force is transferring this property using “early transfer” authority pursuant to CERCLA, which allows the federal government to transfer real property before all necessary cleanup activities have been completed provided certain conditions have been met. Deferral of the CERCLA covenant is allowed after the Administrator of the U.S. Environmental Protection Agency (U.S. EPA) approves that the following conditions have been met and the Governor of California concurs: 1) the property is suitable for transfer based on its intended land use, 2) the deed contains appropriate assurances relating to protectiveness and future remediation, 3) the public has had an

opportunity to comment on the proposed transfer, and 4) the deferral and transfer will not delay the response action at the property. The land use controls on the property will be further documented in a State Land Use Covenant that the Water Board will produce. Transfer of the property cannot occur until the request for deferral is approved by the U.S. EPA with the concurrence of the Governor.

The Air Force has submitted a draft final Finding of Suitability for Early Transfer (FOSET) to document environmental factors of concern at the property and to demonstrate that the proposed transfer prior to the completion of all remedial actions, with the identified land use controls and restrictions, is protective of human health and the environment. The FOSET document describes the federal deed associated with the property transfer. Covenants in the deed will prohibit the use of groundwater (except for monitoring and remediation activities), prohibit the addition of water (by percolation, injection, or infiltration), ensure continued access to property for the Air Force, and protect the remediation infrastructure. After the Air Force resolves the comments it receives from the regulatory agencies, the FOSET will be subject to a 30-day public comment period, and then the Air Force will incorporate public input into the final FOSET. Once the FOSET is finalized, Water Board staff will prepare supporting documents to be sent to the Governor's office with a Governor's Office Action Request to obtain the Governor's concurrence with the covenant deferral for the early transfer of the property. Pending approval by the U.S. EPA and the Governor's office, the property will be ready for transfer.

9. State and Federal Agencies Work Together to Approve California's Largest Mitigation "Bank" for the Protection of 4,000 Acres and to Offset Ecological Impacts – *Jan M. Zimmerman*

On May 11, 2016, the Lahontan Water Board, along with other state and federal partners, approved the Petersen Ranch Mitigation Bank – the largest mitigation bank in California at more than 4,000 acres and the first bank in the Lahontan region.

Mitigation banks are formed to protect, restore, and enhance special environmental resources, such as wetlands, streams, or other resources, to offset unavoidable impacts from projects that receive state and federal permits. Permit holders may buy "credits" from the banks when their projects, that are located elsewhere, but often within the same watershed, cause impacts on these types of environmental resources. The bank then maintains and protects the environmental resources from any future development and ensures that the resources are kept in their natural state in perpetuity.

The Petersen Ranch Mitigation Bank property drains to both the Santa Clara River and the Antelope watersheds and, in the Lahontan region, will serve the Antelope and Fremont valleys (Figure 1), as well as water sheds in the Los Angeles Region. The bank property offers credits for the mitigation of impacts to waters, such as wetlands, streams, floodplains, and open water areas, and to several types of special habitats, including chaparral, meadows and grasslands (Photo 1). Over the past five years, the

bank sponsor, Land Veritas, has worked with the Water Board, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency and the California Department of Fish & Wildlife on developing this mitigation bank, which has been thoroughly vetted by the state and federal agencies.

As the first mitigation bank in the region, Petersen Ranch comes at an opportune time to offset impacts to water resources from alternative energy and transportation development projects in the Antelope and Fremont Valleys. “Public agencies and private-sector builders will now be able to mitigate their environmental impacts by

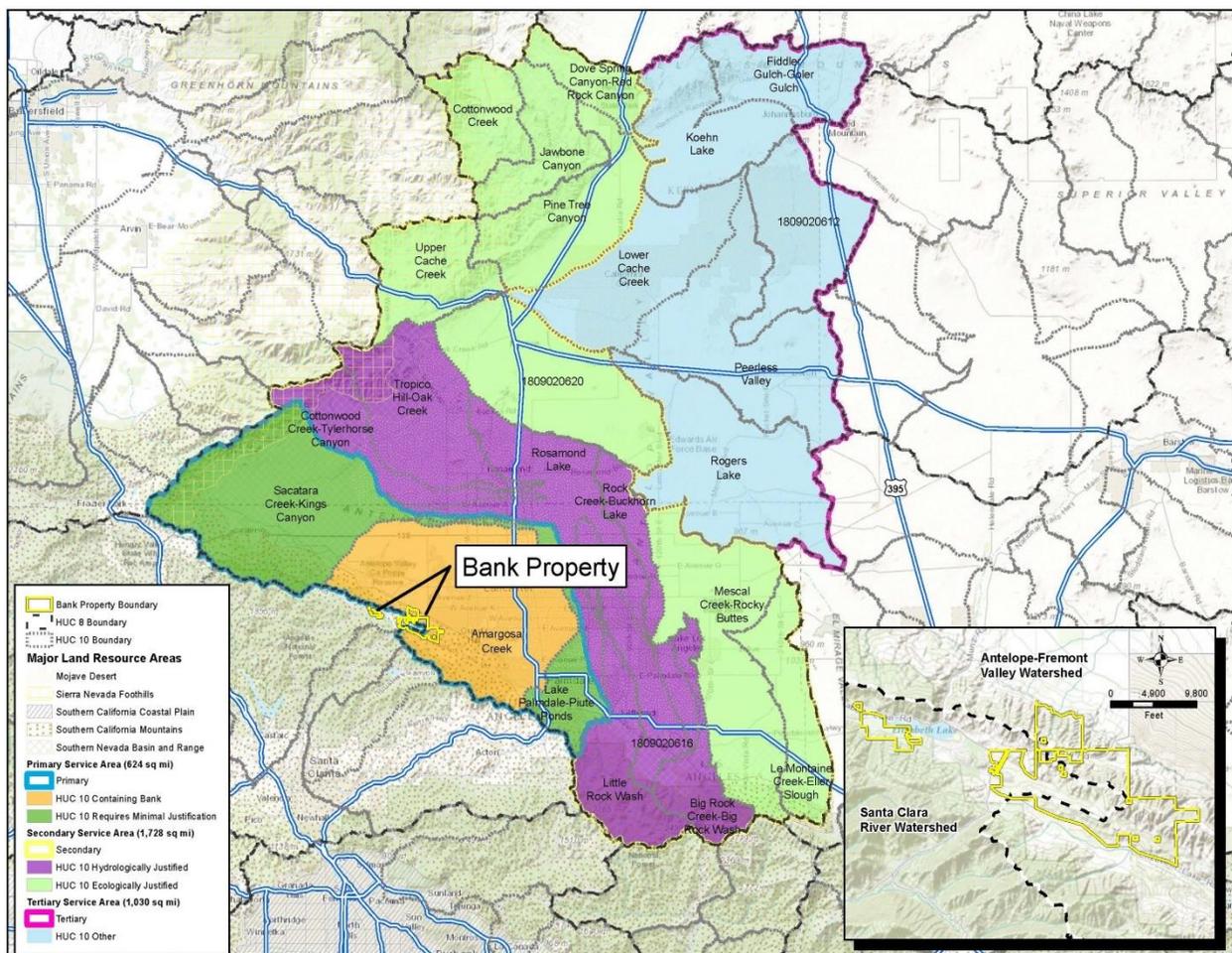


Figure 1 – Petersen Ranch Mitigation Bank properties total nearly 4,000 acres in both the Lahontan and Los Angeles regions. The bank service area in Lahontan encompasses the Antelope and Fremont watersheds.

purchasing credits, the most effective means of preserving our natural resources and protecting water quality. Having a beautiful wetland area in the eastern part of the state that is predominantly desert is wonderful as it will recharge groundwater resources, as well as protect wildlife and the environment. We are pleased to have such a magnificent

resource here in the Lahontan region.
(See press release on Lahontan Water Board website)

The Southwest Resource Management Association will be the nonprofit agency that will manage and ensure the property's environmental values are protected, with oversight by the federal and state agencies. For more information on the Petersen Ranch Mitigation Bank, see the Land Veritas webpage.

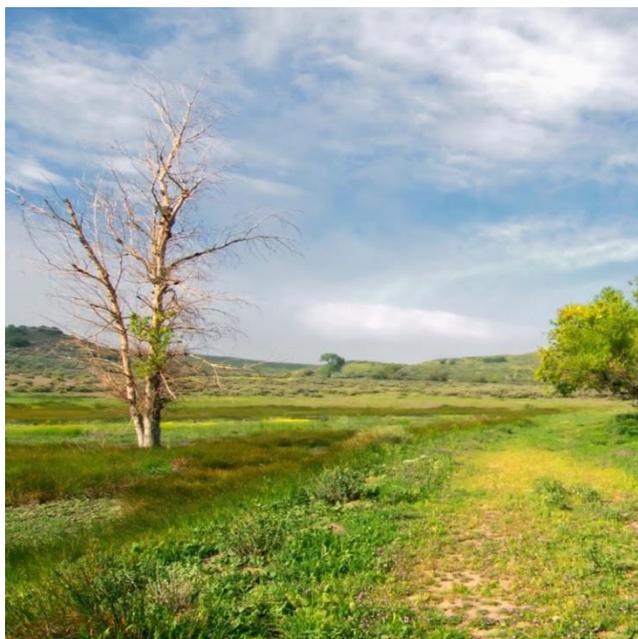


Photo 1 – Seasonal wetlands and meadow habitats are among the many types of resources that will be preserved and enhanced within the bank property. Photo provide by Land Veritas (2016).

10. Joint Agency Request to Resume Groundwater Extraction at Site 25, Edwards Air Force Base - Alonzo Poach

The Lahontan Water Board, the Department of Toxic Substances Control (DTSC), and the US Environmental Protection Agency Region 9 (USEPA) recently sent a letter signed jointly by all three agencies requesting the Air Force resume groundwater extraction at Edwards Air Force Base Site 25. The groundwater extraction and treatment system (GETS) was put on-line in 2001 as an interim measure to control contaminant migration and capture as much of the Site 25 plume as possible until a final remedy could be selected. Site 25 is a storage area for unconventional fuels. Site investigation and monitoring from the mid-1990s to present have identified significant pollution of the groundwater and unsaturated zone from the fuel storage area. Primary contaminants of concern are trichloroethene (TCE) and N-Nitrosodimethylamine (NDMA) that have produced a groundwater plume approximately 1.5 miles long.

In 2009, citing claims of plume stability, the Air Force recommended the GETS at Site 25 be shut down in order to study plume rebound and migration under natural conditions. The GETS was shut down in 2010 and currently remains off-line. The system operated consistently from 2001-2010 and monitoring data show it was successful in retarding plume migration. Review of groundwater monitoring data from 2010 to present show increasing contaminant concentrations in downgradient wells that had previously shown stable concentrations during operation of the GETS. Staff provided comments requesting the Air Force resume plume control because current monitoring data show the plume is advancing. The Air Force presented information stating the effectiveness of the GETS is limited such that it will not completely halt

plume advancement and has not agreed to resume operation. However, the Air Force has not proposed an alternate method of plume control and has not taken steps to optimize the system. The joint agency letter, elevated to Air Force management, requests the Air Force to resume and optimize GETS. The Air Force was requested to formally respond to the letter by the end of July 2016. A joint agency management level meeting with the Air Force is scheduled for June 2, 2016 in San Francisco at USEPA, Region 9 headquarters.