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Restoration Advisory Board Welcomes New Community Co-Chair

The Environmental Restoration Program (ERP) is pleased to welcome Ms. Pat Shamansky as the Restoration Advisory Board (RAB) new Community Co-Chair. Ms. Shamansky grew up in the small town of Mt. Carmel in central Pennsylvania and attended the University of Pittsburgh, graduating in 1976 with a BA in Liberal Arts. She then moved to the Bay Area and worked various jobs over the next several years, including as a laboratory technician for an agricultural chemical company and later at the Chevron Richmond Research facility.

In the mid 1980s, Pat left Chevron Research and returned to college, earning a BS in Electrical Engineering from California State University, Sacramento in 1987. Post graduation, Pat was employed as an engineer in the Chevron Richmond Refinery, where she oversaw environmental cleanup work.

Pat left Chevron to raise her family and became involved in her children's public-school education. In 2007, she was elected to the Fairfield-Suisun Unified School District Governing Board, re-elected in 2011, and retired from the School Board in 2016.

In 2017, Ms. Shamansky was inducted into the Travis AFB Honorary Commander Program for the 60th Dental Squadron and later the 821st Contingency Response Group until 2020. The combined experience of Chevron environmental work and the Travis AFB Honorary Commander Program led her to the RAB. Ms. Shamansky finds the restoration work at Travis to be most interesting and has a genuine desire to follow its progress.

In retirement, Pat enjoys spending time with her 1-year old canine friend Kiva, reading, gardening, cross-stitching, and traveling. Since COVID, she has traveled with her husband, Gene, to Cape Cod and New England, Denmark, Sweden, Norway, the desert Southwest, Prague, Vienna, and most recently Germany and Switzerland, with plans to visit Yellowstone this month.

Pat Shamansky, the new RAB Community Co-Chair and friend Kiva. (Photo credit: Pat Shamansky)

Farewell to an Award-Winning Environmental Restoration Program Team at Travis AFB

By Adriana Constantinescu, San Francisco Bay Regional Water Quality Control Board

Well, it's official. July 31, 2024, was my last working day of a rewarding career as an engineering geologist at the San Francisco Bay Regional Water Quality Control Board (Water Board). I am retiring after 23.5 years overseeing investigation and cleanup at the Department of Defense and other cleanup sites. For more than a decade, I have overseen the investigation and cleanup at Travis AFB, working closely with the ERP team that includes remedial project managers from Travis AFB, the U.S. Environmental Protection Agency (EPA), and Department of Toxic Substances Control (DTSC).

Adriana Constantinescu, San Francisco Bay Regional Water Quality Control Board. (Photo credit: Travis AFB ERP)

The environmental restoration program at Travis AFB is close to my heart because of the good work completed, which inspired me to be the best regulator I could be. I am proud that in 2016 the ERP team was nationally recognized by receiving the Air Force's General Thomas D. White Award after finalizing the 2014 *Groundwater Record of Decision* (ROD), established to clean up 19 groundwater contaminated sites across the Base. The Air Force awarded more than 20 million dollars to implement the ROD. Lonnie Duke, the former remedial project manager, described the success as "over a billion gallons of groundwater treated."

This success was reinforced by the Air Force's continuous dedication to use green, sustainable, innovative remediation technologies and biological processes that break down contaminants in groundwater. Looking at the current environmental restoration activities, I would like to recognize an important project, the Per- and Polyfluoroalkyl Substances (PFAS) Remedial Investigation (RI), Phase I, basewide and off-base. Even before starting the RI, the Air Force sampled water wells south of the Base and installed point-of-entry treatment systems at the properties with PFAS detected levels above the screening levels. The Phase I RI field sampling program was completed this summer, and the regulatory agencies will be reviewing the results soon.

My future retirement plans are also on my mind. I am a world traveler who has visited four continents and over 50 countries. I plan to enrich my collection of travel photographs by visiting even more countries. My large collection of travel photographs supports my desire to understand the natural world and reinforces my belief that protecting and restoring water quality is fundamental to all aspects of protecting the environment.

Site SD031 Remedial Investigation

Site SD031 is located in the northeastern portion of Travis AFB, near the flightline (Figure 1). Historically, Site SD031 was used to support maintenance and refueling of interceptor jets and transport planes. Jet fuel is the primary source of petroleum hydrocarbons present at the site, while solvents used for maintenance activities are the source of chlorinated volatile organic compounds (CVOCs) at the site.

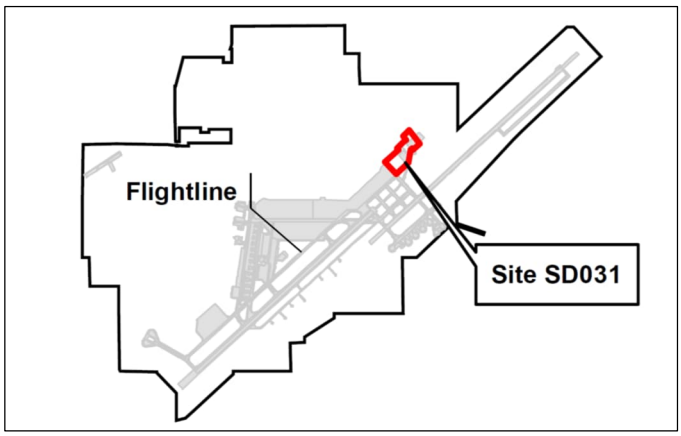


Figure 1. Location of Site SD031 at Travis AFB.
(Image credit: Jacobs)

Multiple environmental investigations have been conducted at Site SD031 since 1992. The initial RI concluded that only groundwater was impacted at the site, and volatile organic compounds (VOCs) in groundwater were chemicals of concern (COCs). However, in 2014, contaminated soil was encountered during installation of groundwater wells. In 2016 and 2017, a second RI for soil was performed to determine the nature and extent of the newly identified soil contamination. Benzo(a)pyrene and dioxin were identified as soil COCs and gasoline-related chemicals (benzene, ethylbenzene, and m-,p-xylene) were identified as soil vapor COCs. In 2021, the site boundary was expanded by approximately 20 acres because numerous soil samples collected during an investigation (2015 to 2017) of the former oil/water separator (OWS) associated with Former Site OW050 (which has

since been closed) identified petroleum hydrocarbon constituents not associated with historical practices at that site. The expanded 29-acre site is shown in Figure 2. As a result of the expansion, additional data were needed to reassess site risks and select a final remedy.

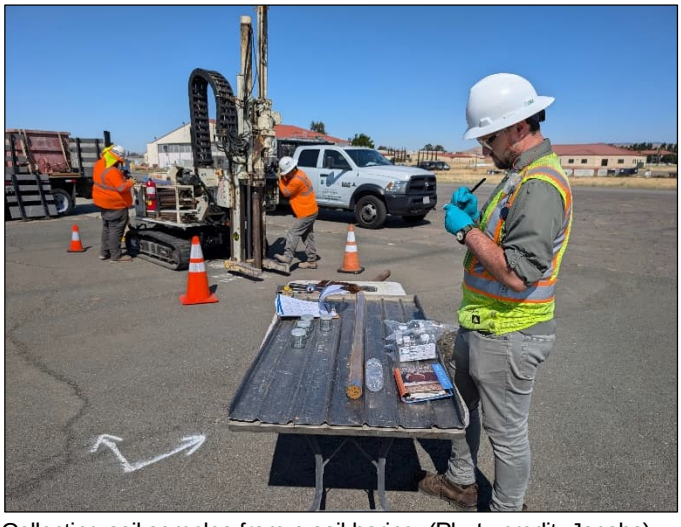
Figure 2. Location of Site SD031, showing original (orange shaded) and expanded (pink shaded) site areas (click on image to enlarge). (Image credit: Jacobs)

In 2022, a data gap investigation (DGI) was conducted using screening tools to initially investigate the new areas of the site where little or no historical data were available. The screening tools included the membrane interface probe (MIP), which includes a sensor at the tip of a drilling rod that detects VOCs in real-time as the tool is advanced into the ground. The real-time data can be used to select additional MIP locations to efficiently delineate contaminated areas and locations for laboratory samples for confirmation. The DGI goal was to identify whether petroleum hydrocarbons or CVOCs were present in the new areas so that a more targeted and efficient approach could be used for collecting analytical data during a RI. The DGI results indicated that either petroleum hydrocarbons or CVOCs were present at every location tested, revealed potential new petroleum hydrocarbon and CVOC source areas, and refined the potential extent of the CVOC plume. The results obtained during the DGI were used to design a targeted sampling approach for the RI, which is scheduled to extend from July 2024 to February 2025. The RI activities include the following:

- Drilling 15 soil borings to collect soil samples
- Drilling seven soil borings to collect soil samples and groundwater samples from temporary wells
- Installation and sampling of 11 groundwater monitoring wells
- Installation and sampling of seven vapor monitoring points (shallow/deep pairs)
- Collection of six co-located sediment and surface water samples

Soil, sediment, surface water, and groundwater samples collected during the RI are being analyzed for classes of chemicals historically detected at the site: VOCs, total petroleum hydrocarbons (TPH), dioxins, polycyclic aromatic hydrocarbons (PAHs), and the metals arsenic, cadmium, and lead. Soil vapor samples are being analyzed for VOCs. All the soil and groundwater sampling and one round of soil vapor sampling were performed in summer and fall 2024. A second round of soil vapor sampling, which will provide information regarding seasonal variability, and collection of sediment and surface water samples will be performed in winter 2025.

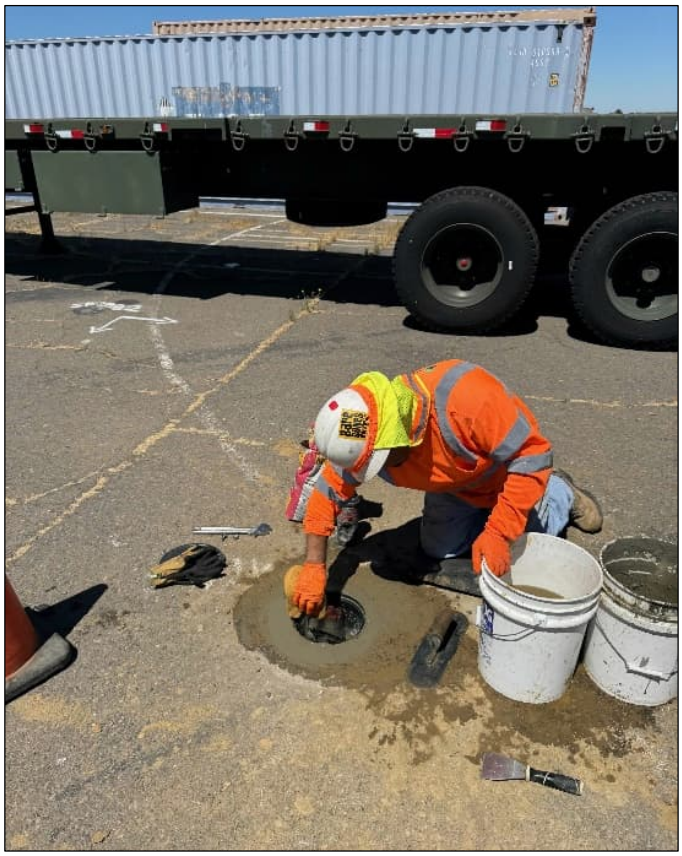
Advancing probe with sensors during the Site SD031 DGI. Real time analysis is performed as the probe advances. (Photo credit: Jacobs)



Collecting soil samples from a soil boring. (Photo credit: Jacobs)

Collecting groundwater samples from a temporary well.
(Photo credit: Jacobs)

Preparing to drill a soil boring for monitoring well installation.
(Photo credit: Jacobs)



Completing construction of a monitoring well.
(Photo credit: Jacobs)

The data collected during this RI, in conjunction with pertinent historical data, will be used to (1) identify chemicals of potential concern (COPCs) in the soil, sediment, surface water, soil vapor, and groundwater at Site SD031; (2) assess the lateral and vertical extent of impacted media at Site SD031; (3) conduct a human health risk assessment and ecological risk assessment to evaluate whether risks to human and ecological receptors are acceptable per the applicable regulatory framework; (4) if applicable, identify the COCs for impacted media; and (5) evaluate the remedial options for identified COCs in an feasibility study.

Site ST028 Data Gap Investigation

Site ST028 is a petroleum-contaminated site, which achieved closure for soils in 2017. Site ST028 is located near the flightline (Figure 3) and encompasses a fuel farm constructed in the 1940s and 1950s. The site contained 18 underground storage tanks (USTs), used at various times to store jet propellant, grade 4 (JP-4), jet propellant, grade 8 (JP-8), diesel, and waste oil. The use of JP-4 was discontinued in 1992, and all the USTs were removed between 1986 and 1997.

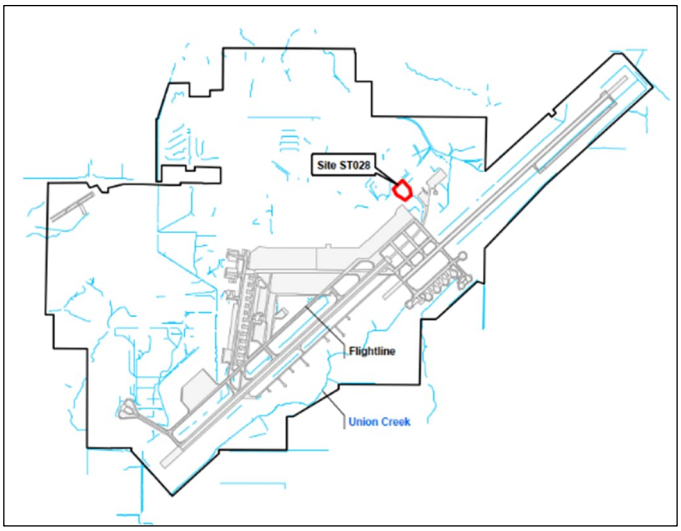


Figure 3. Location of Site ST028 at Travis AFB (click on image to enlarge). (Image credit: Jacobs)

In 2023, a DGI was conducted at Site ST028 as part of a multi-pronged effort to identify potential sources of an intermittent sheen that had been observed on Union Creek. Laboratory analysis of water samples collected from Union Creek indicated the presence of JP-4, among other petroleum products. Site ST028 was investigated because petroleum odors were also noted emitting from stormwater drop inlets located near Site ST028; JP-4 was stored in the former USTs at the site, which is upgradient of Union Creek; and there is an inactive JP-4 pipeline that crosses a stormwater conveyance line in the Site ST028 area that discharges to Union Creek. The Site ST028 DGI area is shown on Figure 4.

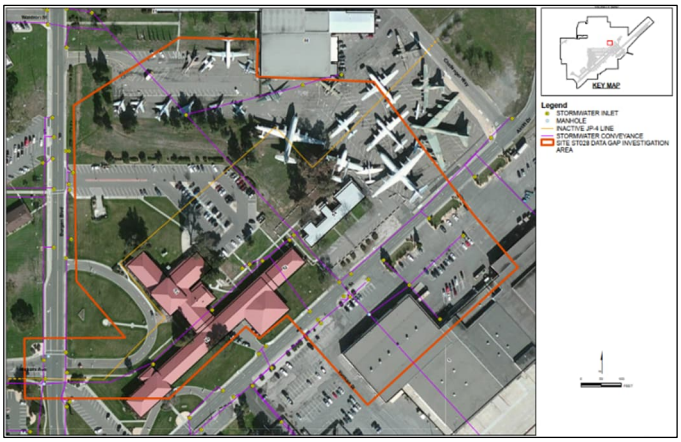


Figure 4. Site ST028 DGI area (click on image to enlarge). (Image credit: Jacobs)

In consultation with EPA, DTSC, and Water Board, the Site ST028 fieldwork was conducted in three phases from June to October 2023. While investigating the potential sources of the sheen observed at Union Creek in 2023 (as detailed below), the Air Force implemented protective measures in Union Creek where the sheen was observed, including placement of booms, absorbent pads, and skimmers in Union Creek. An earthen underflow dam was installed, and frequent monitoring and inspections of the creek were performed. The stormwater conveyance system was inspected to identify damage, and necessary repairs to the system were conducted in summer 2024.

During Phase 1 (June 2023), 61 passive soil gas (PSG) samplers were deployed and analyzed for VOCs, diesel, and gasoline. The PSG samplers targeted the inactive JP-4 line and stormwater conveyance line. The PSG samplers were used as a preliminary screening tool to identify potential petroleum hydrocarbon sources. The PSG samplers, which include a medium that sorbs VOCs, are placed at the bottom of a 3-foot-deep hole created with a hand-held drill. The PSG samplers were then retrieved after 2 weeks and analyzed in the laboratory. The PSG results were used to identify areas of relatively higher contaminant mass and were used to select Phase 2 sampling locations. An example of the passive soil gas results is provided in Figure 5. Greater VOC mass results suggest a greater potential for VOC contamination in soil and groundwater below the PSG samplers.

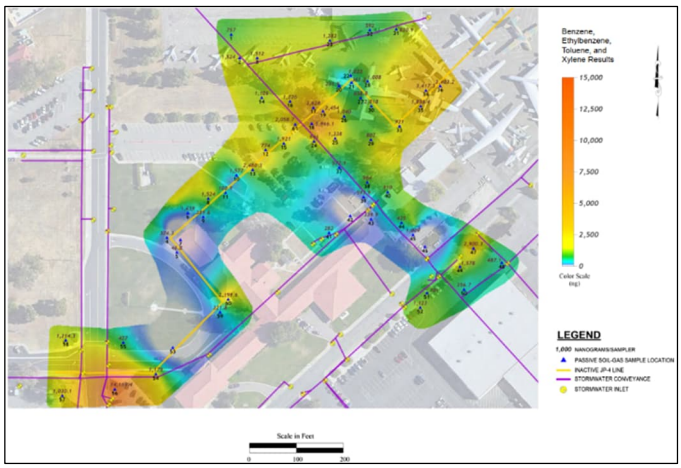


Figure 5. Passive soil gas results for benzene, ethylbenzene, toluene, and xylenes (click on image to enlarge). (Image credit: Jacobs)

During Phase 2 (July 2023), nine soil borings were selected for soil and grab groundwater sampling based on the Phase 1 results. Soil and grab groundwater samples collected from the soil borings were analyzed for VOCs, JP-4, gasoline, diesel, motor oil, and PAHs. In soil, no analytes were detected above project screening levels (PSLs), and JP-4 was not detected. In groundwater, analytes exceeded their respective PSLs at only three locations. Diesel concentrations exceeded PSLs at three locations, and benzo(a)pyrene (a PAH) exceeded the PSL at one location. JP-4 was not detected in groundwater.

During Phase 3 (September and October 2023), four new monitoring wells were installed to target the areas where the highest concentrations of petroleum hydrocarbons were detected in groundwater during Phase 2. No petroleum analytes were detected at concentrations that exceeded their respective PSLs in groundwater samples collected from the new monitoring wells. Only naphthalene exceeded its PSL at one monitoring well. JP-4 was not detected in groundwater.

Overall, petroleum hydrocarbon concentrations in soil and groundwater within the Site ST028 DGI area were not indicative of a contaminant mass that would result in elevated detections of JP-4 or any other petroleum hydrocarbon at Union Creek. While TPH-D concentrations exceeded its PSL in three Phase 2 groundwater samples, elevated TPH concentrations were not confirmed by subsequent groundwater samples collected from monitoring wells installed at these boring locations. No analyte concentrations exceeded their respective PSLs in soil. Only naphthalene was detected at concentrations that slightly exceeded its PSL in groundwater samples collected from the monitoring wells, and the exceedance was only at one monitoring well. JP-4 was not detected in any soil or groundwater samples.

Retrieval of a passive soil vapor probe. (Photo credit: Jacobs)

Drilling a Phase 2 soil boring. (Photo credit: Jacobs)

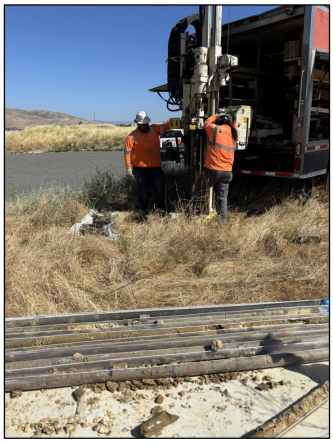
Drilling and installation of a Phase 3 monitoring well. (Photo credit: Jacobs)

Phase I RI for AFFF Areas – Fieldwork Update

The Phase I RI continues in coordination with Travis AFB regulatory stakeholders. The objective of the Phase I RI is to delineate concentrations of PFAS constituents associated with aqueous film-forming foam (AFFF) areas in soil, groundwater, surface water, and sediment, and provide a better understanding of their presence in the environment. The RI was initiated in July 2020. To date, the RI has completed 109 monitoring well installations, 99 soil borings, 535 groundwater samples, 20 surface water and sediment sample locations, and 8 lysimeter installations.

Lysimeter sampling continued after Field Event #3, which concluded in November 2023 with three additional quarterly sampling events. Sampling events took place in January, April, and July 2024. Lysimeters are used to sample pore water (water located in the space between soil particles) found above groundwater.

A second round of groundwater measurements was completed in May 2024. These data will provide information on groundwater depth and flow direction throughout Travis AFB.



On the left, the drilling subcontractor for Oneida, Cascade Drilling, installs a temporary monitoring well for groundwater sample collection for the Fingerprinting and Background Study. On the right, the Oneida Team samples a lysimeter for pore water sample collection for the Phase I RI. (Photo credit: Oneida)

These field events require a lot of coordination. The ERP Team continues to work, discuss project results, and gain consensus on recommendations from our regulatory stakeholders—EPA, DTSC, and the Water Board.

Restoration Advisory Board Tours and Meetings

Community members are cordially invited to attend the public RAB meetings and tours. The next RAB meeting is planned to be held in-person at 3690 Hilborn Road, Fairfield, CA. The meeting is scheduled for Wednesday, April 16, 2025, at 7:00 p.m. You are welcome to arrive early to socialize with fellow RAB members, community members, and the project team. We look forward to seeing you there!

If you are interested in finding out more about the Travis AFB RAB, wish to be included on the email mailing list, or want to inquire about becoming a RAB member, let us know:

enviropa@us.af.mil

(707) 424-2812

For more information about Travis AFB's Environmental Restoration Program, contact us:

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https://www.travis.af.mil/Information/Environment/