25 September 2020

James Kiernan
Chevron Environmental Management Company
6101 Bollinger Canyon Road, C2102
San Ramon, CA 94583

NO FURTHER ACTION REQUIRED, UNOCAL #0383, 243 SOUTH WASHINGTON STREET, SONORA, TUOLUMNE COUNTY

CASE# 550086

Dear Mr. James Kiernan,

This letter confirms the completion of a site investigation and corrective action for the underground storage tank(s) formerly located at the above-described location. Thank you for your cooperation throughout this investigation. Your willingness and promptness in responding to our inquiries concerning the former underground storage tank(s) are greatly appreciated.

Based on the information in the above-referenced file and with the provision that the information provided to this agency was accurate and representative of site conditions, this agency finds that the site investigation and corrective action carried out at your underground storage tank(s) site is in compliance with the requirements of subdivisions (a) and (b) of Section 25296.10 of the Health and Safety Code and with corrective action regulations adopted pursuant to Section 25299.3 of the Health and Safety Code and that no further action related to the petroleum release(s) at the site is required.

This notice is issued pursuant to subdivision (g) of Section 25296.10 of the Health and Safety Code. The Underground Storage Tank (UST) Cleanup Fund will not reimburse claims for corrective action costs submitted more than 365 days after the date of this letter or issuance or activation of the Fund's Letter of Commitment, whichever occurs later, unless either:

1. Claims are submitted pursuant to Section 25299.57, subdivision (k) (reopened UST case); or

2. Submission within the timeframe was beyond the claimant's reasonable control, ongoing work is required for closure that will delay submission of claims beyond 365 days, or it would be unreasonable or inequitable to impose the 365-day time period.

Please contact our office if you have any questions regarding this matter.

Sincerely,

for Patrick Pulupa, Executive Officer

Enclosure: Regional Board Closure Concurrence

cc: Technical Staff, UST Cleanup Fund, State Water Resources Control Board, Sacramento
Erwynn Rueda, Tuolumne County Environmental Health Department, Sonora
Komal Dixit, Arcadis, email

TO: Case File

FROM: Christopher Flower, P.G.
Engineering Geologist
INVESTIGATION, CLEANUP, AND ENFORCEMENT SECTION

(Updated by Benjamin Lehmann
Engineering Geologist)

DATE: 22 September 2020

SUBJECT: NO FURTHER ACTION REQUIRED MEMORANDUM, UNDERGROUND STORAGE TANK, UNOCAL #0383, 243 WASHINGTON STREET, SONORA, TUOLUMNE COUNTY, CASE #550086

Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff prepared this memo and the attached checklist in response to a request for "No Further Action" submitted by ARCADIS on behalf of Chevron Environmental Management Company (Chevron) for the unauthorized underground storage tank (UST) release at 243 Washington Street, Sonora, Tuolumne County (Site). This memo serves only as a brief summary of significant activities conducted at the Site in regard to case # 550086, and as documentation of Central Valley Water Board staff concurrence with the request for "No Further Action". This memo **does not** constitute a complete summary of all Site activities. For a complete case history, one should review the files regarding this case on GeoTracker at http://geotracker.waterboards.ca.gov, at the Central Valley Water Board office and at the Tuolumne County Environmental Health Department (TCEHD). The TCEHD has no outstanding issues or objections regarding regulatory closure, and all record owners of fee title and tenants located within 200 feet of the Site's identified petroleum plume were notified of the request for closure and given 60 days to provide comments. Central Valley Water Board staff did not receive any comments regarding case closure.

CURRENT SITE USE

The Site is currently a paved parking lot for use by the City of Sonora. The Site is surrounded by commercial use land to the north, south, and west and by residential use land to the east.

CASE SITE HISTORY

In May 1993, Chevron removed eight USTs, dispenser islands, and associated piping from the Site. The USTs removed from the Site included two 10,000-gallon gasoline USTs, one 2,000-gallon waste oil UST, two 550-gallon, two 600-gallon, and one 450-gallon USTs of unknown use.

Soil samples collected after removing the USTs, dispensers, and piping indicated that soil beneath the Site had been impacted by petroleum hydrocarbons. Chevron detected up to 36,000 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as gasoline (TPH-g), up to 18,000 mg/kg total petroleum hydrocarbons as diesel (TPH-d), and up to 220 mg/kg benzene in soil samples collected from the Site. Chevron excavated approximately 880 cubic yards of soil during the UST, dispenser, and piping removal which was disposed of at Forward Landfill.

In May 1993, Chevron observed free product on infiltration groundwater at a depth of approximately 11.75 feet below ground surface (bgs) in the UST removal pit at the Site. Chevron removed approximately 1,500 gallons of water from the excavation and collected a sample of the infiltration water. Chevron detected 47,000 micrograms per liter (µg/l) TPH-g, 22,000 µg/l TPH-d, and 3,500 µg/l benzene in the water sample. Chevron also observed free product on infiltration groundwater in the dispenser excavation and removed approximately 850 gallons of infiltration water.

In March 2000, Chevron installed groundwater monitoring wells MW-1 through MW-4 at the Site to assess impact to groundwater. Monitoring wells MW-1 and MW-2 were installed to a depth of 13.5 feet bgs with a screened interval from 6 feet bgs to 13 feet bgs. Monitoring wells MW-3 and MW-4 were installed to a depth of approximately 9 feet bgs with a screened interval from 5 feet bgs to 9 feet bgs. Chevron detected up to 9,640 mg/kg TPH-g (MW-1 at 11 feet bgs), 1,850 mg/kg TPH-d (MW-1 at 11 feet bgs), and up to 40.6 mg/kg benzene (MW-1 at 11 feet bgs) in soil samples collected from the monitoring well borings.

In March 2000, Chevron measured 2.7 feet of product in monitoring well MW-1 during well development. Chevron also detected 61,000 µg/l TPH-g in monitoring well MW-2, 6,800 µg/l TPH-d, and 1,500 µg/l benzene, and 10 µg/l methyl tertiary butyl ether (MTBE) in the groundwater sample collected from well MW-2.

In September 2000, Chevron installed monitoring wells MW-6 and MW-7 to assess the extent of impact to groundwater at the Site. MW-6 and MW-7 were installed to a depth of 17 and 18 feet bgs, respectively. Chevron detected 2.7 mg/kg TPH-g in the soil sample collected from MW-6 and 2.67 mg/kg TPH-d in the soil sample collected from MW-7. Chevron did not detect petroleum hydrocarbons in the groundwater sample collected from MW-6, but did detect 490,000 µg/l TPH-g and 10 µg/l benzene in the groundwater sample collected from MW-7.

In July 2001, Chevron installed monitoring wells MW-5, MW-8, MW-9, and MW-10 to further assess the extent of impact to groundwater at the Site. MW-5, MW-8, MW-9, and MW-10 were installed to depths of 14 feet bgs, 15 feet bgs, 20 feet bgs, and 20 feet bgs, respectively. Chevron detected 5 mg/kg TPH-d in the soil sample collected from MW-5. Chevron detected

690 µg/l TPH-g and 4.5 µg/l benzene in the groundwater sample collected from well MW-9. Chevron also detected 260 µg/l TPH-g and 1.2 µg/l benzene in the groundwater sample collected from well MW-10.

In October 2002, Chevron conducted a dual phase extraction (DPE) pilot test at the Site using monitoring well MW-1 in an attempt to remove separate phase hydrocarbons from the well. Following the DPE pilot test, the free-phase product thickness in monitoring well MW-1 was comparable to historical free-phase product thickness present in the well and this method of remediation was not recommended.

In June 2003, Chevron installed monitoring wells MW-11, MW-12, and MW-13 at the Site. Monitoring wells MW-11, MW-12, and MW-13 were installed to depths of 15 feet bgs, 13 feet bgs, and 18 feet bgs, respectively. Chevron detected up to 1,700 mg/kg TPH-g, 410 mg/kg TPH-d, and 13 mg/kg benzene in the soil sample collected at a depth of 17 feet bgs in the boring for well MW-13. Chevron also detected 18,000 µg/l TPH-g and 1,700 µg/l benzene in the groundwater sample collected from well MW-13.

In December 2004, ENSR advanced soil borings Hole A, Hole B, SB-1, and installed groundwater monitoring well MW-14. Hole A and Hole B were terminated at 5 and 2 feet bgs, respectively, due to potential historical artifacts encountered during advancement. ENSR installed groundwater monitoring well MW-14 with a screen interval from 5.5 feet bgs to 15.5 feet bgs. Petroleum hydrocarbons were not detected above the laboratory detection limits in the groundwater samples collected from monitoring well MW-14 and the monitoring well was properly destroyed in January 2007.

From 18 July to 18 August 2005, Chevron conducted a dual phase extraction (DPE) pilot test to recover LNAPL from monitoring well MW-13 which was installed next to monitoring well MW-1. Prior to the DPE, monitoring well MW-1 contained 36 inches of LNAPL. At the conclusion of the pilot test LNAPL was not measurable in monitoring well MW-1 and was 0.25 inches in monitoring well MW-13. Approximately 519 gallons of LNAPL were removed from the liquid phase during this pilot test. Chevron calculated that TPH-g and benzene removed from the soil vapor phase was 3,152 pounds and 9.6 pounds, respectively.

From December 2008 through February 2009, Chevron conducted four enhanced fluid recovery (EFR) events to removed petroleum hydrocarbons from the Site. During the EFR events, Chevron removed approximately 0.3 pounds of dissolved phase petroleum hydrocarbons and 4.7 pounds of vapor phase petroleum hydrocarbons. Chevron concluded that he EFR events did not yield a significant reduction of petroleum hydrocarbon mass at the Site.

In July 2013, Chevron advanced seven soil borings in the vicinity of monitoring wells MW-1 and MW-13 to assess the extent of impact to soil to develop a Site excavation plan. Soil sample data collected from these borings were used to propose the removal of approximately 190 yards of impacted soil.

During September and October 2013, Chevron excavated approximately 300 tons of impacted soil around monitoring wells MW-1 and MW-13. During the excavation process, Chevron

removed monitoring wells MW-1 and MW-13. Chevron excavated soil until encountering bedrock at depths of approximately 15 to 17.5 feet bgs. Infiltration water was pumped from the excavation into onsite holding tanks. In October 2013, Chevron disposed of the 300 tons of impacted soil at Forward Landfill and disposed of 18,500 gallons of infiltration water at the Tuolumne Utility District wastewater treatment facility. The excavation was lined with a geotextile fabric and filled with crushed rock. Stantec estimated that approximately 27.4 pounds of benzene were removed from the Site by removing impacted soil.

In December 2013, Chevron installed monitoring well MW-15 in the vicinity of former monitoring wells MW-1 and MW-13 and in through the excavation backfill. Chevron installed monitoring well MW-15 to a depth of 17.5 feet bgs with a screen interval from approximately 7.5 feet bgs to 17.5 feet bgs. Chevron detected 12,000 µg/l TPH-g, 40 µg/l benzene, and 220 µg/l naphthalene in the initial groundwater sample collected from well MW-15.

CONSTITUENT CONCENTRATION DATA

Soil - The maximum petroleum constituent concentrations detected in soil beneath the Site are presented in Table 1 below.

Table 1 - Maximum Soil Concentrations (in milligrams per kilogram [mg/kg])

TPH-g	TPH-d	Benzene	Toluene	Ethyl-benzene	Xylenes	MTBE
36,000	**18,000**	**220**	**690**	**560**	**2,400**	**5.2**

TPH-g and TPH-d - total petroleum hydrocarbons as gasoline and diesel;
MTBE - methyl tertiary-butyl ether

Groundwater - The maximum petroleum constituent concentrations detected in groundwater beneath the Site are shown in Table 2. The results of the latest groundwater sampling event completed May 2016 are shown in Table 3.

Table 2 - Maximum Petroleum Hydrocarbons in Groundwater (in micrograms per liter [µg/l])

TPH-g	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph
490,000	**6,000**	**11,000**	**6,100**	**27,000**	**11,000**	**760**

TPH-g - Total petroleum hydrocarbons as gasoline, MTBE - methyl tertiary butyl ether,
Naph - naphthalene

Table 3 - Most Recent Groundwater Analytical Results (in µg/l)

Well	TPH-g	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	Naph
MW-2*	**4,700**	**48**	**5.0**	**59**	**39**	<5	<50
MW-7R	<100	<0.5	<0.5	<0.5	<1.5	NA	<0.5
MW-8	<100	<0.5	<0.5	<0.5	<1.5	NA	<0.5
MW-10	<100	<0.5	<0.5	<0.5	<1.5	NA	<0.5
MW-11*	**110**	<1	<1	<1	<5	NA	<10
MW-12	<100	<0.5	<0.5	<0.5	<1.5	<0.5	<0.5
MW-15*	**4,200**	**57**	**3.0**	**3.0**	**8.0**	**0.6 J**	<10

TPH-g and TPH-d – total petroleum hydrocarbons as gasoline and diesel; MTBE – methyl tertiary-butyl ether; Naph – Naphthalene; NA – not analyzed; J – estimated value;
* – monitoring result from 11 April 2019 groundwater monitoring event

GENERAL SITE CONDITIONS

Soils encountered beneath the Site during investigations consist of fill materials varying in depth from approximately 1 to 13 feet bgs. Underlying the fill material are fine-grained soil consisting of clay, sandy clay, and gravely clay to an average depth of 8 to 18 feet bgs. Beneath this layer is bedrock including fractured limestone and schist. Measured depth to groundwater at the Site has ranged from 4.5 to 15 feet bgs and generally flows toward the northwest.

The nearest domestic water supply well is located approximately 750 feet southwest of the Site. The nearest water production supply well is located approximately 2,800 feet southeast of the Site. The nearest surface water body, Sonora Creek, is located approximately 850 feet to the northwest of the Site. The residual petroleum plume appears to be well defined and attenuating. The remaining petroleum hydrocarbons in groundwater are expected to attenuate below established water quality objectives (WQO) without impacting human health or the environment.

Remaining groundwater monitoring, remedial and soil gas wells were properly abandoned on 29 and 30 July 2020. As stated in the 17 September 2020 *Well Destruction Report*, ARCADIS was unable to locate monitoring well MW-10 due to the well being covered during resurfacing activities. ARCADIS was unable to locate the well with standard electromagnetic locating methods or with ground-penetrating radar. TCEHD was notified regarding the missing monitoring well and is in concurrence with regulatory closure.

LOW-THREAT UST CASE CLOSURE POLICY (*LTCP*) EVALUATION

In the 28 June 2019 *Second Quarter 2019 Groundwater Monitoring Report and Request for Closure* (*NFAR Report*), ARCADIS states that the Site meets criteria necessary for closure as outlined in the *LTCP.* Central Valley Water Board staff concurs with ARCADIS' recommendation that the Site should be closed.

- **General Criteria** - This Site meets the eight General Criteria for closure as outlined in the *LTCP*. The Site is located within the Tuolumne Utility District (TUD) public water system.

There are no water supply wells identified within 1,000 feet of the Site. The nearest surface water body, Sonora Creek, is located approximately 850 feet northwest of the Site.

- **Media Specific Criteria** - This Site meets the three Media Specific Criteria as outlined in items 1 through 3 below for case closure under the *LTCP*.

    1. **Groundwater** – The residual petroleum hydrocarbon plume is less than 100 feet in length, the nearest surface water body or water well is greater than 250 feet away and free product is not present at the Site. Therefore, the Site meets groundwater media-specific criteria 1 of the *LTCP.*

    2. **Petroleum Vapor Intrusion to Indoor Air** – The Site meets Scenario 3 in Appendix 3 of the *LTCP*. Depth to groundwater is greater than 5 feet bgs and benzene concentrations in groundwater are less than 100 µg/l. Total petroleum hydrocarbons in the upper 10 feet of soil are less than 100 mg/kg. Additionally, the Site is currently a paved parking lot of the City of Sonora and there are no existing structures or plans for redevelopment.

    3. **Direct Contact and Outdoor Air Exposure Criteria** – No analyzed petroleum constituents remain in shallow soil above the residential or commercial/industrial land use screening levels outlined in Table 1 of the *LTCP*.

CONCLUSIONS

A release of petroleum fuel occurred beneath the Site. However, the former UST system was removed and active remediation by soil excavations conducted in 1993, 1994, and 2013; free product removal in monitoring wells MW-1, MW-2, and MW-13 between 2009 and 2013; and the DPE remediation system removed an estimated 3,225 pounds of petroleum hydrocarbons from the subsurface. Approximately 20.4 pounds of LNAPL was removed from monitoring wells MW-1, MW-2, and MW-13 between 2009 and 2013. In total, approximately 3,250 pounds of petroleum hydrocarbons have been removed from the Site. Additionally, approximately 1,070 cubic yards of impacted soil and 19,200 gallons of impacted groundwater have been removed from the Site during the excavation activities and additional petroleum hydrocarbons have been destroyed through natural attenuation. While petroleum hydrocarbons remain beneath the Site, groundwater sampling data show that the impact to groundwater is defined, stable and is expected to attenuate below established WQOs within a reasonable timeframe. The nearest water supply well is located approximately 750 feet southwest of the Site. The nearest surface water body, Sonora Creek, is located approximately 850 feet to the northwest of the Site. Therefore, the remaining petroleum constituents are unlikely to pose a threat to human health or further impact waters of the state as they attenuate. Consequently, they do not justify the cost of any additional active remediation or monitoring, and Central Valley Water Board staff concurs with ARCADIS' recommendation for Site closure.