

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

EXECUTIVE OFFICER'S SUMMARY REPORT
MEETING DATE: October 14, 2015

ITEM: 7

SUBJECT: **Union Pacific Railroad Company and Crist Oil Company, Inc., for the property located at 37105 Mission Boulevard, Fremont, Alameda County – Adoption of Site Cleanup Requirements**

CHRONOLOGY: The Board has not previously considered this matter.

DISCUSSION: The Revised Tentative Order (Cleanup Team Supplemental) would require the dischargers, Union Pacific Railroad Company (UPRR), the owner of the Crist Oil site, and Crist Oil Company, Inc., the former site operator, to define the lateral and vertical extent of soil and groundwater pollution, to implement interim remedial actions, and to prepare and implement a final cleanup plan for the source property and offsite impacted properties, including protection of the Alameda County Water District's Peralta-Tyson wellfield that has been impacted with the fuel oxygenate methyl tert butyl ether (MTBE).

Separate Functions: To help ensure the fairness and impartiality of this enforcement proceeding, the functions of Water Board staff who have been overseeing this site (Cleanup Team) have been separated from those who will provide advice to the Board (Advisory Team). The Cleanup Team includes Cherie McCaulou, Cheryl Prowell, Stephen Hill, Dyan Whyte, and Yuri Won. The Advisory Team includes Alyx Karpowicz, Tamarin Austin, and me.

Background: The Crist Oil site is located in Fremont, near Alameda Creek, and in a groundwater basin that is heavily used by the Alameda County Water District as a public water supply. A petroleum bulk fueling distribution facility with several large, above-ground storage tanks operated at the site from approximately 1915 to 2005, when the tanks were removed. During site operations, unauthorized releases of petroleum caused soil and groundwater contamination. UPRR and its predecessors have owned the site during operations; Crist Oil Company operated at the site during the time of the releases. Recent data show that the District's Peralta-Tyson wellfield has been impacted by low levels of MTBE, which is also found at much higher concentrations at the site. UPRR is conducting investigations at locations between the site and the wellfield in an effort to define the extent of the contamination. Groundwater investigations have approached depths of 500 feet and nearly a mile away from the site. The lateral and vertical extent of the pollution has yet to be fully defined.

Tentative Order and Comments Received: The Cleanup Team circulated a tentative order to interested parties on August 3, 2015, and received comments from UPRR and the District (Appendix B). UPRR had substantive comments and requested several changes to the tentative order. The District's comments supported the tentative order and requested one minor change. The Cleanup Team's Response to Comments is included as Appendix C. Key comments and the Cleanup Team's responses are summarized below:

- *Naming of UPRR:* UPRR argues that there is insufficient evidence to conclude that the MTBE detected at the Peralta-Tyson wellfield can be attributed to the Crist Oil site. The Cleanup Team disagrees. It states that the release of petroleum hydrocarbons (including MTBE) at the site is well documented and that grab groundwater sample data presented in the June 5, 2015, investigation report documents that contamination extends between the site and the wellfield.
- *Need for Interim Corrective Actions:* UPRR argues that recommending and implementing interim remedial actions at this time is premature, resulting in actions that may fail or exacerbate contamination at the site. The Cleanup Team counters that interim corrective actions are a standard pro-active step in response to petroleum releases, especially when groundwater actively used as a drinking water supply is at risk.

As noted in the Cleanup Team Supplemental, the Cleanup Team met with UPRR representatives on October 1. Based on that meeting, the Cleanup Team has further revised the Revised Tentative Order in Appendix A and attached it to the Supplemental as the October 6, 2015, Revised Tentative Order in redline/strikeout format. The Cleanup Team will discuss the October 6, 2015, Revised Tentative Order with UPRR prior to the Board meeting.

Board Hearing: I anticipate that this item will be contested at the Board hearing by UPRR. I have allotted each party (including the Cleanup Team) up to 15 minutes to present evidence, cross-examine witnesses (if warranted), and provide a closing statement at the hearing.

**RECOMMEN-
DATION:**

I will have a recommendation following the hearing.

File No. 01S0689 (CCM)

Appendices: Cleanup Team Supplemental, including October 6, 2015, Revised Tentative Order
A – Revised Tentative Order dated September 25, 2015
B – Correspondence
C – Cleanup Team's Response to Comments
D – Site Location Map

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL
BOARD SAN FRANCISCO BAY REGION

CLEANUP TEAM SUPPLEMENTAL
MEETING DATE: October 14, 2015

ITEM: **7 - SUPPLEMENTAL**

SUBJECT: **Union Pacific Railroad Company and Crist Oil Company, Inc., for the property located at 37105 Mission Boulevard, Fremont, Alameda County – Adoption of Site Cleanup Requirements**

DISCUSSION: On October 1, 2015, the Water Board's Cleanup Team met with Union Pacific Railroad Company (UPRR) representatives to discuss the Cleanup Team's Revised Tentative Order and Response to Comments, included as Appendices A and C, respectively, in the Board package. At this meeting UPRR representatives assured staff that they were moving forward as quickly as possible and that a number of tasks were well underway. However, given the complex hydrogeology and logistical challenges of drilling deep borings, they requested changes to a number of compliance dates and some modifications to task descriptions. The Cleanup Team agrees with many, but not all of UPRR's proposed revisions. The attached Revised Tentative Order reflects the accepted changes, as further modified by the Cleanup Team.

ATTACHMENT: October 6, 2015, Revised Tentative Order

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

REVISED TENTATIVE ORDER ~~9/25/15~~10/6/2015

ADOPTION OF SITE CLEANUP REQUIREMENTS for:

**UNION PACIFIC RAILROAD COMPANY
CRIST OIL COMPANY, INC.**

For the property located at:

**37105 MISSION BOULEVARD
FREMONT
ALAMEDA COUNTY**

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter Regional Water Board), finds that:

1. **Site Location:** The site is located at 37105 Mission Boulevard in Fremont, California (Site) in the historic “Niles District” (Figure 1). The Site is an approximately 0.5-acre property at the corner of Mission Boulevard (and its frontage road Vallejo Road), Sullivan Underpass, and the Union Pacific Railroad (UPRR) railroad tracks and Niles Canyon Railway Boarding Platform to the south and single family homes to the east and northwest. The Site is vacant and secured with chain-link fencing. The remaining structures at the Site include a Conex box, a dilapidated wooden shed and a warehouse with a corrugated metal roof. The Hayward Fault is located in close proximity and west of the Site. Topographic features in the Site vicinity include the East Bay Hills approximately 200-feet to the north, the Alameda Creek and the Recharge Ponds approximately 2,000-feet to the south, and the Peralta-Tyson Wellfield approximately 4,000-feet to the south of the Site.
2. **Site History:** The Site at 37105 Mission Boulevard has been owned by UPRR or its predecessors since July 17, 1893. A chronology of Site ownership and corporate mergers is presented below:
 - Central Pacific Railroad Company acquired the Property from Pacific Improvement Company on or about July 17, 1893.
 - In or around 1899, the Central Pacific Railroad Company became the Central Pacific Railway Company.
 - In or around 1959, the Central Pacific Railway Company became the Southern Pacific Company.

- On or about February 20, 1969, Southern Pacific Company merged with and into Southern Pacific Transportation Company (SPTCo). SPTCo was the surviving company and Southern Pacific Company simultaneously ceased to exist.
- On or about September 11, 1996, Southern Pacific Rail Corporation merged with the rail carriers controlled by Southern Pacific Rail Corporation (SPTCo, St. Louis Southwestern Railway Company, SPCSL Corp., and the Denver and Rio Grande Western Railroad Company) as SPTCo, and Union Pacific Corporation merged with the rail carriers controlled by Union Pacific Corporation (UPRR and Missouri Pacific Railroad Company) as UPRR.
- On or about February 1, 1998, UPRR and SPTCo merged. The surviving corporation was SPTCo. However, in accordance with the agreement on the effective date of the merger (February 1, 1998), the company name was changed from SPTCo to UPRR.

UPRR and its predecessors did not conduct operations at the property. Rather, UPRR and its predecessors leased the property to various tenants for use as petroleum bulk fueling operations for 90 years, beginning as early as 1915, based on available historical lease records. 1929 Sanborn maps indicate three aboveground storage tanks (ASTs) containing gasoline and diesel and other structures were present at the Site. One of the ASTs is reported to have had a capacity of 42,372 gallons, while the other two ASTs had capacities of 17,240 gallons each. Other historic structures features at the Site include a pump house, fuel dispensers, an oil storage structure and other related warehouses and structures. Aerial photographs dating from 1939 to 1998 confirm the presence of structures and ASTs at the Site.

Associated Oil Company and its successors leased and operated as an oil and gasoline distribution plant and service station from 1915 to 1933, and later as an oil and gasoline bulk distribution plant from 1933 to 1975. All of the successors to Associated Oil Company are not known at this time, but in 1975, Phillips Petroleum Co. (now known as Phillips 66) terminated Associated Oil Company's 1932 lease of the Site on behalf of the lessee.

Richard Aubrey Crist leased the Site starting on August 1, 1975, for "the maintenance and operation of Lessee-owned improvements and facilities for the operation of an oil and gas bulk plant" (Commercial Lease between Southern Pacific Transportation Company and R.A. Crist, dated August 5, 1975). The City of Fremont's Fire Department records from 1988, 1991 and 1993, show that Crist Oil Company, Inc., a California corporation, also conducted petroleum bulk plant operations at the Site. At some point in the early to mid-1990's, Mr. Crist, as an individual, continued his bulk petroleum business as Mission Automated Fuels at the Site until his death on November 13, 2004.

The Fremont Fire Department inspection reports for February 1993, April 2002, July 2003, and August 2004 document repeated violations for operating without permits, lack of secondary containment for 55-gallon drum storage, failure to cleanup spills as they occur, improper labeling of drums and lack of permitting for a kerosene tank. On April 2,

1996, a diesel fuel spill occurred at Site and 10 gallons spilled onto the pavement and flowed to Sullivan Underpass. During Mr. Crist's operations, the fire department responded to chemical spill incidences, and issued violations for improper storage, handling, and labeling of hazardous materials.

On December 13, 2005, Fremont Fire Department inspected removal of six ASTs, piping, and petroleum impacted soil and asphalt pavement which were transported offsite and disposed of as hazardous waste. The ASTs consisted of a 35,000-gallon gasoline tank, a 30,000-gallon gasoline tank, a 30,000-gallon diesel tank, a 500-gallon waste oil tank, and two 287-gallon kerosene tanks. Lubricants and greases were stored onsite in 55-gallon drums in the oil storage building. Inventory records show 70 drums were stored onsite. Onsite and offsite investigations conducted in between 2005 and 2015 have confirmed widespread groundwater pollution of petroleum-based fuels including the fuel oxygenate methyl-tert butyl ether (MTBE) which was a fuel additive widely used from the 1990s through 2003 when its use in California was banned.

The identified chemicals of concern include total petroleum hydrocarbons as gasoline, diesel and motor oil (TPH-g, TPH-d, TPH-mo), the fuel oxygenates MTBE and tert-butyl alcohol (TBA), benzene, toluene, ethyl benzene, and total xylenes (BTEX), naphthalene, and lead (to a lesser extent).

3. **Named Dischargers:** UPRR is named as a discharger because it is the current owner of the property, has knowledge of the discharge and the legal ability to control it. In addition, UPRR is named because it or its predecessors owned the property during the time of the activity that resulted in the discharge, had knowledge of the discharge or the activities that caused the discharge, and had the legal ability to control the discharge.

Crist Oil Company, Inc., is also named as a discharger because of substantial evidence that it discharged petroleum hydrocarbons during its operations at the Site. The same petroleum hydrocarbons (MTBE containing gasoline, diesel, motor oil and waste oil) it used in its bulk fueling plant operations are present in soil in the immediate vicinity of onsite sources (including the aboveground storage tanks, underground piping, fuel dispensers and fueling areas) and in groundwater in the immediate vicinity of and downgradient of the onsite sources. The presence of MTBE in the release indicates that at least a portion of the releases occurred during the timeframe when MTBE was widely used and Crist Oil Company, Inc. operated at the Site. Fire department records also indicate it failed to comply with hazardous waste laws.

Mr. Crist is a discharger because of substantial evidence that Mr. Crist used and discharged petroleum hydrocarbons to soil and groundwater at the Site, as documented in fire department records. In addition, the same petroleum hydrocarbons (gasoline, diesel, motor oil and waste oil) used in his bulk fueling plant operations are present in soil in the immediate vicinity of onsite sources (including the aboveground storage tanks, underground piping, fuel dispensers and fueling areas) and in groundwater in the immediate vicinity of and downgradient of the onsite sources. Mr. Crist, however, is not named to this Order because he is deceased and his estate is closed, having distributed all

of its assets, including \$444,584.46 to UPRR for environmental remediation at or near the Site pursuant to a settlement agreement between Mr. Crist's estate, heirs, and UPRR.

The historical bulk oil and gasoline distribution operations by Associated Oil Company and its successors from 1915 through 1975 may have contributed to the soil and groundwater pollution at the Site. However, there is insufficient evidence at this time to determine whether any of the spills and releases identified at the Site occurred prior to 1975 and it is therefore premature to name Associated Oil Company and its successors at this time. ..

If additional information is submitted indicating that other parties caused or permitted any waste to be discharged on the Site where it entered or could have entered waters of the state, the Regional Water Board will consider adding those parties' names to this order.

4. **Regulatory Status:** This Site is currently not subject to Regional Water Board order. In March 2013, the Alameda County Water District (ACWD) referred the case to the Regional Water Board.
5. **Site Hydrogeology:** The Site is located within the Niles Cone Groundwater Basin (Niles Cone), a local 103-square-mile basin within the Fremont groundwater area. The Fremont groundwater area occupies a major structural alluvial-filled trough between the Diablo Range to the east and the Santa Cruz Mountains to the west. This trough is bounded by two major fault systems: the Hayward fault to the east and the San Andreas Fault to the west. The Hayward Fault extends along the base of the Diablo Range foothills within 0.3 mile west of the Site.

Niles Cone is a large alluvial fan formed by the ancestral Alameda Creek, located 0.5 mile south of the Site, and by marine deposits associated with San Francisco Bay. The Niles Cone Groundwater Basin is separated by the Hayward Fault into an Above Hayward Fault (AHF) sub-basin east of the fault and a Below Hayward Fault (BHF) sub-basin west of the fault. The Hayward Fault acts as a low-permeability barrier to east-west groundwater flow. In fall 2012, groundwater elevations across the Hayward Fault were as much as 20 feet higher in the AHF sub-basin than the BHF sub-basin.

The Site is within the AHF sub-basin. Regionally, the AHF sub-basin is composed of relatively homogeneous permeable sediments that form the AHF aquifer which, has both unconfined and confined characteristics due to the presence of local low permeability layers. In the Site area, the AHF aquifer thins to the east where it pinches out against bedrock of the Diablo Range, and is constricted laterally by the Hayward Fault and Diablo Range bedrock.

The following two distinct water bearing zones are recognized at the Site:

- **Shallow Groundwater Zone** – The shallow groundwater zone encountered at the Site is an unconfined portion of the AHF aquifer. This zone consists of Quaternary alluvial sediments described above. Borehole logs indicated that the shallow groundwater zone at the Site is dominated by sandy and gravelly silts and clays with subordinate layers of sand and gravel. The shallow groundwater zone pinches out against shallow bedrock near the intersection of Nichols Avenue and Mission Boulevard and increases in thickness to the west and south of this area. Onsite, this zone ranges from less than 20 feet below ground surface (bgs) to approximately 42 feet bgs (as seen at well EW0100). Borings south of the Site to 75 feet bgs (for example, UPNCGB0310) did not penetrate the shallow groundwater zone alluvial sediments.
- **Deeper Groundwater Zone** – A weathered and/or fractured upper portion of the pebble and cobble conglomerate bedrock makes up the deeper groundwater zone at the Site. Borehole logs generally describe this unit as a silty gravel or silty sand and gravel due to decomposition in drilled samples. The total thickness of bedrock unit near the Site is unknown. USGS publications indicate that the thickness of Knoxville Formation in the Niles Quadrangle may be 2,500 feet. A boring approximately 200 feet north of the Site (UPNCGB0323) encountered this unit within 1 foot of the surface. Approximately 200 feet east of the Site the unit was encountered at 68 feet bgs. Comparable hydraulic heads between the shallow and deep groundwater zone suggest that this zone in the vicinity of the Site is likely under unconfined or semi-confined conditions.

Groundwater at the Site appears to be hydraulically connected to the ACWD's recharge quarry ponds located approximately 0.5 mile south-southeast of the Site and ACWD's Peralta-Tyson Wellfield located approximately one mile south of the Site. Groundwater elevations appear to fluctuate seasonally by up to 8 feet. Groundwater flow direction fluctuates from north to south which appears to be associated with the water levels in the recharge quarry ponds.

6. **Remedial Investigation:** Testing of soil samples collected on December 16, 2005, at the time of AST removal, near the ground surface showed concentrations of gasoline range organics (C₅ to C₁₂) ranging from 460 milligram per kilogram (mg/kg) to 3,800 mg/kg and lead at concentrations up to 580 mg/kg.

Beginning in 2007, UPRR conducted investigations to determine the lateral and vertical extent of the petroleum hydrocarbon releases that have impacted soil and groundwater at the Site and nearby offsite vicinity. Even though over 230 soil samples, 200 groundwater samples and 56 soil vapor samples have been collected, the lateral and vertical extent of the pollution is not fully defined. Additional investigations are underway to define the magnitude and extent of MTBE, gasoline, diesel, motor oil and other petroleum hydrocarbon constituents that have been detected in both shallow and deep aquifers to

depths of 400 feet below ground surface and threaten to impact ACWD's public water supply wells located a mile away from the Site.

Onsite/ Nearby Offsite Remedial Investigations

Phased remedial investigations have been conducted onsite to assess primary and secondary sources of pollution and at nearby offsite locations to assess impacts to soil and groundwater resulting from migration. The investigations have included aquifer testing, vapor intrusion evaluations, and investigations using advanced technologies.

Onsite Soil Impacts:

The highest concentrations of chemicals in soil have been found onsite and in shallow surface soil samples collected in 2006 and 2007, and include TPH-g and TPH-d concentrations of up to 10,000 mg/kg in more than 50 soil samples. The soil contamination extends from the Site's ground surface to at least 100 feet bgs.

Groundwater Impacts:

In December 2008, TPH-g and MTBE were detected onsite at maximum concentrations of 3,800,000 µg/L and 340,000 µg/L, respectively. These concentrations indicate the presence of free product or non-aqueous phase liquid (NAPL) at that time. Four years later in September 2012, the NAPL had increased at the Site and was measured at a thickness of up to 1.35 feet.

A Membrane Interface Probes (MIP) investigation accompanied with soil and groundwater sampling was performed between October and December 2009. Four of 37 MIP borings were located onsite, while the others were northwest, west, southwest and south of the Site. The depths of the borings were between 50 and 70 feet bgs. Thirteen grab groundwater samples were collected and TPH-g, TPH-d, and TPH-mo were detected at maximum concentrations of 4,800,000 µg/L, 2,000,000 µg/L, and at 490 µg/L, respectively. The maximum concentrations were found in the borings located to the west and northwest of the Site. Thirteen different volatile organic compounds (VOCs) were detected above the reporting limits in the grab water samples. These VOCs include BTEX compounds, MTBE, TBA and naphthalene.

Between September 2012 and January 2015, NAPL was measured in up to six monitoring wells at thicknesses ranging from 0.01 to 1.12 feet.

The extent of source area groundwater contamination is not currently defined. A NAPL investigation is being conducted in accordance with the March 17, 2015, *Source Area Delineation Work Plan* approved in the Water Board's April 17, 2015, directive letter.

Vapor Intrusion Evaluation (Onsite and Nearby Offsite Locations):

A vapor intrusion evaluation was conducted in 2011 and 2012, at locations onsite, nearby offsite and in a residential neighborhood northwest of Mission Boulevard

and the Site. A full suite of volatile organic compound (VOC) and TPH-gasoline analyses were analyzed in the 56 soil vapor samples collected at the Site and surrounding areas at approximately 5 and 15 feet bgs from each soil vapor sample location. TPH-g exceeded the Environmental Screening Level (ESL) for residential exposure in four samples with concentrations up to 14,000,000 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Benzene was detected at concentrations greater than the ESL at four shallow soil vapor sampling locations up to a maximum soil vapor concentration of $770 \mu\text{g}/\text{m}^3$. Benzene was also exceeded the soil vapor ESL in four deeper (14.5 feet bgs) soil vapor samples with a maximum concentration of $170 \mu\text{g}/\text{m}^3$. Tetrachloroethylene (PCE) was detected at concentrations greater than the ESLs in two soil vapor samples collected along Mission Boulevard. PCE is not found in any other onsite or offsite soil samples, nor in any groundwater samples, and is unlikely to be related to former Site operations. Soil vapor contamination has been adequately defined at this time.

Offsite Investigations

Offsite deep aquifer investigations to evaluate potential MTBE threats to the ACWD's Peralta-Tyson Wellfield began in 2014, with the installation of eight deep borings located between the Site and the wellfield.

MTBE was detected at concentrations exceeding the ESL in 17 of the 54 water samples collected at 25 foot intervals from all the borings at depths up to 400 feet bgs, including a boring located next to the Peralta-Tyson Wellfield. The MTBE likely originated at the Site where MTBE concentrations exceed $250,000 \mu\text{g}/\text{L}$ in shallow groundwater. The pattern of detections of MTBE indicate that MTBE plume may drop below the Alameda Creek and may rise again in elevation as it approaches the Peralta-Tyson Wellfield, which has production wells terminating at approximately 200 feet bgs.

Concentrations of total petroleum hydrocarbons as diesel (TPH-d) and motor oil (TPH-mo) were detected in all four borings and in 40 of the 54 water samples collected to total depths of approximately 400 feet bgs. The maximum TPH-d and TPH-mo concentrations were detected in borings located closest to the Peralta-Tyson Wellfield. It is currently unclear whether these TPH detections are attributable to releases from the Site or are an artifact of the drilling or sampling process.

The full vertical and lateral extent of groundwater contamination is not defined. A supplemental investigation is underway to install ten additional borings to depths approaching 500 feet bgs.

7. **Interim Remedial Measures:** No significant soil excavation work has been implemented at the Site to remove source contamination. The only interim remedial action implemented to date are the December 2005 facility closure, demolition of an oil storage building, removal of the ASTs, pump house, fuel dispensers, associated underground piping, and removal of portions of the asphalt pavement. In addition to the facility closure actions, NAPL was removed from one monitoring well on October 4,

2012, during a bail-down test, and absorbent socks were placed into four wells for NAPL recovery in January 2015. The socks will be inspected and replaced as needed.

NAPL remains onsite and is considered to be a continuing primary source of pollution. Petroleum saturated soil remains onsite and is a secondary source of pollution to groundwater through leaching. A *Source Area Delineation Work Plan* dated March 17, 2015, was approved by Regional Water Board staff in April 2015. The purpose of a source investigation is to identify and delineate the lateral and vertical extent of NAPL mass at the Site and vicinity. NAPL can be present in the saturated zone below the water table, as has been shown to be the case at this Site. Additionally, a *Work Plan for Shallow Bedrock Aquifer Testing* dated April 14, 2015, was approved by staff in July 2015. These investigations are needed to develop a remediation plan to remove free product to the maximum extent possible and to restore groundwater quality and prevent further impacts to the ACWD production well at the Peralta-Tyson Wellfield.

Interim remedial measures still need to be implemented at this Site to reduce the threat to water quality, public health, and the environment posed by the discharge of waste and to provide a technical basis for selecting and designing final remedial measures.

8. **Adjacent Sites:** There are 30 sites located within a two-mile radius of the Peralta-Tyson Wellfield and Above Hayward Fault sub-basin, seven of these have reported detections of MTBE. Under the oversight of the Regional Water Board, four of the sites were granted case closure letter letters and three are eligible for case closure. The Niles Food Company located at 37048 Niles Boulevard is approximately 400 feet southwest of the Site. In July 2011, the case was closed after Niles Food Company successfully demonstrated that its underlying MTBE-impacted groundwater was from the nearby Site.
9. **Basin Plan:** The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was duly adopted by the Water Board and approved by the State Water Resources Control Board, Office of Administrative Law and the U.S. EPA, where required.

The Peralta-Tyson well field operated by ACWD is located approximately 1 mile south of the source property. This well field is actively used for municipal supply. The Site is located within 0.5 mile of Alameda Creek and the Alameda Creek Quarry Ponds. Alameda Creek, located to the south of the Site, flows near the eastern and northern margins of the Niles Cone Subbasin. ACWD using the Alameda Creek Quarry Ponds as recharge ponds to store and percolate water into the underlying waters of the Niles Cone.

The existing beneficial uses of groundwater underlying and adjacent to the Site include:

- a. Agricultural supply

- b. Industrial service supply
- c. Municipal and domestic supply
- d. Industrial process supply

The existing beneficial uses of the Alameda Creek and Alameda Creek Quarry Ponds include:

- a. Agricultural supply
- b. Groundwater recharge
- c. Commercial and sport fishing
- d. Cold freshwater habitat
- e. Fish migration
- f. Preservation of rare and endangered species
- g. Fish spawning
- h. Warm freshwater habitat
- i. Wildlife habitat
- j. Water contact recreation
- k. Noncontact water recreation

10. **Other Regional Water Board Policies:** Regional Water Board Resolution No. 88-160 allows discharges of extracted, treated groundwater from site cleanups to surface waters only if it has been demonstrated that neither reclamation nor discharge to the sanitary sewer is technically and economically feasible.

Regional Water Board Resolution No. 89-39, "Sources of Drinking Water," defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high TDS, low yield, or naturally-high contaminant levels.

11. **State Water Board Policies:** State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to this discharge. It requires maintenance of high quality waters unless a lesser water quality is consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses, and will not result in exceedance of applicable water quality objectives. This order and its requirements are consistent with Resolution No. 68-16.

State Water Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304," applies to this discharge. It directs the Regional Water Boards to set cleanup levels equal to background water quality or the best water quality which is reasonable, if background levels cannot be restored. Cleanup levels other than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in exceedance of applicable water quality objectives. The remedial action plan will assess the feasibility of attaining background levels of water quality. This order and its requirements are consistent with the provisions of Resolution No. 92-49, as amended.

12. **Preliminary Cleanup Goals:** Pending the establishment of site-specific cleanup levels, preliminary cleanup goals are needed for the purpose of conducting remedial investigation and interim remedial actions. These goals should address all relevant media (e.g., groundwater, soil, and soil gas) and all relevant concerns (e.g., groundwater ingestion, migration of groundwater to surface waters, and vapor intrusion).
13. **Basis for 13304 Order:** California Water Code Section 13304 authorizes the Regional Water Board to issue orders requiring dischargers to cleanup and abate waste where the discharger has caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance.
14. **Cost Recovery:** Pursuant to California Water Code Section 13304, the dischargers are hereby notified that the Regional Water Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Regional Water Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order.
15. **California Safe Drinking Water Policy:** It is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.
16. **CEQA:** This action is an order to enforce the laws and regulations administered by the Regional Water Board. As such, this action is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resources Agency Guidelines.
17. **Notification:** The Regional Water Board has notified the dischargers and all interested agencies and persons of its intent under California Water Code Section 13304 to prescribe site cleanup requirements for the discharge, and has provided them with an opportunity to submit their written comments.

IT IS HEREBY ORDERED, pursuant to sections 13304 and 13267 of the California Water Code, that the dischargers (or its agents, successors, or assigns) shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous substances in a manner that will degrade water quality or adversely affect beneficial uses of waters of the State is prohibited.
2. Further significant migration of wastes or hazardous substances through subsurface transport to waters of the State is prohibited.
3. Activities associated with the subsurface investigation and cleanup that will cause significant adverse migration of wastes or hazardous substances are prohibited.

B. PRELIMINARY CLEANUP GOALS

The following preliminary cleanup goals shall be used to guide remedial investigation and interim remedial actions, pending establishment of site-specific cleanup levels.

1. Groundwater: Applicable screening levels such as the Regional Water Board's ESLs document. Groundwater screening levels shall incorporate at least the following exposure pathways: groundwater ingestion and vapor intrusion to indoor air. For groundwater ingestion, use applicable water quality objectives (e.g., lower of primary and secondary maximum contaminant levels, or MCLs) or, in the absence of a chemical-specific objective, equivalent drinking water levels based on toxicity and taste and odor concerns.
2. Soil: Applicable screening levels such as the Regional Water Board's ESLs document. Soil screening levels are intended to address a full range of exposure pathways, including direct exposure, nuisance, and leaching to groundwater. For purposes of this subsection, the discharger shall assume that groundwater is a potential source of drinking water.
3. Soil gas: Applicable screening levels such as the Regional Water Board's ESLs document. Soil gas screening levels are intended to address the vapor intrusion to indoor air pathway.

C. TASKS

1. COMPLETION OF SOURCE CHARACTERIZATION

COMPLIANCE DATE: ~~October 30~~November 20, 2015

Submit a Source Characterization Report that documents completion of the source delineation investigation and includes the reporting components listed in the March 17, 2015 *Source Area Delineation Work Plan*. The report shall address all the elements required in our April 16, 2015 letter, including the following:

- a) identify all confirmed and possible sources of pollution on the Site; and develop a detailed Site plan showing location of all tanks, piping, hazardous materials storage areas, fueling facilities and equipment;
- b) identify potential conduits for migration of pollution sources (i.e., natural and man-made conduits), fate and transport mechanisms and migration pathways through the subsurface and the hydrogeologic properties ~~of the weathered bedrock~~ underlying the Site and vicinity;
- e) ~~develop a three-dimensional conceptual site model depicting the lateral and vertical extent of NAPL within specific stratigraphic units across the investigated area, and mass flux calculations ~~and recommendations for source remediation~~; and utilize cross sections depicting vertical and lateral extent of NAPL and saturated soil sources;-~~
- d) ~~present the results of the bedrock aquifer testing and a groundwater flow model that has been further developed and calibrated to simulate transient conditions observed at the Site;~~
- e) ~~d)~~ identify the sensitive receptors (public and private wells) within a two-mile radius of the Site; and
- f) ~~e)~~ characterize the hydrogeology and update the conceptual site model so it can be used to evaluate remedial technologies for NAPL removal.

2. INTERIM REMEDIAL ACTION WORKPLAN FOR ONSITE POLLUTION

COMPLIANCE DATE: ~~October 30~~ December 18, 2015

Submit a workplan acceptable to the Executive Officer to evaluate interim remedial action alternatives and to recommend one or more alternatives for implementation. The workplan shall include measures to remove sources and to control risk to site workers and offsite receptors. The workplan shall include cleanup levels and describe significant implementation steps, and a proposed schedule, for the interim remedial action. ~~The workplan shall also include measures to control risk to site workers and offsite receptors.~~ Work may be phased to allow the investigation to proceed efficiently.-

3. COMPLETION OF INTERIM REMEDIAL ACTIONS FOR ONSITE POLLUTION

COMPLIANCE DATE: ~~60~~ 90 days after approval of Task 2

Complete tasks in the Task 2 workplan and submit a technical report acceptable to the Executive Officer documenting their completion and assessing the effectiveness of the interim remedial actions. For ongoing actions, such as soil vapor extraction or groundwater extraction, the report shall document start-up as opposed to completion.

4. **INTERIM REMEDIAL ACTION WORKPLAN FOR OFFSITE POLLUTION-**

COMPLIANCE DATE: ~~October~~January 30, 2015~~2016~~

Submit a workplan acceptable to the Executive Officer to evaluate interim remedial action alternatives to protect the Peralta-Tyson Wellfield and recommend one or more alternatives for potential implementation. The workplan shall ~~specify~~include a contingency plan containing specific proposed actions and implementation triggers for protection of the ACWD Peralta-Tyson Wellfield. The workplan shall include a time schedule. ~~Work may be phased to allow the investigation to proceed efficiently.~~ for implementing the contingency plan if implementation triggers are met.

5. **COMPLETION OF INTERIM REMEDIAL ACTIONS FOR OFFSITE POLLUTION**

_____~~COMPLIANCE DATE:~~ ~~90 days after approval of Task 4~~According to schedule in Task 4
workplan approved by the Executive Officer

Complete tasks in the Task 4 workplan if required under Task 4 and submit a technical report acceptable to the Executive Officer documenting their completion. For ongoing actions, such as wellhead treatment, ~~soil vapor extraction or groundwater extraction,~~ the report shall document start-up as opposed to completion.

6a. **REMEDIAL INVESTIGATION WORKPLAN**

COMPLIANCE DATE: ~~October 30~~December 18, 2015

Submit a workplan acceptable to the Executive Officer to complete the definition of the vertical and lateral extent of groundwater pollution both onsite and offsite. The workplan must include a proposal to monitor the pollution between the Site and the ACWD Peralta-Tyson Wellfield, and propose any pilot testing needed to develop remedial actions. The work plan shall specify investigation methods and a proposed time schedule. Work may be phased to allow the investigation to proceed efficiently, provided that this does not delay compliance.

6b. **COMPLETION OF REMEDIAL INVESTIGATION**

_____~~COMPLIANCE DATE:~~ ~~90 days after approval of 6a~~According to schedule in Task 6a
as approved by the Executive Officer

Complete tasks in the Task 6a workplan and submit ~~one or more~~ technical ~~report~~reports acceptable to the Executive Officer documenting their completion. The technical report shall define the vertical and lateral extent of pollution down to preliminary cleanup goals, present the results of the bedrock aquifer testing and a groundwater flow model that has been further developed and calibrated to simulate transient conditions observed at the Site, and provide an updated conceptual site model that incorporates all available data.

7a. **REMEDIAL INVESTIGATION WORKPLAN (ADDITIONAL PHASE)**

COMPLIANCE DATE: **30 days after required by Executive Officer**

Submit a workplan acceptable to the Executive Officer to complete the definition of the vertical and lateral extent of soil and groundwater pollution onsite and offsite. The workplan shall specify investigation methods and a proposed time schedule. The Executive Officer will require this workplan if the previous phase of the remedial investigation complied with the approved workplan but did not adequately define the vertical and lateral extent of soil and groundwater pollution (e.g., preliminary cleanup goals were exceeded at the most distant groundwater sampling points).

7b. **COMPLETION OF REMEDIAL INVESTIGATION (ADDITIONAL PHASE)**

COMPLIANCE DATE: **According to schedule in ~~task~~Task 7a workplan approved by the Executive Officer**

Complete tasks in the Task ~~7a~~4a workplan and submit a technical report acceptable to the Executive Officer documenting their completion. The technical report shall define the vertical and lateral extent of pollution down to preliminary cleanup goals.

8. **RISK ASSESSMENT WORKPLAN ~~INCLUDING ACWD PRODUCTION WELLFIELD~~**

COMPLIANCE DATE: **February 1, 2016**

Submit a workplan acceptable to the Executive Officer for preparation of either a screening level evaluation or a site-specific risk assessment~~-,~~ including the ACWD Peralta-Tyson Wellfield. The workplan shall include a conceptual site model (i.e., identify pathways and receptors where Site contaminants pose a potential threat to human health). If a screening level evaluation is selected, the workplan shall identify which screening levels will be used and demonstrate that they address all relevant pathways such as utility corridors and receptors for the Site.

9. **COMPLETION OF RISK ASSESSMENT ~~FOR OFFSITE POLLUTION INCLUDING ACWD PRODUCTION WELLFIELD~~**

COMPLIANCE DATE: **30 days after approval of Task 8**

Complete tasks in the Task 8 workplan and submit a technical report acceptable to the Executive Officer documenting their completion. The report shall comprise either a screening level evaluation or a site-specific risk assessment. The results of this report will help establish acceptable exposure levels, to be used in developing remedial alternatives in Task 10 below.

10. **REMEDIAL ACTION PLAN INCLUDING DRAFT CLEANUP LEVELS**

COMPLIANCE DATE: **~~May~~July 1, 2016**

Submit a technical report acceptable to the Executive Officer containing:

- a. Summary of remedial investigation
- b. Summary of risk assessment
- c. Evaluation of the installed interim remedial actions
- d. Feasibility study evaluating alternative final remedial actions
- e. Recommended final remedial actions and cleanup levels
- f. Implementation tasks and time schedule

The remedial action plan must propose remedial work that has a high probability of eliminating unacceptable threats to human health and restoring beneficial uses of water in a reasonable time, with "reasonable time" based on the severity of impact to the beneficial use (for current impacts) or the time before the beneficial use will occur (for potential future impacts). The remedial action plan must address the full extent of contamination originating at the Site, including any contamination that extends beyond the source-property boundary.

Item d shall include projections of cost, effectiveness, benefits, and impact on public health, welfare, and the environment of each alternative action.

Items a through d shall be consistent with the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 C.F.R. § 300), CERCLA guidance documents with respect to remedial investigations and feasibility studies, Health and Safety Code section 25356.1(c), and State Water Board Resolution No. 92-49 as amended ("Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304").

Item e shall consider the preliminary cleanup goals for soil and groundwater identified in finding 12 and shall address the attainability of background levels of water quality (see finding 11).

11. **Delayed Compliance:** If the discharger is delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the discharger shall promptly notify the Executive Officer, and the Regional Water Board or Executive Officer may consider revisions to this order.

D. PROVISIONS

1. **No Nuisance:** The storage, handling, treatment, or disposal of polluted soil or groundwater shall not create a nuisance as defined in Water Code section 13050(m).
2. **Good Operation and Maintenance (O&M):** The dischargers shall maintain in good working order and operate as efficiently as possible any facility or control system installed to achieve compliance with the requirements of this order.
3. **Cost Recovery:** The dischargers shall be liable, pursuant to Water Code section 13304, to the Regional Water Board for all reasonable costs actually incurred by the Regional Water Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. If the Site addressed by this Order is enrolled in a State Water Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to the procedures established in that program. Any disputes raised by the dischargers over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.
4. **Access to Site and Records:** In accordance with Water Code section 13267(c), the discharger shall permit the Regional Water Board or its authorized representative:
 - a. Entry upon premises in which any pollution source exists, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
 - b. Access to copy any records required to be kept under the requirements of this Order.
 - c. Inspection of any monitoring or remediation facilities installed in response to this Order.

- d. Sampling of any groundwater or soil that is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the dischargers.
5. **Self-Monitoring Program:** The dischargers shall comply with the Self-Monitoring Program as attached to this Order and as may be amended by the Executive Officer.
6. **Contractor / Consultant Qualifications:** All technical documents shall be signed by and stamped with the seal of a California registered geologist, a California certified engineering geologist, or a California registered civil engineer.
7. **Lab Qualifications:** All samples shall be analyzed by State-certified laboratories or laboratories accepted by the Regional Water Board using approved U.S. EPA methods for the type of analysis to be performed. Quality assurance/quality control (QA/QC) records shall be maintained for Regional Water Board review. This provision does not apply to analyses that can only reasonably be performed onsite (e.g., temperature).
8. **Document Distribution:** An electronic and paper version of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the Regional Water Board, and electronic copies shall be provided to the following agencies:
 - a. City of Fremont Fire Department
 - b. County of Alameda Environmental Health Department
 - c. Alameda County Water District

The Executive Officer may modify this distribution list as needed.

Electronic copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be uploaded to the State Water Board's GeoTracker database within five business days after submittal to the Regional Water Board. Guidance for electronic information submittal is available at:

http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal

9. **Reporting of Changed Owner or Operator:** The dischargers shall file a technical report on any changes in contact information, Site occupancy or ownership associated with the property described in this Order.
10. **Reporting of Hazardous Substance Release:** If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the dischargers

shall report such discharge to the Regional Water Board by calling (510) 622-2369.

A written report shall be filed with the Regional Water Board within five working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified.

This reporting is in addition to reporting required by law, including to the California Emergency Management Agency pursuant to the Health and Safety Code.

11. **Periodic SCR Review:** The Regional Water Board will review this Order periodically and may revise it when necessary. The dischargers may request revisions and upon review the Executive Officer may recommend that the Regional Water Board revise these requirements.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on _____.

Bruce H. Wolfe
Executive Officer

FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS ORDER MAY SUBJECT YOU TO ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO: IMPOSITION OF ADMINISTRATIVE CIVIL LIABILITY UNDER WATER CODE SECTIONS 13268 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR INJUNCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY

Attachments: Site Map
Self-Monitoring Program

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM for:

**UNION PACIFIC RAILROAD COMPANY
CRIST OIL COMPANY, INC.**

For the property located at:

**37105 MISSION BOULEVARD
FREMONT
ALAMEDA COUNTY**

1. **Authority and Purpose:** The Regional Water Board requests the technical reports required in this Self-Monitoring Program pursuant to Water Code sections 13267 and 13304. This Self-Monitoring Program is intended to document compliance with Regional Water Board Order No. XX-XXX (site cleanup requirements).
2. **Monitoring:** The discharger shall measure groundwater elevations quarterly in all monitoring wells, and shall collect and analyze representative samples of groundwater according to the following schedule:

Well #	Sampling Frequency	Analyses
UPNCMW0100	Semi-annually	8015, 8260
UPNCMW0101	Semi-annually	8015, 8260
UPNCMW0102	Semi-annually	8015, 8260
UPNCMW0103	Semi-annually	8015, 8260
UPNCMW0104	Semi-annually	8015, 8260
UPNCMW0105	Semi-annually	8015, 8260
UPNCMW0106	Semi-annually	8015, 8260
UPNCMW0107	Semi-annually	8015, 8260
UPNCMW0108	Semi-annually	8015, 8260
UPNCMW0109	Semi-annually	8015, 8260
UPNCMW0110	Semi-annually	8015, 8260
UPNCMW0111	Semi-annually	8015, 8260

Key: 8015 = EPA Method 80150B or equivalent for TPH as gasoline, diesel and motor oil (with and without silica gel cleanup)
8260 = EPA Method 8260 or equivalent for VOCs

The discharger shall sample any new monitoring or extraction wells quarterly and analyze groundwater samples for the same constituents as shown in the above table. The discharger may propose changes in the above table; any proposed changes are subject to Executive Officer approval.

3. **Quarterly Monitoring Reports:** The dischargers shall submit semi-annual monitoring reports to the Regional Water Board no later than 30 days following the end of the first half of the calendar year (e.g., report for first half of the year due August 1) and the second half of the calendar year (e.g., report for the second half of the year due January 31). The first semi-annual monitoring report shall be due on August 1, 2015. The reports shall include:
 - a. Transmittal Letter: The transmittal letter shall discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter shall be signed by the discharger's principal executive officer or his/her duly authorized representative, and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.
 - b. Groundwater Elevations: Groundwater elevation data shall be presented in tabular form, and a groundwater elevation map shall be prepared for each monitored water-bearing zone. Historical groundwater elevations shall be included in the fourth quarterly report each year.
 - c. Groundwater Analyses: Groundwater sampling data shall be presented in tabular form, and an isoconcentration map shall be prepared for one or more key contaminants for each monitored water-bearing zone, as appropriate. The report shall indicate the analytical method used, detection limits obtained for each reported constituent, and a summary of QA/QC data. Historical groundwater sampling results shall be included in each semi-annual report. The report shall describe any significant increases in contaminant concentrations since the last report, and any measures proposed to address the increases. Supporting data, such as lab data sheets, shall be included.
 - d. Groundwater Extraction: If applicable, the report shall include groundwater extraction results in tabular form, for each extraction well and for the Site as a whole, expressed in gallons per minute and total groundwater volume for the quarter. The report shall also include contaminant removal results, from groundwater extraction wells and from other remediation systems (e.g., soil vapor extraction), expressed in units of chemical mass per day and mass for the two

quarters of the reporting period. Historical mass removal results shall be included in the fourth quarterly report each year.

- e. **Status Report:** The semi-annual report shall describe relevant work completed during the reporting period (e.g., site investigation, interim remedial measures) and work planned for the following two quarters.
- 4. **Violation Reports:** If the dischargers violate requirements in the Site Cleanup Requirements, then the dischargers shall notify the Regional Water Board office by telephone as soon as practicable once the discharger has knowledge of the violation. Regional Water Board staff may, depending on violation severity, require the dischargers to submit a separate technical report on the violation within five working days of telephone notification.
- 5. **Other Reports:** The dischargers shall notify the Regional Water Board in writing prior to any Site activities, such as construction or underground tank removal, which have the potential to cause further migration of contaminants or which would provide new opportunities for Site investigation.
- 6. **Record Keeping:** The dischargers or his/her agent shall retain data generated for the above reports, including lab results and QA/QC data, for a minimum of six years after origination and shall make them available to the Regional Water Board upon request.
- 7. **SMP Revisions:** Revisions to the Self-Monitoring Program may be ordered by the Executive Officer, either on his/her own initiative or at the request of the dischargers. Prior to making SMP revisions, the Executive Officer will consider the burden, including costs, of associated self-monitoring reports relative to the benefits to be obtained from these reports.

APPENDIX A

REVISED TENTATIVE ORDER

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

REVISED TENTATIVE ORDER 9/25/15

ADOPTION OF SITE CLEANUP REQUIREMENTS for:

**UNION PACIFIC RAILROAD COMPANY
CRIST OIL COMPANY, INC.**

For the property located at:

**37105 MISSION BOULEVARD
FREMONT
ALAMEDA COUNTY**

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter Regional Water Board), finds that:

1. **Site Location:** The site is located at 37105 Mission Boulevard in Fremont, California (Site) in the historic “Niles District” (Figure 1). The Site is an approximately 0.5-acre property at the corner of Mission Boulevard (and its frontage road Vallejo Road), Sullivan Underpass, and the Union Pacific Railroad (UPRR) railroad tracks and Niles Canyon Railway Boarding Platform to the south and single family homes to the east and northwest. The Site is vacant and secured with chain-link fencing. The remaining structures at the Site include a Conex box, a dilapidated wooden shed and a warehouse with a corrugated metal roof. The Hayward Fault is located in close proximity and west of the Site. Topographic features in the Site vicinity include the East Bay Hills approximately 200-feet to the north, the Alameda Creek and the Recharge Ponds approximately 2,000-feet to the south, and the Peralta-Tyson Wellfield approximately 4,000-feet to the south of the Site.
2. **Site History:** The Site at 37105 Mission Boulevard has been owned by UPRR or its predecessors since July 17, 1893. A chronology of Site ownership and corporate mergers is presented below:
 - Central Pacific Railroad Company acquired the Property from Pacific Improvement Company on or about July 17, 1893.
 - In or around 1899, the Central Pacific Railroad Company became the Central Pacific Railway Company.
 - In or around 1959, the Central Pacific Railway Company became the Southern Pacific Company.

- On or about February 20, 1969, Southern Pacific Company merged with and into Southern Pacific Transportation Company (SPTCo). SPTCo was the surviving company and Southern Pacific Company simultaneously ceased to exist.
- On or about September 11, 1996, Southern Pacific Rail Corporation merged with the rail carriers controlled by Southern Pacific Rail Corporation (SPTCo, St. Louis Southwestern Railway Company, SPCSL Corp., and the Denver and Rio Grande Western Railroad Company) as SPTCo, and Union Pacific Corporation merged with the rail carriers controlled by Union Pacific Corporation (UPRR and Missouri Pacific Railroad Company) as UPRR.
- On or about February 1, 1998, UPRR and SPTCo merged. The surviving corporation was SPTCo. However, in accordance with the agreement on the effective date of the merger (February 1, 1998), the company name was changed from SPTCo to UPRR.

UPRR and its predecessors did not conduct operations at the property. Rather, UPRR and its predecessors leased the property to various tenants for use as petroleum bulk fueling operations for 90 years, beginning as early as 1915, based on available historical lease records. 1929 Sanborn maps indicate three aboveground storage tanks (ASTs) containing gasoline and diesel and other structures were present at the Site. One of the ASTs is reported to have had a capacity of 42,372 gallons, while the other two ASTs had capacities of 17,240 gallons each. Other historic structures features at the Site include a pump house, fuel dispensers, an oil storage structure and other related warehouses and structures. Aerial photographs dating from 1939 to 1998 confirm the presence of structures and ASTs at the Site.

Associated Oil Company and its successors leased and operated as an oil and gasoline distribution plant and service station from 1915 to 1933, and later as an oil and gasoline bulk distribution plant from 1933 to 1975. All of the successors to Associated Oil Company are not known at this time, but in 1975, Phillips Petroleum Co. (now known as Phillips 66) terminated Associated Oil Company's 1932 lease of the Site on behalf of the lessee.

Richard Aubrey Crist leased the Site starting on August 1, 1975, for "the maintenance and operation of Lessee-owned improvements and facilities for the operation of an oil and gas bulk plant" (Commercial Lease between Southern Pacific Transportation Company and R.A. Crist, dated August 5, 1975). The City of Fremont's Fire Department records from 1988, 1991 and 1993, show that Crist Oil Company, Inc., a California corporation, also conducted petroleum bulk plant operations at the Site. At some point in the early to mid-1990's, Mr. Crist, as an individual, continued his bulk petroleum business as Mission Automated Fuels at the Site until his death on November 13, 2004.

The Fremont Fire Department inspection reports for February 1993, April 2002, July 2003, and August 2004 document repeated violations for operating without permits, lack of secondary containment for 55-gallon drum storage, failure to cleanup spills as they occur, improper labeling of drums and lack of permitting for a kerosene tank. On April 2,

1996, a diesel fuel spill occurred at Site and 10 gallons spilled onto the pavement and flowed to Sullivan Underpass. During Mr. Crist's operations, the fire department responded to chemical spill incidences, and issued violations for improper storage, handling, and labeling of hazardous materials.

On December 13, 2005, Fremont Fire Department inspected removal of six ASTs, piping, and petroleum impacted soil and asphalt pavement which were transported offsite and disposed of as hazardous waste. The ASTs consisted of a 35,000-gallon gasoline tank, a 30,000-gallon gasoline tank, a 30,000-gallon diesel tank, a 500-gallon waste oil tank, and two 287-gallon kerosene tanks. Lubricants and greases were stored onsite in 55-gallon drums in the oil storage building. Inventory records show 70 drums were stored onsite. Onsite and offsite investigations conducted in between 2005 and 2015 have confirmed widespread groundwater pollution of petroleum-based fuels including the fuel oxygenate methyl-tert butyl ether (MTBE) which was a fuel additive widely used from the 1990s through 2003 when its use in California was banned.

The identified chemicals of concern include total petroleum hydrocarbons as gasoline, diesel and motor oil (TPH-g, TPH-d, TPH-mo), the fuel oxygenates MTBE and tert-butyl alcohol (TBA), benzene, toluene, ethyl benzene, and total xylenes (BTEX), naphthalene, and lead (to a lesser extent).

3. **Named Dischargers:** UPRR is named as a discharger because it is the current owner of the property, has knowledge of the discharge and the legal ability to control it. In addition, UPRR is named because it or its predecessors owned the property during the time of the activity that resulted in the discharge, had knowledge of the discharge or the activities that caused the discharge, and had the legal ability to control the discharge.

Crist Oil Company, Inc., is also named as a discharger because of substantial evidence that it discharged petroleum hydrocarbons during its operations at the Site. The same petroleum hydrocarbons (MTBE containing gasoline, diesel, motor oil and waste oil) it used in its bulk fueling plant operations are present in soil in the immediate vicinity of onsite sources (including the aboveground storage tanks, underground piping, fuel dispensers and fueling areas) and in groundwater in the immediate vicinity of and downgradient of the onsite sources. The presence of MTBE in the release indicates that at least a portion of the releases occurred during the timeframe when MTBE was widely used and Crist Oil Company, Inc. operated at the Site. Fire department records also indicate it failed to comply with hazardous waste laws.

Mr. Crist is a discharger because of substantial evidence that Mr. Crist used and discharged petroleum hydrocarbons to soil and groundwater at the Site, as documented in fire department records. In addition, the same petroleum hydrocarbons (gasoline, diesel, motor oil and waste oil) used in his bulk fueling plant operations are present in soil in the immediate vicinity of onsite sources (including the aboveground storage tanks, underground piping, fuel dispensers and fueling areas) and in groundwater in the immediate vicinity of and downgradient of the onsite sources. Mr. Crist, however, is not named to this Order because he is deceased and his estate is closed, having distributed all

of its assets, including \$444,584.46 to UPRR for environmental remediation at or near the Site pursuant to a settlement agreement between Mr. Crist's estate, heirs, and UPRR.

The historical bulk oil and gasoline distribution operations by Associated Oil Company and its successors from 1915 through 1975 may have contributed to the soil and groundwater pollution at the Site. However, there is insufficient evidence at this time to determine whether any of the spills and releases identified at the Site occurred prior to 1975 and it is therefore premature to name Associated Oil Company and its successors at this time.

If additional information is submitted indicating that other parties caused or permitted any waste to be discharged on the Site where it entered or could have entered waters of the state, the Regional Water Board will consider adding those parties' names to this order.

4. **Regulatory Status:** This Site is currently not subject to Regional Water Board order. In March 2013, the Alameda County Water District (ACWD) referred the case to the Regional Water Board.
5. **Site Hydrogeology:** The Site is located within the Niles Cone Groundwater Basin (Niles Cone), a local 103-square-mile basin within the Fremont groundwater area. The Fremont groundwater area occupies a major structural alluvial-filled trough between the Diablo Range to the east and the Santa Cruz Mountains to the west. This trough is bounded by two major fault systems: the Hayward fault to the east and the San Andreas Fault to the west. The Hayward Fault extends along the base of the Diablo Range foothills within 0.3 mile west of the Site.

Niles Cone is a large alluvial fan formed by the ancestral Alameda Creek, located 0.5 mile south of the Site, and by marine deposits associated with San Francisco Bay. The Niles Cone Groundwater Basin is separated by the Hayward Fault into an Above Hayward Fault (AHF) sub-basin east of the fault and a Below Hayward Fault (BHF) sub-basin west of the fault. The Hayward Fault acts as a low-permeability barrier to east-west groundwater flow. In fall 2012, groundwater elevations across the Hayward Fault were as much as 20 feet higher in the AHF sub-basin than the BHF sub-basin.

The Site is within the AHF sub-basin. Regionally, the AHF sub-basin is composed of relatively homogeneous permeable sediments that form the AHF aquifer which, has both unconfined and confined characteristics due to the presence of local low permeability layers. In the Site area, the AHF aquifer thins to the east where it pinches out against bedrock of the Diablo Range, and is constricted laterally by the Hayward Fault and Diablo Range bedrock.

The following two distinct water bearing zones are recognized at the Site:

- **Shallow Groundwater Zone** – The shallow groundwater zone encountered at the Site is an unconfined portion of the AHF aquifer. This zone consists of Quaternary alluvial sediments described above. Borehole logs indicated that the shallow groundwater zone at the Site is dominated by sandy and gravelly silts and clays with subordinate layers of sand and gravel. The shallow groundwater zone pinches out against shallow bedrock near the intersection of Nichols Avenue and Mission Boulevard and increases in thickness to the west and south of this area. Onsite, this zone ranges from less than 20 feet below ground surface (bgs) to approximately 42 feet bgs (as seen at well EW0100). Borings south of the Site to 75 feet bgs (for example, UPNCGB0310) did not penetrate the shallow groundwater zone alluvial sediments.
- **Deeper Groundwater Zone** – A weathered and/or fractured upper portion of the pebble and cobble conglomerate bedrock makes up the deeper groundwater zone at the Site. Borehole logs generally describe this unit as a silty gravel or silty sand and gravel due to decomposition in drilled samples. The total thickness of bedrock unit near the Site is unknown. USGS publications indicate that the thickness of Knoxville Formation in the Niles Quadrangle may be 2,500 feet. A boring approximately 200 feet north of the Site (UPNCGB0323) encountered this unit within 1 foot of the surface. Approximately 200 feet east of the Site the unit was encountered at 68 feet bgs. Comparable hydraulic heads between the shallow and deep groundwater zone suggest that this zone in the vicinity of the Site is likely under unconfined or semi-confined conditions.

Groundwater at the Site appears to be hydraulically connected to the ACWD's recharge quarry ponds located approximately 0.5 mile south-southeast of the Site and ACWD's Peralta-Tyson Wellfield located approximately one mile south of the Site. Groundwater elevations appear to fluctuate seasonally by up to 8 feet. Groundwater flow direction fluctuates from north to south which appears to be associated with the water levels in the recharge quarry ponds.

6. **Remedial Investigation:** Testing of soil samples collected on December 16, 2005, at the time of AST removal, near the ground surface showed concentrations of gasoline range organics (C₅ to C₁₂) ranging from 460 milligram per kilogram (mg/kg) to 3,800 mg/kg and lead at concentrations up to 580 mg/kg.

Beginning in 2007, UPRR conducted investigations to determine the lateral and vertical extent of the petroleum hydrocarbon releases that have impacted soil and groundwater at the Site and nearby offsite vicinity. Even though over 230 soil samples, 200 groundwater samples and 56 soil vapor samples have been collected, the lateral and vertical extent of the pollution is not fully defined. Additional investigations are underway to define the magnitude and extent of MTBE, gasoline, diesel, motor oil and other petroleum hydrocarbon constituents that have been detected in both shallow and deep aquifers to

depths of 400 feet below ground surface and threaten to impact ACWD's public water supply wells located a mile away from the Site.

Onsite/ Nearby Offsite Remedial Investigations

Phased remedial investigations have been conducted onsite to assess primary and secondary sources of pollution and at nearby offsite locations to assess impacts to soil and groundwater resulting from migration. The investigations have included aquifer testing, vapor intrusion evaluations, and investigations using advanced technologies.

Onsite Soil Impacts:

The highest concentrations of chemicals in soil have been found onsite and in shallow surface soil samples collected in 2006 and 2007, and include TPH-g and TPH-d concentrations of up to 10,000 mg/kg in more than 50 soil samples. The soil contamination extends from the Site's ground surface to at least 100 feet bgs.

Groundwater Impacts:

In December 2008, TPH-g and MTBE were detected onsite at maximum concentrations of 3,800,000 µg/L and 340,000 µg/L, respectively. These concentrations indicate the presence of free product or non-aqueous phase liquid (NAPL) at that time. Four years later in September 2012, the NAPL had increased at the Site and was measured at a thickness of up to 1.35 feet.

A Membrane Interface Probes (MIP) investigation accompanied with soil and groundwater sampling was performed between October and December 2009. Four of 37 MIP borings were located onsite, while the others were northwest, west, southwest and south of the Site. The depths of the borings were between 50 and 70 feet bgs. Thirteen grab groundwater samples were collected and TPH-g, TPH-d, and TPH-mo were detected at maximum concentrations of 4,800,000 µg/L, 2,000,000 µg/L, and at 490 µg/L, respectively. The maximum concentrations were found in the borings located to the west and northwest of the Site. Thirteen different volatile organic compounds (VOCs) were detected above the reporting limits in the grab water samples. These VOCs include BTEX compounds, MTBE, TBA and naphthalene.

Between September 2012 and January 2015, NAPL was measured in up to six monitoring wells at thicknesses ranging from 0.01 to 1.12 feet.

The extent of source area groundwater contamination is not currently defined. A NAPL investigation is being conducted in accordance with the March 17, 2015, *Source Area Delineation Work Plan* approved in the Water Board's April 17, 2015, directive letter.

Vapor Intrusion Evaluation (Onsite and Nearby Offsite Locations):

A vapor intrusion evaluation was conducted in 2011 and 2012, at locations onsite, nearby offsite and in a residential neighborhood northwest of Mission Boulevard

and the Site. A full suite of volatile organic compound (VOC) and TPH-gasoline analyses were analyzed in the 56 soil vapor samples collected at the Site and surrounding areas at approximately 5 and 15 feet bgs from each soil vapor sample location. TPH-g exceeded the Environmental Screening Level (ESL) for residential exposure in four samples with concentrations up to 14,000,000 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Benzene was detected at concentrations greater than the ESL at four shallow soil vapor sampling locations up to a maximum soil vapor concentration of $770 \mu\text{g}/\text{m}^3$. Benzene was also exceeded the soil vapor ESL in four deeper (14.5 feet bgs) soil vapor samples with a maximum concentration of $170 \mu\text{g}/\text{m}^3$. Tetrachloroethylene (PCE) was detected at concentrations greater than the ESLs in two soil vapor samples collected along Mission Boulevard. PCE is not found in any other onsite or offsite soil samples, nor in any groundwater samples, and is unlikely to be related to former Site operations. Soil vapor contamination has been adequately defined at this time.

Offsite Investigations

Offsite deep aquifer investigations to evaluate potential MTBE threats to the ACWD's Peralta-Tyson Wellfield began in 2014, with the installation of eight deep borings located between the Site and the wellfield.

MTBE was detected at concentrations exceeding the ESL in 17 of the 54 water samples collected at 25 foot intervals from all the borings at depths up to 400 feet bgs, including a boring located next to the Peralta-Tyson Wellfield. The MTBE likely originated at the Site where MTBE concentrations exceed $250,000 \mu\text{g}/\text{L}$ in shallow groundwater. The pattern of detections of MTBE indicate that MTBE plume may drop below the Alameda Creek and may rise again in elevation as it approaches the Peralta-Tyson Wellfield, which has production wells terminating at approximately 200 feet bgs.

Concentrations of total petroleum hydrocarbons as diesel (TPH-d) and motor oil (TPH-mo) were detected in all four borings and in 40 of the 54 water samples collected to total depths of approximately 400 feet bgs. The maximum TPH-d and TPH-mo concentrations were detected in borings located closest to the Peralta-Tyson Wellfield. It is currently unclear whether these TPH detections are attributable to releases from the Site or are an artifact of the drilling or sampling process.

The full vertical and lateral extent of groundwater contamination is not defined. A supplemental investigation is underway to install ten additional borings to depths approaching 500 feet bgs.

7. **Interim Remedial Measures:** No significant soil excavation work has been implemented at the Site to remove source contamination. The only interim remedial action implemented to date are the December 2005 facility closure, demolition of an oil storage building, removal of the ASTs, pump house, fuel dispensers, associated underground piping, and removal of portions of the asphalt pavement. In addition to the facility closure actions, NAPL was removed from one monitoring well on October 4,

2012, during a bail-down test, and absorbent socks were placed into four wells for NAPL recovery in January 2015. The socks will be inspected and replaced as needed.

NAPL remains onsite and is considered to be a continuing primary source of pollution. Petroleum saturated soil remains onsite and is a secondary source of pollution to groundwater through leaching. A *Source Area Delineation Work Plan* dated March 17, 2015, was approved by Regional Water Board staff in April 2015. The purpose of a source investigation is to identify and delineate the lateral and vertical extent of NAPL mass at the Site and vicinity. NAPL can be present in the saturated zone below the water table, as has been shown to be the case at this Site. Additionally, a *Work Plan for Shallow Bedrock Aquifer Testing* dated April 14, 2015, was approved by staff in July 2015. These investigations are needed to develop a remediation plan to remove free product to the maximum extent possible and to restore groundwater quality and prevent further impacts to the ACWD production well at the Peralta-Tyson Wellfield.

Interim remedial measures still need to be implemented at this Site to reduce the threat to water quality, public health, and the environment posed by the discharge of waste and to provide a technical basis for selecting and designing final remedial measures.

8. **Adjacent Sites:** There are 30 sites located within a two-mile radius of the Peralta-Tyson Wellfield and Above Hayward Fault sub-basin, seven of these have reported detections of MTBE. Under the oversight of the Regional Water Board, four of the sites were granted case closure letter letters and three are eligible for case closure. The Niles Food Company located at 37048 Niles Boulevard is approximately 400 feet southwest of the Site. In July 2011, the case was closed after Niles Food Company successfully demonstrated that its underlying MTBE-impacted groundwater was from the nearby Site.
9. **Basin Plan:** The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was duly adopted by the Water Board and approved by the State Water Resources Control Board, Office of Administrative Law and the U.S. EPA, where required.

The Peralta-Tyson well field operated by ACWD is located approximately 1 mile south of the source property. This well field is actively used for municipal supply. The Site is located within 0.5 mile of Alameda Creek and the Alameda Creek Quarry Ponds. Alameda Creek, located to the south of the Site, flows near the eastern and northern margins of the Niles Cone Subbasin. ACWD using the Alameda Creek Quarry Ponds as recharge ponds to store and percolate water into the underlying waters of the Niles Cone.

The existing beneficial uses of groundwater underlying and adjacent to the Site include:

- a. Agricultural supply

- b. Industrial service supply
- c. Municipal and domestic supply
- d. Industrial process supply

The existing beneficial uses of the Alameda Creek and Alameda Creek Quarry Ponds include:

- a. Agricultural supply
- b. Groundwater recharge
- c. Commercial and sport fishing
- d. Cold freshwater habitat
- e. Fish migration
- f. Preservation of rare and endangered species
- g. Fish spawning
- h. Warm freshwater habitat
- i. Wildlife habitat
- j. Water contact recreation
- k. Noncontact water recreation

10. **Other Regional Water Board Policies:** Regional Water Board Resolution No. 88-160 allows discharges of extracted, treated groundwater from site cleanups to surface waters only if it has been demonstrated that neither reclamation nor discharge to the sanitary sewer is technically and economically feasible.

Regional Water Board Resolution No. 89-39, "Sources of Drinking Water," defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high TDS, low yield, or naturally-high contaminant levels.

11. **State Water Board Policies:** State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to this discharge. It requires maintenance of high quality waters unless a lesser water quality is consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses, and will not result in exceedance of applicable water quality objectives. This order and its requirements are consistent with Resolution No. 68-16.

State Water Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304," applies to this discharge. It directs the Regional Water Boards to set cleanup levels equal to background water quality or the best water quality which is reasonable, if background levels cannot be restored. Cleanup levels other than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in exceedance of applicable water quality objectives. The remedial action plan will assess the feasibility of attaining background levels of water quality. This order and its requirements are consistent with the provisions of Resolution No. 92-49, as amended.

12. **Preliminary Cleanup Goals:** Pending the establishment of site-specific cleanup levels, preliminary cleanup goals are needed for the purpose of conducting remedial investigation and interim remedial actions. These goals should address all relevant media (e.g., groundwater, soil, and soil gas) and all relevant concerns (e.g., groundwater ingestion, migration of groundwater to surface waters, and vapor intrusion).
13. **Basis for 13304 Order:** California Water Code Section 13304 authorizes the Regional Water Board to issue orders requiring dischargers to cleanup and abate waste where the discharger has caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance.
14. **Cost Recovery:** Pursuant to California Water Code Section 13304, the dischargers are hereby notified that the Regional Water Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Regional Water Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order.
15. **California Safe Drinking Water Policy:** It is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.
16. **CEQA:** This action is an order to enforce the laws and regulations administered by the Regional Water Board. As such, this action is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resources Agency Guidelines.
17. **Notification:** The Regional Water Board has notified the dischargers and all interested agencies and persons of its intent under California Water Code Section 13304 to prescribe site cleanup requirements for the discharge, and has provided them with an opportunity to submit their written comments.

IT IS HEREBY ORDERED, pursuant to sections 13304 and 13267 of the California Water Code, that the dischargers (or its agents, successors, or assigns) shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous substances in a manner that will degrade water quality or adversely affect beneficial uses of waters of the State is prohibited.
2. Further significant migration of wastes or hazardous substances through subsurface transport to waters of the State is prohibited.
3. Activities associated with the subsurface investigation and cleanup that will cause significant adverse migration of wastes or hazardous substances are prohibited.

B. PRELIMINARY CLEANUP GOALS

The following preliminary cleanup goals shall be used to guide remedial investigation and interim remedial actions, pending establishment of site-specific cleanup levels.

1. Groundwater: Applicable screening levels such as the Regional Water Board's ESLs document. Groundwater screening levels shall incorporate at least the following exposure pathways: groundwater ingestion and vapor intrusion to indoor air. For groundwater ingestion, use applicable water quality objectives (e.g., lower of primary and secondary maximum contaminant levels, or MCLs) or, in the absence of a chemical-specific objective, equivalent drinking water levels based on toxicity and taste and odor concerns.
2. Soil: Applicable screening levels such as the Regional Water Board's ESLs document. Soil screening levels are intended to address a full range of exposure pathways, including direct exposure, nuisance, and leaching to groundwater. For purposes of this subsection, the discharger shall assume that groundwater is a potential source of drinking water.
3. Soil gas: Applicable screening levels such as the Regional Water Board's ESLs document. Soil gas screening levels are intended to address the vapor intrusion to indoor air pathway.

C. TASKS

1. COMPLETION OF SOURCE CHARACTERIZATION

COMPLIANCE DATE: **October 30, 2015**

Submit a Source Characterization Report that documents completion of the source delineation investigation and includes the reporting components listed in the March 17, 2015 *Source Area Delineation Work Plan*. The report shall address all the elements required in our April 16, 2015 letter, including the following:

- a) identify all confirmed and possible sources of pollution on the Site; and develop a detailed Site plan showing location of all tanks, piping, hazardous materials storage areas, fueling facilities and equipment;
- b) identify potential conduits for migration of pollution sources (i.e., natural and man-made conduits), fate and transport mechanisms and migration pathways through the subsurface and the hydrogeologic properties of the weathered bedrock underlying the Site and vicinity;
- c) develop a three-dimensional conceptual site model depicting the lateral and vertical extent of NAPL within specific stratigraphic units across the investigated area, mass flux calculations and recommendations for source remediation; and utilize cross sections depicting saturated soil sources;
- d) present the results of the bedrock aquifer testing and a groundwater flow model that has been further developed and calibrated to simulate transient conditions observed at the Site;
- e) identify the sensitive receptors (public and private wells) within a two-mile radius of the Site; and
- f) characterize the hydrogeology and update the conceptual site model so it can be used to evaluate remedial technologies for NAPL removal.

2. **INTERIM REMEDIAL ACTION WORKPLAN FOR ONSITE POLLUTION**

COMPLIANCE DATE: **October 30, 2015**

Submit a workplan acceptable to the Executive Officer to evaluate interim remedial action alternatives and to recommend one or more alternatives for implementation. The workplan shall include cleanup levels and describe significant implementation steps, and a proposed schedule, for the interim remedial action. The workplan shall also include measures to control risk to site workers and offsite receptors. Work may be phased to allow the investigation to proceed efficiently.

3. **COMPLETION OF INTERIM REMEDIAL ACTIONS FOR ONSITE POLLUTION**

COMPLIANCE DATE: **60 days after approval of Task 2**

Complete tasks in the Task 2 workplan and submit a technical report acceptable to the Executive Officer documenting their completion and assessing the effectiveness of the interim remedial actions. For ongoing actions, such as soil vapor extraction or groundwater extraction, the report shall document start-up as opposed to completion.

4. **INTERIM REMEDIAL ACTION WORKPLAN FOR OFFSITE POLLUTION**

COMPLIANCE DATE: **October 30, 2015**

Submit a workplan acceptable to the Executive Officer to evaluate interim remedial action alternatives to protect the Peralta-Tyson Wellfield and recommend one or more alternatives for implementation. The workplan shall specify a proposed time schedule. Work may be phased to allow the investigation to proceed efficiently.

5. **COMPLETION OF INTERIM REMEDIAL ACTIONS FOR OFFSITE POLLUTION**

COMPLIANCE DATE: **90 days after approval of Task 4**

Complete tasks in the Task 4 workplan and submit a technical report acceptable to the Executive Officer documenting their completion. For ongoing actions, such as wellhead treatment, soil vapor extraction or groundwater extraction, the report shall document start-up as opposed to completion.

6a. **REMEDIAL INVESTIGATION WORKPLAN**

COMPLIANCE DATE: **October 30, 2015**

Submit a workplan acceptable to the Executive Officer to complete the definition of the vertical and lateral extent of groundwater pollution both onsite and offsite. The workplan must include a proposal to monitor the pollution between the Site and the ACWD Peralta-Tyson Wellfield, and propose any pilot testing needed to develop remedial actions. The work plan shall specify investigation methods and a proposed time schedule. Work may be phased to allow the investigation to proceed efficiently, provided that this does not delay compliance.

6b. **COMPLETION OF REMEDIAL INVESTIGATION**

COMPLIANCE DATE: **90 days after approval of 6a**

Complete tasks in the Task 6a workplan and submit a technical report acceptable to the Executive Officer documenting their completion. The technical report shall define the vertical and lateral extent of pollution down to preliminary cleanup goals, and provide an updated conceptual site model that incorporates all available data.

7a. **REMEDIAL INVESTIGATION WORKPLAN (ADDITIONAL PHASE)**

COMPLIANCE DATE: **30 days after required by Executive Officer**

Submit a workplan acceptable to the Executive Officer to complete the definition of the vertical and lateral extent of soil and groundwater pollution onsite and

offsite. The workplan shall specify investigation methods and a proposed time schedule. The Executive Officer will require this workplan if the previous phase of the remedial investigation complied with the approved workplan but did not adequately define the vertical and lateral extent of soil and groundwater pollution (e.g., preliminary cleanup goals were exceeded at the most distant groundwater sampling points).

7b. **COMPLETION OF REMEDIAL INVESTIGATION (ADDITIONAL PHASE)**

COMPLIANCE DATE: **According to schedule in task 7a workplan approved by the Executive Officer**

Complete tasks in the Task 7a workplan and submit a technical report acceptable to the Executive Officer documenting their completion. The technical report shall define the vertical and lateral extent of pollution down to preliminary cleanup goals.

8. **RISK ASSESSMENT WORKPLAN INCLUDING ACWD PRODUCTION WELLFIELD**

COMPLIANCE DATE: **February 1, 2016**

Submit a workplan acceptable to the Executive Officer for preparation of either a screening level evaluation or a site-specific risk assessment. The workplan shall include a conceptual site model (i.e., identify pathways and receptors where Site contaminants pose a potential threat to human health). If a screening level evaluation is selected, the workplan shall identify which screening levels will be used and demonstrate that they address all relevant pathways such as utility corridors and receptors for the Site.

9. **COMPLETION OF RISK ASSESSMENT FOR OFFSITE POLLUTION INCLUDING ACWD PRODUCTION WELLFIELD**

COMPLIANCE DATE: **30 days after approval of Task 8**

Complete tasks in the Task 8 workplan and submit a technical report acceptable to the Executive Officer documenting their completion. The report shall comprise either a screening level evaluation or a site-specific risk assessment. The results of this report will help establish acceptable exposure levels, to be used in developing remedial alternatives in Task 10 below.

10. **REMEDIAL ACTION PLAN INCLUDING DRAFT CLEANUP LEVELS**

COMPLIANCE DATE: **May 1, 2016**

Submit a technical report acceptable to the Executive Officer containing:

- a. Summary of remedial investigation
- b. Summary of risk assessment
- c. Evaluation of the installed interim remedial actions
- d. Feasibility study evaluating alternative final remedial actions
- e. Recommended final remedial actions and cleanup levels
- f. Implementation tasks and time schedule

The remedial action plan must propose remedial work that has a high probability of eliminating unacceptable threats to human health and restoring beneficial uses of water in a reasonable time, with “reasonable time” based on the severity of impact to the beneficial use (for current impacts) or the time before the beneficial use will occur (for potential future impacts). The remedial action plan must address the full extent of contamination originating at the Site, including any contamination that extends beyond the source-property boundary.

Item d shall include projections of cost, effectiveness, benefits, and impact on public health, welfare, and the environment of each alternative action.

Items a through d shall be consistent with the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 C.F.R. § 300), CERCLA guidance documents with respect to remedial investigations and feasibility studies, Health and Safety Code section 25356.1(c), and State Water Board Resolution No. 92-49 as amended ("Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304").

Item e shall consider the preliminary cleanup goals for soil and groundwater identified in finding 12 and shall address the attainability of background levels of water quality (see finding 11).

10. **Delayed Compliance:** If the discharger is delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the discharger shall promptly notify the Executive Officer, and the Regional Water Board or Executive Officer may consider revisions to this order.

D. PROVISIONS

1. **No Nuisance:** The storage, handling, treatment, or disposal of polluted soil or groundwater shall not create a nuisance as defined in Water Code section 13050(m).
2. **Good Operation and Maintenance (O&M):** The dischargers shall maintain in good working order and operate as efficiently as possible any facility or control system installed to achieve compliance with the requirements of this order.

3. **Cost Recovery:** The dischargers shall be liable, pursuant to Water Code section 13304, to the Regional Water Board for all reasonable costs actually incurred by the Regional Water Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. If the Site addressed by this Order is enrolled in a State Water Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to the procedures established in that program. Any disputes raised by the dischargers over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.
4. **Access to Site and Records:** In accordance with Water Code section 13267(c), the discharger shall permit the Regional Water Board or its authorized representative:
 - a. Entry upon premises in which any pollution source exists, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
 - b. Access to copy any records required to be kept under the requirements of this Order.
 - c. Inspection of any monitoring or remediation facilities installed in response to this Order.
 - d. Sampling of any groundwater or soil that is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the dischargers.
5. **Self-Monitoring Program:** The dischargers shall comply with the Self-Monitoring Program as attached to this Order and as may be amended by the Executive Officer.
6. **Contractor / Consultant Qualifications:** All technical documents shall be signed by and stamped with the seal of a California registered geologist, a California certified engineering geologist, or a California registered civil engineer.
7. **Lab Qualifications:** All samples shall be analyzed by State-certified laboratories or laboratories accepted by the Regional Water Board using approved U.S. EPA methods for the type of analysis to be performed. Quality assurance/quality control (QA/QC) records shall be maintained for Regional Water Board review. This provision does not apply to analyses that can only reasonably be performed onsite (e.g., temperature).

8. **Document Distribution:** An electronic and paper version of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the Regional Water Board, and electronic copies shall be provided to the following agencies:
- a. City of Fremont Fire Department
 - b. County of Alameda Environmental Health Department
 - c. Alameda County Water District

The Executive Officer may modify this distribution list as needed.

Electronic copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be uploaded to the State Water Board's GeoTracker database within five business days after submittal to the Regional Water Board. Guidance for electronic information submittal is available at:

http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal

9. **Reporting of Changed Owner or Operator:** The dischargers shall file a technical report on any changes in contact information, Site occupancy or ownership associated with the property described in this Order.
10. **Reporting of Hazardous Substance Release:** If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the dischargers shall report such discharge to the Regional Water Board by calling (510) 622-2369.

A written report shall be filed with the Regional Water Board within five working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified.

This reporting is in addition to reporting required by law, including to the California Emergency Management Agency pursuant to the Health and Safety Code.

11. **Periodic SCR Review:** The Regional Water Board will review this Order periodically and may revise it when necessary. The dischargers may request revisions and upon review the Executive Officer may recommend that the Regional Water Board revise these requirements.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on _____.

Bruce H. Wolfe
Executive Officer

FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS ORDER MAY SUBJECT YOU TO ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO: IMPOSITION OF ADMINISTRATIVE CIVIL LIABILITY UNDER WATER CODE SECTIONS 13268 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR INJUNCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY

Attachments: Site Map
Self-Monitoring Program

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM for:

**UNION PACIFIC RAILROAD COMPANY
CRIST OIL COMPANY, INC.**

For the property located at:

**37105 MISSION BOULEVARD
FREMONT
ALAMEDA COUNTY**

1. **Authority and Purpose:** The Regional Water Board requests the technical reports required in this Self-Monitoring Program pursuant to Water Code sections 13267 and 13304. This Self-Monitoring Program is intended to document compliance with Regional Water Board Order No. XX-XXX (site cleanup requirements).
2. **Monitoring:** The discharger shall measure groundwater elevations quarterly in all monitoring wells, and shall collect and analyze representative samples of groundwater according to the following schedule:

Well #	Sampling Frequency	Analyses
UPNCMW0100	Semi-annually	8015, 8260
UPNCMW0101	Semi-annually	8015, 8260
UPNCMW0102	Semi-annually	8015, 8260
UPNCMW0103	Semi-annually	8015, 8260
UPNCMW0104	Semi-annually	8015, 8260
UPNCMW0105	Semi-annually	8015, 8260
UPNCMW0106	Semi-annually	8015, 8260
UPNCMW0107	Semi-annually	8015, 8260
UPNCMW0108	Semi-annually	8015, 8260
UPNCMW0109	Semi-annually	8015, 8260
UPNCMW0110	Semi-annually	8015, 8260
UPNCMW0111	Semi-annually	8015, 8260,

Key: 8015 = EPA Method 80150B or equivalent for TPH as gasoline, diesel and motor oil (with and without silica gel cleanup)
8260 = EPA Method 8260 or equivalent for VOCs

The discharger shall sample any new monitoring or extraction wells quarterly and analyze groundwater samples for the same constituents as shown in the above table. The discharger may propose changes in the above table; any proposed changes are subject to Executive Officer approval.

3. **Quarterly Monitoring Reports:** The dischargers shall submit semi-annual monitoring reports to the Regional Water Board no later than 30 days following the end of the first half of the calendar year (e.g., report for first half of the year due August 1) and the second half of the calendar year (e.g., report for the second half of the year due January 31). The first semi-annual monitoring report shall be due on August 1, 2015. The reports shall include:
 - a. Transmittal Letter: The transmittal letter shall discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter shall be signed by the discharger's principal executive officer or his/her duly authorized representative, and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.
 - b. Groundwater Elevations: Groundwater elevation data shall be presented in tabular form, and a groundwater elevation map shall be prepared for each monitored water-bearing zone. Historical groundwater elevations shall be included in the fourth quarterly report each year.
 - c. Groundwater Analyses: Groundwater sampling data shall be presented in tabular form, and an isoconcentration map shall be prepared for one or more key contaminants for each monitored water-bearing zone, as appropriate. The report shall indicate the analytical method used, detection limits obtained for each reported constituent, and a summary of QA/QC data. Historical groundwater sampling results shall be included in each semi-annual report. The report shall describe any significant increases in contaminant concentrations since the last report, and any measures proposed to address the increases. Supporting data, such as lab data sheets, shall be included.
 - d. Groundwater Extraction: If applicable, the report shall include groundwater extraction results in tabular form, for each extraction well and for the Site as a whole, expressed in gallons per minute and total groundwater volume for the quarter. The report shall also include contaminant removal results, from groundwater extraction wells and from other remediation systems (e.g., soil vapor extraction), expressed in units of chemical mass per day and mass for the two

quarters of the reporting period. Historical mass removal results shall be included in the fourth quarterly report each year.

- e. **Status Report:** The semi-annual report shall describe relevant work completed during the reporting period (e.g., site investigation, interim remedial measures) and work planned for the following two quarters.
- 4. **Violation Reports:** If the dischargers violate requirements in the Site Cleanup Requirements, then the dischargers shall notify the Regional Water Board office by telephone as soon as practicable once the discharger has knowledge of the violation. Regional Water Board staff may, depending on violation severity, require the dischargers to submit a separate technical report on the violation within five working days of telephone notification.
- 5. **Other Reports:** The dischargers shall notify the Regional Water Board in writing prior to any Site activities, such as construction or underground tank removal, which have the potential to cause further migration of contaminants or which would provide new opportunities for Site investigation.
- 6. **Record Keeping:** The dischargers or his/her agent shall retain data generated for the above reports, including lab results and QA/QC data, for a minimum of six years after origination and shall make them available to the Regional Water Board upon request.
- 7. **SMP Revisions:** Revisions to the Self-Monitoring Program may be ordered by the Executive Officer, either on his/her own initiative or at the request of the dischargers. Prior to making SMP revisions, the Executive Officer will consider the burden, including costs, of associated self-monitoring reports relative to the benefits to be obtained from these reports.

APPENDIX B

CORRESPONDENCE



Union Pacific Railroad

Environmental Management Group

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Lauren A. Mancuso
Manager Environmental Site Remediation

☐ Roseville, California 95747

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Facsimile (402) 501-2396

August 17, 2015

Ms. Cherie McCaulou
California Regional Water Quality Control Board, San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, California 94612

Subject: Comments on the Tentative Order – Interim Site Cleanup Requirements Order, Former Crist Oil Company, 37105 Mission Boulevard, Fremont, California

Dear Ms. McCaulou,

Union Pacific Railroad Company (UPRR) has reviewed the Tentative Order – Interim Site Cleanup Requirements Order (Tentative Order) for the Former Crist Oil Company (site), located at 37105 Mission Boulevard, Fremont, California provided by the California Regional Water Quality Control Board, San Francisco Bay Region (Water Board) in a letter dated August 3, 2015. The following comments and discussion address both our general comments regarding the intent of the order and our specific comments on the content and proposed tasks.

General Comments

UPRR is committed to completing the necessary investigation and cleanup activities associated with releases at the site, and recognizes the request to adopt an Interim Site Cleanup Requirements Order to achieve those goals within a timely manner. A number of site-related investigations and assessments have been recently conducted or are currently ongoing to support remedial strategies for the onsite and proximal source area, including:

- Source delineation investigation to assess the nature and extent of light non-aqueous phase liquid (LNAPL) in the subsurface from releases at the site was recently completed, which amassed a significant quantity of data that requires specialized assessment and modeling. This investigation is a key step to evaluate remedies for the site.
- A weathered bedrock aquifer test was recently approved and will be used to develop a transient groundwater flow model, which will be used to support remedial action assessment in 2015.
- A pilot test work plan will be submitted in August 2015 to evaluate two remedial action options.

The intention is to complete the source delineation, aquifer test, groundwater modeling, and pilot test to recommend onsite and proximal source area remedial action in early 2016. Without this data and assessment, it is premature to recommend and implement an interim remedial action that may fail or exacerbate contamination at the site.

Ongoing offsite characterization is being conducted to identify the source or sources and define the lateral/vertical extent of the methyl tert-butyl ether (MtBE) plume in groundwater. Presently, there is not

sufficient data to confirm or refute that the site is the sole or is a co-contributing source of MtBE observed in the Peralta-Tyson Wellfield and it is premature to establish associated tasks in the Tentative Order beyond site characterization.

Specific Comments

1. Site Location (Tentative Order, Pg. 1)

Statement: *The remaining structures at the Site include a conex box for storage of leaded batteries, a dilapidated wooden shed and a warehouse with a corrugated metal roof.*

Comment: There is no evidence available indicating that the conex box, which is a relatively recent site feature, is currently being used or has been used for the storage of leaded batteries.

Statement: *The Hayward Fault is located in close proximity and west of the Site. Nearby topographic features include the East Bay Hills to north, the Alameda Creek, Recharge Ponds and the Peralta-Tyson Wellfield to the south of the Site.*

Comment: Alameda Creek, Recharge Ponds, and the Peralta-Tyson Wellfield are located from ½ to 1 mile from the site and should not be considered “nearby”.

2. Site History (Tentative Order, Pg. 1)

Statement: *The Site at 37105 Mission Boulevard has been owned by UPRR and its predecessors since July 17, 1893.*

Comment: The text should be revised to state that the site has been owned by UPRR “or” its predecessors.

Statement: *1929 Sanborn maps indicate three aboveground storage tanks (ASTs) containing gasoline and other structures were present at the Site.*

Comment: The text should be revised to state that the AST contents include gasoline and diesel.

Statement: *Based on the age of the original ASTs, the pump house, and a nearby railroad passing through the Site, the petroleum products for the ASTs were likely transported by rail car via the rail spur that aligns with the former location of the pump house and pumped to the ASTs, at least during early operation of the Site.*

Comment: There is no available evidence that the petroleum products for the ASTs were transported by rail. This statement should be removed from the Order.

Statement: *The identified chemicals of concern include total petroleum hydrocarbons as gasoline, diesel and motor oil (TPH-g, TPH-d, TPH-mo), the fuel oxygenates MTBE and tert-butyl alcohol (TBA), benzene, toluene, ethyl benzene, and total xylenes (BTEX), naphthalene, and lead (to a lesser extent).*

Comment: Lead should not be considered a chemical of concern, according to the results of previous investigations and acceptance by Alameda County Water District (ACWD) to eliminate it as a chemical of concern for additional investigation activities presented in the February 7, 2008 Site Investigation Report for the Former Crist Oil Company, Fremont, California.

7. Interim Remedial Measures (Tentative Order, Pg. 8)

Statement: *The purpose of a source investigation is to identify and delineate the lateral and vertical extent of “floating source material” at the Site.*

Comment: “Floating source material” should be removed, because it is misleading. LNAPL can be present in the saturated zone below the water table, as has been shown to be the case at this site.

C. Tasks, 1. Completion of Source Characterization (Tentative Order, Pg. 11)

COMPLIANCE DATE: August 31, 2015

Comment: As of August 2015, laboratory testing is still being conducted associated with the subject investigation. Testing, evaluation, modeling, and reporting is anticipated to be conducted from August through October. The compliance date for this task should be extended to October 30, 2015 to be able to conduct the planned testing, modeling, and reporting required in the proposed order, and to allow for necessary reviews of the report.

Requirement: *Submit a Source Characterization Report that documents completion of the source delineation investigation and includes the reporting components listed in the March 17, 2015 Source Area Delineation Work Plan. The report shall address all the elements required in our April 16, 2015 letter, including the following:*

c) develop a three-dimensional conceptual site model depicting the lateral and vertical extent of NAPL within specific stratigraphic units across the investigated area, mass flux calculations and recommendations for source remediation; and utilize cross sections depicting saturated soil sources;

Comment: The Source Characterization Report is not intended to present an evaluation of recommendations for source remediation options for the site. Evaluation of source remediation options for the site will be conducted following completion of the approved aquifer test and intended remedial pilot testing for the site. The requirement for inclusion of recommendations for source remediation in the Source Characterization Report should be removed.

Requirement: *d) present the results of the bedrock aquifer testing and a groundwater flow model that has been further developed and calibrated to simulate transient conditions observed at the Site;*

Comment: The bedrock aquifer testing work plan was approved in July 2015. Field work is anticipated to be conducted in August-September 2015. Groundwater modeling using data generated by the approved aquifer testing is anticipated to occur following the aquifer test. Therefore, requirement for inclusion of results of the bedrock aquifer testing and a groundwater flow model in the Source Characterization Report should be removed. A report documenting the results of the aquifer test and groundwater model will be submitted under separate cover.

C. Tasks, 2. Interim Remedial Action Workplan for Onsite Pollution (Tentative Order, Pg. 11)

COMPLIANCE DATE: August 31, 2015

Requirement: *Submit a workplan acceptable to the Executive Officer to evaluate interim remedial action alternatives and to recommend one or more alternatives for implementation. The workplan shall include cleanup levels and describe significant implementation steps, and a proposed schedule, for the interim remedial action. The workplan shall also include measures to control risk to site workers and offsite receptors. Work may be phased to allow the investigation to proceed efficiently.*

Comment: A remedial action pilot test work plan to present the proposal to test potential remedial actions at the site is currently being prepared. The pilot test will be conducted following Regional Water Board approval, which is anticipated in August 2015. Once the pilot test is complete, continuation and/or expansion of the pilot test treatment system operations will be considered and discussed with the Regional Water Board. Following completion of onsite aquifer testing, groundwater modeling, and pilot testing, and assuming data gaps have been addressed, onsite remedial action evaluation will be conducted, including preparation of a feasibility study that will evaluate remedial actions for the site and recommend a final remedial action to address onsite soil and groundwater impacts from fuel-related releases. The requirement for an interim remedial action workplan for onsite pollution should be removed.

C. Tasks, 3. Completion of Interim Remedial Actions for Onsite Pollution (Tentative Order, Pg. 12)

COMPLIANCE DATE: 60 days after approval of Task 2

Complete tasks in the Task 2 workplan and submit a technical report acceptable to the Executive Officer documenting their completion and assessing the effectiveness of the interim remedial actions. For ongoing actions, such as soil vapor extraction or groundwater extraction, the report shall document start-up as opposed to completion.

Comment: It is premature to propose remedial action activities until the necessary data to evaluate remedial actions has been obtained. The requirement for completion of interim remedial actions for onsite pollution should be removed.

C. Tasks, 4. Interim Remedial Actions for Offsite Pollution (Tentative Order, Pg. 12)

COMPLIANCE DATE: **August 31, 2015**

Requirement: *Submit a workplan acceptable to the Executive Officer to evaluate interim remedial action alternatives to protect the Peralta-Tyson Wellfield and recommend one or more alternatives for implementation. The workplan shall specify a proposed time schedule. Work may be phased to allow the investigation to proceed efficiently.*

Comment: It is premature to require development of a work plan for interim remedial action for offsite pollution before site characterization has been completed. The requirement for an interim remedial action work plan should be removed.

C. Tasks, 5. Completion of Interim Remedial Actions for Offsite Pollution (Tentative Order, Pg. 12)

COMPLIANCE DATE: **August 31, 2015**

Requirement: *Complete tasks in the Task 4 workplan and submit a technical report acceptable to the Executive Officer documenting their completion. For ongoing actions, such as wellhead treatment, soil vapor extraction or groundwater extraction, the report shall document start-up as opposed to completion.*

Comment: It is premature to require interim remedial action activities for offsite pollution before site characterization has been completed. The requirement for completion of interim remedial actions for offsite pollution should be removed.

C. Tasks, 6a. Remedial Investigation Workplan (Tentative Order, Pg. 12)

COMPLIANCE DATE: **September 30, 2015**

Requirement: *Submit a workplan acceptable to the Executive Officer to complete the definition of the vertical and lateral extent of groundwater pollution. The workplan must include a proposal to monitor the pollution between the Site and the ACWD Peralta-Tyson Wellfield, and propose any pilot testing needed to develop remedial actions. The work plan shall specify investigation methods and a proposed time schedule. Work may be phased to allow the investigation to proceed efficiently, provided that this does not delay compliance.*

Comment: A work plan has already been submitted to complete the definition of the vertical and lateral extent of groundwater pollution and that work plan is currently being implemented. The requirement for this remedial investigation workplan and specifically the request to “monitor the pollution between the Site and the ACWD Peralta-Tyson Wellfield” should be removed until site characterization has determined that the source of pollution at the Peralta-Tyson Wellfield is from releases at the site.

C. Tasks, 6b. Completion of Remedial Investigation (Tentative Order, Pg. 13)

COMPLIANCE DATE: **90 days after approval of 6a**

Requirement: *Complete tasks in the Task 6a workplan and submit a technical report acceptable to the Executive Officer documenting their completion. The technical report shall define the vertical and lateral*

extent of pollution down to preliminary cleanup goals, and provide an updated conceptual site model that incorporates all available data.

Comment: It is premature to require long-term groundwater monitoring until site characterization has confirmed that pollution in the Peralta-Tyson Wellfield is associated with releases from the site. The requirement for monitoring offsite pollution should be removed.

C. Tasks, 7a. Remedial Investigation Workplan (Additional Phase) (Tentative Order, Pg. 13)

COMPLIANCE DATE: *30 days after required by Executive Officer*

Requirement: *Submit a workplan acceptable to the Executive Officer to complete the definition of the vertical and lateral extent of soil and groundwater pollution. The workplan shall specify investigation methods and a proposed time schedule. The Executive Officer will require this workplan if the previous phase of the remedial investigation complied with the approved workplan but did not adequately define the vertical and lateral extent of soil and groundwater pollution (e.g., preliminary cleanup goals were exceeded at the most distant groundwater sampling points).*

Comment: If additional phases of investigation are necessary, we would prefer to streamline the process by presenting proposals for additional investigation activities via email during active investigation activities to continue operations and avoid delays.

C. Tasks, 7b. Completion of Remedial Investigation (Additional Phase) (Tentative Order, Pg. 13)

COMPLIANCE DATE: *According to schedule in task 7a workplan approved by the Executive Officer*

Complete tasks in the Task 4a workplan and submit a technical report acceptable to the Executive Officer documenting their completion. The technical report shall define the vertical and lateral extent of pollution down to preliminary cleanup goals.

Comment: As indicated in the comment to C. Tasks, **7a. Remedial Investigation Workplan (Additional Phase)**, if additional phases of investigation are necessary, we would prefer to streamline the process by presenting proposals for additional investigation activities via email during active investigation activities to continue operations and avoid delays.

C. Tasks, 8. Risk Assessment Workplan Including ACWD Production Wellfield (Tentative Order, Pg. 13)

COMPLIANCE DATE: *February 1, 2016*

Requirement: *Submit a workplan acceptable to the Executive Officer for preparation of either a screening level evaluation or a site-specific risk assessment. The workplan shall include a conceptual site model (i.e., identify pathways and receptors where Site contaminants pose a potential threat to human health). If a screening level evaluation is selected, the workplan shall identify which screening levels will be used and demonstrate that they address all relevant pathways such as utility corridors and receptors for the Site.*

Comment: A workplan should not be required to identify screening levels or a site-specific risk assessment. This task should be removed because the requirements of this task have been or can be met during preparation of a Feasibility Study (C. Tasks. 10. Remedial Action Plan Including Draft Cleanup Levels).

C. Tasks, 9. Completion of Risk Assessment for Offsite Pollution Including ACWD Production Wellfield (Tentative Order, Pg. 14)

COMPLIANCE DATE: *30 days after approval of Task 8*

Requirement: *Complete tasks in the Task 8 workplan and submit a technical report acceptable to the Executive Officer documenting their completion. The report shall comprise either a screening level*

evaluation or a site-specific risk assessment. The results of this report will help establish acceptable exposure levels, to be used in developing remedial alternatives in Task 9 below.

Comment: As indicated in the comment for C. Tasks, 8. **Risk Assessment Workplan Including ACWD Production Wellfield**, completion of risk assessment for offsite pollution is unnecessary and should be removed as a requirement for the order.

C. Tasks, 10. Remedial Action Plan Including Draft Cleanup Levels (Tentative Order, Pg. 14)

COMPLIANCE DATE: May 1, 2016

Submit a technical report acceptable to the Executive Officer containing:

- a. Summary of remedial investigation*
- b. Summary of risk assessment*
- c. Evaluation of the installed interim remedial actions*
- d. Feasibility study evaluating alternative final remedial actions*
- e. Recommended final remedial actions and cleanup levels*
- f. Implementation tasks and time schedule*

The remedial action plan must propose remedial work that has a high probability of eliminating unacceptable threats to human health and restoring beneficial uses of water in a reasonable time, with “reasonable time” based on the severity of impact to the beneficial use (for current impacts) or the time before the beneficial use will occur (for potential future impacts). The remedial action plan must address the full extent of contamination originating at the Site, including any contamination that extends beyond the source-property boundary.

Item d shall include projections of cost, effectiveness, benefits, and impact on public health, welfare, and the environment of each alternative action.

Items a through d shall be consistent with the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 C.F.R. § 300), CERCLA guidance documents with respect to remedial investigations and feasibility studies, Health and Safety Code section 25356.1(c), and State Water Board Resolution No. 92-49 as amended (“Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304”).

Item e shall consider the preliminary cleanup goals for soil and groundwater identified in finding 12 and shall address the attainability of background levels of water quality (see finding 11).

Comment: The proposed deadline for a “Remedial Action Plan” or Feasibility Study is acceptable and we intend to submit a Feasibility Study before the proposed deadline.

If you have any questions or comments after reviewing this letter, please feel free to contact me by email at LAMANCUS@up.com or by phone at (916) 789-5184.

Regards,
Union Pacific Railroad



Lauren A. Mancuso
Manager of Site Remediation
Union Pacific Railroad Company

Copy to:

Tom Berkins/Alameda Water Quality District

David Hodson/CH2M HILL
Janie O'Conner/City of Fremont Fire Department



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August 27, 2015

Ms. Cherie McCaulou
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Dear Ms. McCaulou:

Subject: Comments to Tentative Order for Site Cleanup Requirements for the former Crist Oil Company Site, 37105 Mission Boulevard, Fremont (ACWD Site #599)

The Alameda County Water District (ACWD) appreciates the opportunity to comment on the Regional Water Quality Control Board's (Regional Board) Tentative Site Cleanup Requirements (SCR) for the former Crist Oil Company located at 37105 Mission Boulevard, Fremont (Site). It is important to note that the Site is located in the vicinity of Alameda Creek, ACWD's recharge facilities, and ACWD's Peralta-Tyson Wellfield in the Above Hayward Fault portion of the Niles Cone Groundwater Basin, and is therefore in a highly sensitive area. The Above Hayward Fault sub-basin is largely unconfined and the first encountered water-bearing zone is the regional aquifer, composed of highly permeable soil (i.e., cobbles, gravel, and sand). The tremendous water storage and flow potential of these aquifer materials explain why a major portion of ACWD's recharge and extraction occurs within this critical zone.

ACWD supports the Regional Board's adoption of this SCR, especially the Tasks associated with implementing onsite remedial actions in a timely fashion. We concur with all of the required Tasks contained in the Tentative SCR; however, based on recent discussions with Regional Board staff, as well as our review of Union Pacific Railroad's (UPRR) "Comments on the Tentative Order" dated August 17, 2015, it appears that Task C.1, "Completion of Source Characterization" may only pertain to source characterization of free product or non-aqueous phase liquid (NAPL), and does not address the need to further define the vertical extent of groundwater pollution onsite. Defining the vertical extent of groundwater pollution onsite is a critical component necessary for UPRR to properly design and implement the interim remedial actions required in Tasks C.2, "Interim Remedial Action Workplan for Onsite Pollution" and C.3, "Completion of Interim Remedial Actions for Onsite Pollution." Therefore, we recommend that the Regional Board expand the elements required in Task C.1 to include the need to define

Ms. Cherie McCaulou

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the vertical extent of groundwater pollution, or alternatively, include this element in a separate Task in the Tentative SCR.

If you have any questions regarding this letter, please contact Thomas Berkins, Groundwater Protection Program Coordinator, at (510) 668-4442.

Sincerely,



Michelle A. Myers

Groundwater Resources Manager

tb/mh

cc: Steven Inn, ACWD

Thomas Berkins, ACWD

Lauren Mancuso, UPRR

Jay Swardenski, Fremont Fire Department

APPENDIX C

CLEANUP TEAM'S RESPONSE TO COMMENTS

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

CLEANUP TEAM'S RESPONSE TO COMMENTS (9/24/15)

**Union Pacific Railroad Company
Crist Oil Company, Inc.
For the property located at 37105 Mission Boulevard, Fremont, Alameda County
Adoption of Site Cleanup Requirements**

This document provides Waster Board cleanup staff's response to comments received on the tentative order (TO) for Site Cleanup Requirements for the subject site. On August 3, 2015, cleanup staff distributed the TO for comment. We received comments on the TO from the following parties.

Date	Commenter	No. of pages
8/17/14	Lauren A. Mancuso, Manager of Site Remediation, Union Pacific Railroad Company (UPRR), property owner and named discharger for the subject site	7
8/27/14	Michelle A. Myers, Groundwater Resources Manager, Alameda County Water District (ACWD), water purveyor for Fremont, Newark and Union City	2

The comments are summarized below, followed by staff's response. For the full comment and context of each comment, refer to the comment letters.

Union Pacific Railroad Company

- 1. *Comment:*** UPRR is committed to completing the necessary investigation and cleanup activities associated with releases at the site. UPRR will complete the source delineation, aquifer testing, groundwater modeling, and pilot testing and recommend remedial actions for onsite and proximal source area in early 2016. UPRR believes that without this data and assessment, it is premature for the TO to require interim remedial actions that may fail or exacerbate contamination at the site.

Response: We disagree. While staff appreciates the investigative efforts by UPRR, this TO is needed to set clear expectations for ongoing actions to protect ACWD's Peralta- Tyson Wellfield. Task 2 of the TO requires the dischargers to evaluate interim remedial actions and recommend one or more interim remedial action alternatives for implementation to address onsite contamination. Task 4 of the TO requires the dischargers to conduct interim remedial actions to protect the Peralta-Tyson Wellfield, which have detected methyl tert butyl ether (MTBE) concentrations. Interim removal actions are a common element of the corrective action process at petroleum release sites. Typically, interim corrective actions utilize presumptive technologies, such as excavation or free product recovery, that remove primary or secondary source mass with minimal likelihood to exacerbate contamination. Interim corrective actions will not completely remediate the site, but are intended to control risk and minimize ongoing migration while a full-scale remedy is being evaluated.

Examples of interim remedial measures include but are not limited to:

- Removing contaminated soil onsite that is a continuing source of pollution through leaching, and could result in contamination of currently uncontaminated areas.
- Constructing a temporary cap to control or reduce exposures until subsequent action is taken.
- Relocating contaminated material from one area of a site (e.g., residential yards) to another area of the site for temporary storage pending final disposal.
- Installing and operating extraction wells in an aquifer to restrict migration of a contaminated ground-water plume.
- Providing a temporary alternate source of drinking water.
- Pilot testing of remedial technologies (e.g., soil vapor extraction, air sparging, dual phase extraction, and thermal heating). However, pilot tests will only be considered as an acceptable interim remedial action if they are designed to achieve the interim remedial objectives of controlling risk and minimizing migration.

2. **Comment:** There is not sufficient data to confirm or refute that the site is the sole source or is a co-contributing source of MTBE observed in the Peralta-Tyson Wellfield. UPRR is conducting ongoing offsite characterization to identify the source or sources and define the lateral/vertical extent of the MTBE plume in groundwater. It is therefore premature to establish tasks in the Tentative Order beyond site characterization.

Response: We disagree. The site operated as a bulk fueling terminal for 90 years. There is sufficient data that demonstrates the site's bulk fueling operations resulted in unauthorized releases of hazardous materials including petroleum hydrocarbons containing MTBE that were stored, handled and dispensed in large quantities onsite.

MTBE was certified for use as a fuel oxygenate in 1979. Refiners significantly increased MTBE use in the 1990s to help them comply with federal and state regulations for cleaner gasoline. In 1999, Governor Davis declared that MTBE presents an environmental risk to California. MTBE was eliminated in California gasoline by December 31, 2003. MTBE was a common additive in gasoline during the period when the bulk fuel storage facility operated.

Contaminants related to bulk fuel storage operations, including MTBE, total petroleum hydrocarbons as gasoline, and other fuel components, have been detected in soil and groundwater onsite at elevated concentrations, and with measureable petroleum product containing MTBE in at least six of the monitoring wells onsite. A groundwater flow model predicted the groundwater flow from the site to the production wells and the deep aquifer offsite investigation demonstrates that the pollution migrated from the site to the Peralta-Tyson Wellfield. As presented in the June 5, 2015, Offsite Investigation Report, concentrations of MTBE have been detected in grab groundwater samples collected between the site and the Wellfield from depths approaching 500 feet below ground surface. This is sufficient data to conclude that the site has contributed to the release. If additional sources of MTBE are identified, additional dischargers can be added to the Order.

3. **Comment:** There is no evidence available indicating that the Conex box, which is a relatively recent site feature, is currently being used or has been used for the storage of leaded batteries. Finding 1 should be revised accordingly.

Response: We agree and have revised Finding 1 accordingly. UPRR provided staff with an email on August 12, 2015, stating that the Conex boxes were recently inspected and there was no

evidence of battery storage in any of the onsite structures. A photograph of the large Conex box shows it empty.

4. **Comment:** UPRR commented that the Alameda Creek, Recharge Ponds, and the Peralta-Tyson Wellfield are located from ½ to 1 mile from the site and should not be considered “nearby.” Finding 1 should be revised accordingly.

Response: We agree and have revised Finding 1 to state the specific distances from the site to the Wellfield, the Alameda Creek, and the Recharge Ponds.

5. **Comment:** UPRR commented on a statement in the TO that the Site *has been owned by UPRR and its predecessors since July 17, 1893*, and pointed out that the TO should be revised to state that the site has been owned by UPRR “or” its predecessors. Finding 2 should be revised accordingly.

Response: Comment noted. We have revised Finding 2 to more clearly indicate UPRR’s relationship to its corporate predecessors.

6. **Comment:** The statement that three aboveground storage tanks (ASTs) noted on the 1929 Sanborn Maps contained gasoline and other structures were present at the site should be revised to state that the AST contents include gasoline and diesel. Finding 2 should be revised accordingly.

Response: We agree and have revised Finding 2 accordingly.

7. **Comment:** UPRR disagrees with a statement in Finding 2 that the site’s rail spur were used to transport petroleum products to the ASTs. There is no available evidence that the petroleum products for the ASTs were transported by rail. Finding 2 should be revised accordingly.

Response: We agree and have deleted this statement from Finding 2.

8. **Comment:** Lead should not be considered a chemical of concern, based on the results of previous investigations presented in the February 7, 2008, Site Investigation Report and acceptance by ACWD to eliminate it as a chemical of concern. Finding 2 should be revised accordingly.

Response: We disagree. As early as 1915, gasoline was stored at the site in large quantities. Leaded gasoline was phased out in about 1975. Lead has been detected at elevated concentrations up to 580 mg/kg in onsite soil samples collected in December 2005. The commercial environmental screening level for lead is 320 mg/kg. Accordingly, lead should be investigated and evaluated as a potential chemical of concern. The record does not show that ACWD eliminated it as a chemical of concern.

9. **Comment:** The reference to “floating source material” in Finding 7 should be removed, because it is misleading. Light non-aqueous phase liquid (LNAPL) can be present in the saturated zone below the water table, as has been shown to be the case at this site. Finding 7 should be revised accordingly.

Response: We agree and have revised Finding 7 accordingly.

- 10. Comment:** The Task 1 compliance date (Completion of Source Characterization) should be revised from August 31, 2015, to October 30, 2015.

Response: We agree and have revised the Task 1 compliance date accordingly.

- 11. Comment:** The Source Characterization Report (Task 1) should not need to present an evaluation of recommendations for source remediation options for the site. Source remediation options should be evaluated following completion of the approved aquifer test and remedial pilot testing for the site.

Response: We disagree. It is reasonable for the Source Characterization Report to include recommendations for source removal, which is typically done early in the remedial process and which does not need to wait for full site characterization. Water Board staff has already approved the Aquifer Test Workplan and will approve the Remedial Pilot Test Workplan shortly. Staff has already agreed to UPRR's request to extend the compliance date for submittal of the Source Characterization Report from August 31 to October 30, 2015.

- 12. Comment:** There is no need to require the results of aquifer testing and groundwater modeling in the Source Characterization Report (Task 1). The aquifer test field work is anticipated to be conducted in August-September 2015. Groundwater modeling using data generated by the aquifer test will occur following the aquifer test, and UPRR plans to submit a report containing the results of these efforts under separate cover.

Response: We disagree. Staff has already agreed to UPRR's request to extend the compliance date for submittal of the Source Characterization Report from August 31 to October 30, 2015. This time extension should allow sufficient time for inclusion of results of aquifer testing and groundwater modeling. If not, UPRR may ask for a time extension to submit an addendum report for the aquifer testing and groundwater modeling.

- 13. Comment:** It is premature to propose interim remedial action activities until the necessary data to evaluate remedial actions has been obtained. Therefore, the requirement for an "Interim Remedial Action Workplan for Onsite Pollution" (Task 2) should be removed from the TO. UPRR's has submitted an August 26, 2015 workplan for remedial pilot testing and once this is approved by the Water Board and pilot testing is completed, UPRR will consider continuation and/or expansion of the pilot test treatment system with concurrence from the Water Board. UPRR also plans to prepare a feasibility study following completion of onsite aquifer testing, groundwater modeling, and pilot testing assuming data gaps have been addressed. The FS will evaluate onsite remedial actions and recommend a final remedial action to address onsite soil and groundwater impacts from fuel-related releases.

Response: We disagree. Interim remedial actions are needed promptly, due to the imminent threat to the ACWD Wellfield, and it is not reasonable or necessary to wait for the completion of full site characterization before implementing those interim remedial actions. See also our response to UPRR comment 1. As an aside, pilot testing of a remedial option may qualify as an interim remedial action if it is intended to accomplish source removal or to address the imminent threat to the ACWD Wellfield.

- 14. Comment:** The requirement for a Remedial Investigation Workplan (Task 6a) and specifically the task's requirement to "monitor the pollution between the site and the ACWD Peralta-Tyson

Wellfield” should be removed until such time as site characterization has determined that site releases are the source of pollution at the Peralta-Tyson Wellfield. UPRR is currently implementing a workplan to complete the definition of the vertical and lateral extent of groundwater pollution.

Response – We disagree; see our response to UPRR comment 2. There is sufficient data that demonstrates the site’s unauthorized releases are responsible for the impacts to the shallow and deep aquifers. Monitoring the groundwater pollution between the site and the Wellfield is essential to evaluate plume migration patterns and assess potential impacts to the Wellfield. While we appreciate UPRR’s continuing efforts to define the lateral and vertical extent of offsite deep aquifer impacts by a series of temporary borings, permanent monitoring wells are also needed to provide the ability to monitor the same location over time and identify temporal patterns.

- 15. Comment:** Tasks 7a and 7b (additional phases of remedial investigation) are not needed and should be removed from the TO. The Remedial Investigation Workplan (Task 6a) is currently being implemented. If additional phases of investigation are necessary, UPRR would prefer to streamline the process by presenting proposals for additional investigation activities via email during active investigation activities to continue operations and avoid delays.

Response: We disagree. We understand that the deep aquifer investigations currently under way are part of remedial investigations and we have no objection to the use of stream-lined, expedited and phased approaches to fully define the lateral and vertical extent of onsite and offsite contamination. We also have no objection to the use of e-mails to transmit proposals for limited scope of work. Protection of the ACWD Wellfield is a high priority and our staff is committed responding to UPRR’s remedial-investigation proposals in a timely manner. Tasks 7a and 7b provide assurance that remedial investigation will fully define the extent of contamination, in the event that a streamlined approach bogs down.

- 16. Comment:** The Risk Assessment Workplan (Task 8) and completion report (Task 9) for offsite pollution is unnecessary and should be removed from the TO. UPRR believes a screening level risk assessment can be completed during the preparation of the feasibility study, as part of Task 10, Remedial Action Plan Including Draft Cleanup Levels.

Response: We disagree. Tasks 8 and 9 already allow for a screening level risk assessment, and its completion prior to the Remedial Action Plan is needed to provide guidance to earlier tasks (remedial investigation and interim remedial actions) and to establish acceptable exposure levels to be used in developing the remedial alternatives in the feasibility study.

- 17. Comment:** The proposed deadline for the “Remedial Action Plan” (Task 10) is acceptable and we intend to submit a Feasibility Study before the proposed deadline.

Response: Comment noted.

Alameda County Water District (ACWD)

1. **Comment:** The Site is located near the highly sensitive Alameda Creek, ACWD recharge facilities and ACWD Peralta-Tyson Wellfield in the Above Hayward Fault portion of the Niles Cone Groundwater Basin. The Above Hayward Fault sub-basin is largely unconfined and the first

encountered water-bearing zone is the regional aquifer, composed of highly permeable soil (i.e., cobbles, gravel and sand), that provide tremendous water storage and flow potential, and is critical for ACWD's recharge and extraction operations.

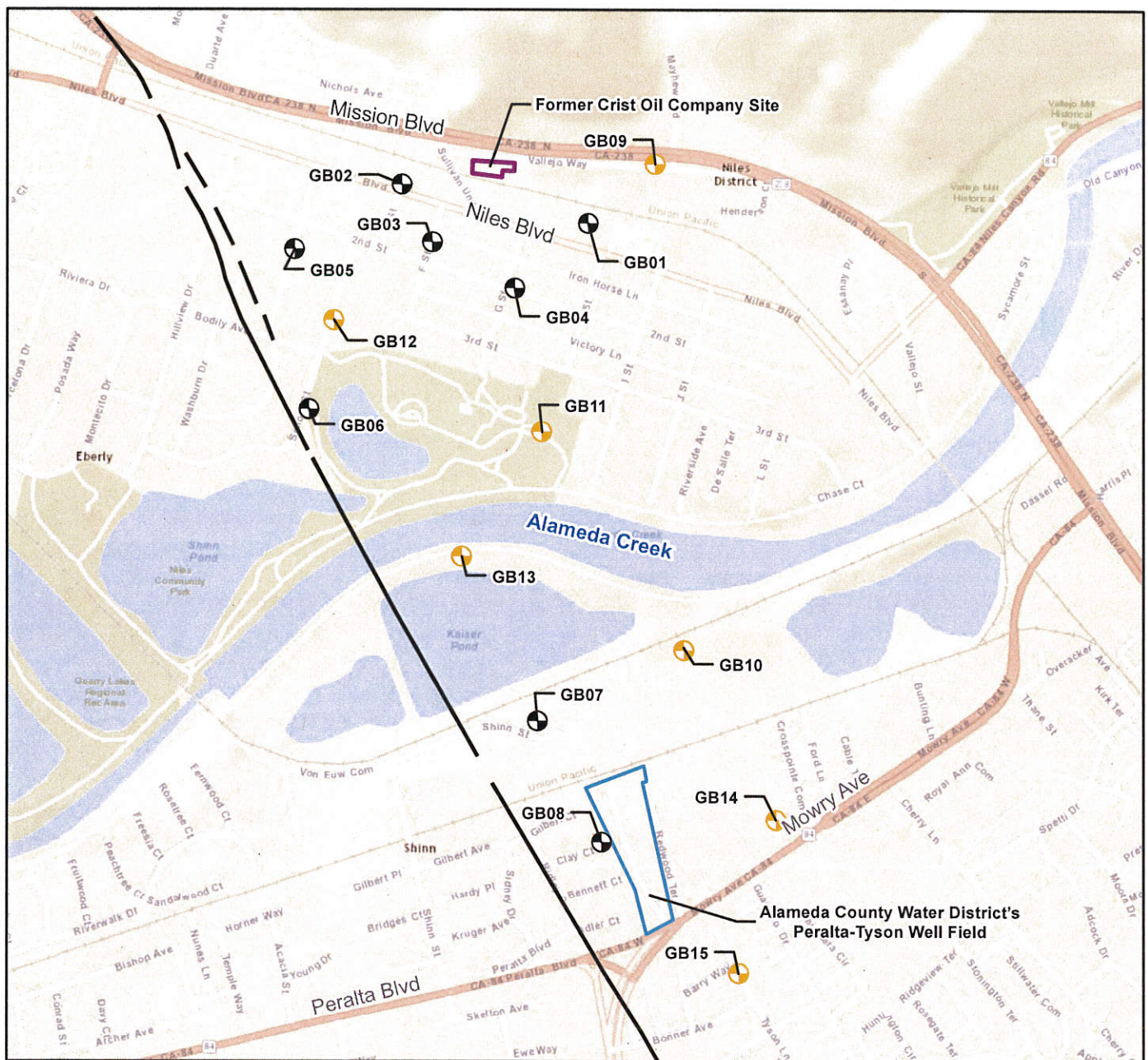
Response: We agree, and the TO findings already discuss these points.

2. **Comment:** ACWD supports the Order, especially the tasks associated with implementing onsite remedial actions within a timely manner. ACWD concurs with all the required tasks contained in the order. Task 1 (Completion of Source Delineation) does not address the need to further define the *vertical* extent of groundwater contamination onsite, which is a critical component necessary for UPRR to properly design and implement the interim remedial actions required in Task 2 (Interim Remedial Action Workplan for Onsite Pollution) and Task 3 (Completion of Interim Remedial Action Workplan for Onsite Pollution). A new task should be added or Task 1 should be expanded to require additional elements to define the vertical extent of groundwater pollution onsite.

Response: We agree that additional investigations are needed to define the vertical extent of groundwater contamination onsite. Tasks 6a and 6b of the TO require the dischargers to define the vertical and lateral extent of groundwater pollution. The TO has been revised to clarify that these tasks apply to onsite and offsite pollution.

APPENDIX D

SITE LOCATION MAP

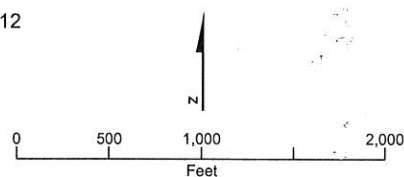


LEGEND

- Soil Boring Location
- Proposed Soil Boring Location
- Hayward Fault

Note:

1. Proposed soil boring locations GB11, GB12 and GB13 will be conducted first.



VICINITY MAP



FIGURE

Offsite Investigation Report for Borings
GB05 through GB08
Former Crist Oil Company,
37105 Mission Boulevard, Fremont, California

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Sources: Esri, DeLorme, USGS, NPS
Sources: Esri, USGS, NOAA