



California Regional Water Quality Control Board

San Francisco Bay Region



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Acting Secretary for
Environmental Protection

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Edmund G. Brown, Jr.
Governor

Date: April 13, 2011
File No. 01S0645 (CFC)

Union Oil Company of California, aka Unocal
c/o Chevron Environmental Management Company
Superfund & Property Management Business Unit
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Attn: Brian R. Caster and Tom Kearney
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SUBJECT: Transmittal of Tentative Order – Revised Final Site Cleanup Requirements and Rescission of Order Nos. 90-133, 93-025, 98-041, and R2-2006-0084 – for the Properties located at 401 and 411 High Street, Oakland, Alameda County.

Dear Mr. Mailloux, Armstrong, Koch, Caster, and Kearney:

Attached is a Tentative Order (Revised Final Site Cleanup Requirements) for the subject site. The Tentative Order updates the list of named responsible parties, amends site-specific cleanup standards, requires the implementation of acceptable remedial action plans, and establishes tasks for long-term site management through site closure.

This matter will be considered by the Regional Water Board during its regular meeting on Wednesday, June 8, 2011. The meeting will start at 9:00 am and will be held in the first floor auditorium of the Elihu Harris Building, 1515 Clay Street, Oakland, California. Any written comments by you or interested persons must be submitted to the Regional Water Board offices by May 13, 2011. Comments submitted after this date will not be considered by the Regional Water Board.

Pursuant to section 2050(c) of Title 23 of the California Code of Regulations, any party that challenges the Regional Water Board's action on this matter through a petition to the State Water Board under Water Code section 13320 will be limited to raising only those substantive issues or objections that were raised before the Regional Water Board at the public hearing or in timely submitted written correspondence delivered to the Regional Water Board (see above).

If you have any questions, please contact Cleet Carlton of my staff at (510) 622-2374 [e-mail: ccarlton@waterboards.ca.gov].

Sincerely,

Bruce H. Wolfe
Executive Officer

Attachment: Tentative Order
cc w/attach: Mailing List

Mailing List

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

DRAFT TENTATIVE ORDER

ADOPTION OF REVISED FINAL SITE CLEANUP REQUIREMENTS AND RESCISSION OF ORDER NOS. 90-133, 93-025, 98-041, AND R2-2006-0084 FOR:

UNION OIL COMPANY OF CALIFORNIA, AKA UNOCAL, A SUBSIDIARY OF
CHEVRON CORPORATION

CHEVRON CORPORATION

ATLANTIC RICHFIELD COMPANY – A BP AFFILIATED COMPANY

BP AMOCO P.L.C.

RICHARD KOCH 411 HIGH STREET ANNUITY TRUST

NANCY KOCH 411 HIGH STREET ANNUITY TRUST

OAKLAND HIGH STREET PARTNERS, LP

for the properties located at

401 and 411 HIGH STREET
OAKLAND, ALAMEDA COUNTY

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

- Site Location:** The site consists of two adjoining properties, 401 and 411 High Street in Oakland (Figure 1). The site is located immediately adjacent to the Oakland Estuary Tidal Canal (Estuary) just north of the High Street Bridge. The 401 High Street property has an approximately 350-foot border along the Oakland Estuary and is connected to High Street by a narrow easement between 301 High Street and 411 High Street (see Figure 1). The 411 High Street property shares an approximately 500-foot border with 401 High Street and is approximately 160 feet along High Street. The 411 High Street property also shares two sides with the adjacent property at 441/445 High Street and includes a narrow easement extending northeast along its border with 3775 Alameda Avenue. The site is located in a predominantly industrial neighborhood. The City of Oakland currently provides a General Commercial (GC-1) land use classification for the site (June 1999, Estuary Policy Plan), and the site is currently zoned as heavy industrial (M-40). Land use in the vicinity is mainly industrial and commercial, although in recent years, some residential development has occurred along the shoreline to the northwest, in an area where this use is allowed by the 1999 Estuary Policy Plan (i.e., Signature’s “The Estuary” and “Harbor Walk” developments). The 50- to 100-foot-wide Bay Trail runs along the shoreline at the southwest edge of 401 High Street.

In July 2010, the City of Oakland presented a preferred land use alternative for the Central Estuary Plan, which includes the site location. This alternative includes construction of a new street along the northwest and southwest edges of the 411 High Street property, with the remainder of 411 High Street and the adjacent property at 441/445 High Street being re-classified from industrial to commercial/retail. To date, these plans have not yet been approved.

2. **Site History:**

a. **401 High Street**

Richfield Oil Company owned the 401 High Street property from 1946 to 1975 and operated a bulk petroleum distribution facility from 1946 to 1967. From 1955 to 1975, American Mineral Spirits Company, Western (AMSCO-W), a joint venture between Richfield Oil Company and Pure Oil Company, operated a bulk terminal for storing, shipping, and receiving chemical products on the property. Pure Oil Company was bought by Union Oil Company of California (Unocal) in 1965. In 1975, Union Oil bought Richfield Oil Company's share of AMSCO-W. The new entity, Union Chemical Division of Unocal, operated the bulk terminal until 1991. The bulk terminal included a tank farm containing 41 12,000-gallon underground storage tanks (USTs) and 8 aboveground storage tanks (ASTs) for fuels, fuel-related chemicals, and solvents. In 2005, Unocal Corporation merged with Chevron Corporation (Chevron), to become a wholly-owned subsidiary of Chevron.

A major spill occurred at the northwest edge of the 401 High Street property on July 5, 1983, when 23,300 gallons of toluene was spilled during rail car off-loading at the Unocal tank farm. Unocal estimated that between 3,600 and 4,000 gallons of toluene in an undissolved fraction (free phase) in the subsurface, which migrated northwest across the property line onto the parcel owned by NEU Investment Corp. In addition, investigations at the 401 High Street property have revealed that soil and groundwater have been impacted by various solvent chemicals and petroleum constituents associated with the former Unocal chemical distribution facility operations.

The 301 High Street property was formerly used by Atlantic Richfield Company (ARCO) for equipment maintenance and storage. The 401 High Street property was subsequently redeveloped along with 301 High Street (located along High Street) as the existing self-storage facility by the Crist Property Company, and was sold in 2003 to the current owner, Las Vegas II Storage, LLC, now known as Oakland High Street Storage Partners, LP.

b. **411 High Street**

Richfield Oil Company owned and operated a petroleum storage facility in the southern portion of the 411 High Street property from 1946 through 1967. The facility included two large buildings, three ASTs with capacities greater than 50,000 gallons each, six smaller ASTs with capacities less than 50,000 gallons each, a loading rack and numerous product pipelines and manifolds. Gasoline, diesel, and motor oil were stored in the

ASTs. The former tanks and associated aboveground piping were removed from the property by ARCO by 1975.

From 1967 through 1975, the northern parcel of the 411 property was subleased from AMSCO-W, first to Earl Foster, and then in 1972 to Frank Peckett dba the Foster Chemical Company. Foster Chemical mainly operated a fish fertilizer packaging facility on the northern parcel of the 411 property, where four 2,000-gallon USTs, four 6,000-gallon USTs, and a 500-gallon heating oil UST were located. The contents and usage of the eight larger USTs are unknown.

In 1975, ARCO sold the property to Mr. William Balfrey who immediately sold it to the current owners, the Richard Koch 411 High Street Annuity Trust and Nancy Koch 411 High Street Annuity Trust. The site was occupied by the Big B Lumberteria lumber yard until 1996 (the Big B retail store was located at 301 High Street). It was subsequently occupied by ITEL Terminals Inc. to store and repair shipping containers from 1996 to 2000. From 2000 to the present, the site has been occupied by First Transit Company as a commercial passenger van storage and maintenance facility. During the tenancy of these occupants subsequent to ARCO, there were no USTs or ASTs installed or operated on the property. In 2000, ARCO merged with BP Amoco P.L.C. to become a wholly-owned subsidiary of BP (Atlantic Richfield Company – a BP affiliated company).

Investigations at the property have revealed that soil and groundwater have been impacted by various solvent chemicals and petroleum constituents associated with the former ARCO and possibly Foster Chemical operations.

3. **Named Dischargers:** Union Oil Company of California (aka Unocal) – a subsidiary of Chevron Corporation, and Chevron Corporation (hereafter referred to as Chevron/Unocal) are named as primarily-responsible dischargers because they are the successor in interest to Unocal, because of substantial evidence that Unocal discharged pollutants to soil and groundwater at the site, and because Unocal owned/operated all or part of the site during or after the time of the activities that resulted in the discharge, had knowledge of the discharge or the activities that caused the discharge, and had the legal ability to prevent the discharge.

Atlantic Richfield Company – a BP affiliated company and BP Amoco P.L.C., (hereafter referred to as BP/ARCO) are named as primarily-responsible dischargers because they are the successor in interest to ARCO, because of substantial evidence that ARCO discharged pollutants to soil and groundwater at the site, and because ARCO owned/operated all or part of the site during or after the time of the activities that resulted in the discharge, had knowledge of the discharge or the activities that caused the discharge, and had the legal ability to prevent the discharge¹.

¹ On September 18, 2009, BP informed the Regional Water Board that it retained Arcadis US Inc. (Arcadis) to manage remediation at the 411 High Street property and, in accordance with its contract, Arcadis has assumed primary accountability for meeting all applicable regulatory obligations. The Regional Water Board recognizes Arcadis as the primary contact for remediation management, but BP remains a discharger.

Oakland High Street Partners, LP, is named as discharger because it owned part of the site after the time of the activities that resulted in the discharge. It will be responsible for compliance with this order only if the Regional Water Board or Executive Officer finds that primarily-responsible dischargers have failed to comply with the requirements of this order (secondarily responsible).

Richard Koch 411 High Street Annuity Trust, and Nancy Koch 411 High Street Annuity Trust (High Street Trusts) are named as dischargers because they owned part of the site after the time of the activities that resulted in the discharge. They will be responsible for compliance with this order only if the Regional Water Board or Executive Officer finds that primarily-responsible dischargers have failed to comply with the requirements of this order (secondarily responsible).

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 was subject to the following Regional Water Board orders:

- o Site Cleanup Requirements (Order No. 90-133) adopted September 19, 1990.

- o Amendment of Site Cleanup Requirements (Order No. 93-025) adopted March 17, 1993. The rationale of this amendment was to allow additional time for interim groundwater treatment and require the submittal of a five-year status report.

- o Amendment of Site Cleanup Requirements (Order No. 98-041) adopted May 20, 1998. The rationale of this amendment was to remove the 301 High Street property from the Site Cleanup Requirements.

- o Amendment of Site Cleanup Requirements (Order No. R2-2006-0084) adopted December 13, 2006. The rationale of this amendment was to update the named responsible parties and require the submittal of investigation reports and feasibility study/remedial action plans.

5. **Site Hydrogeology:** The site is located on alluvial deposits characterized as sequences of silty clay sediments interbedded with sand and gravel lenses. Site investigations have identified three distinct water-bearing zones, referred to as Zone A (upper), Zone B (lower), and Zone C (deep), which are separated by relatively low permeability confining units. Additional subdivisions within the upper and lower zones were identified during investigations since 2006. These subdivisions add complexity to the hydrogeology and potential for contaminant migration between the upper and lower zones.

Zone A sediments consist of discontinuous clayey to sandy deposits and extend from the ground surface to approximately 6 to 8 feet below ground surface (bgs). Groundwater in

Zone A appears to be influenced by surface infiltration of precipitation and not by tidal fluctuations in the Estuary. Prior to remedial activities, the seasonal groundwater flow in the Zone A unit was generally south-southwest towards the Estuary. Since the initiation of remedial activities, monitoring of groundwater in Zone A has shown variable flow directions, with occasional sinks and mounds in shifting locations across the site. In addition, some wells screened across Zone A are periodically dry. The A/B confining unit consists of a 5- to 10-foot thick silty clay and clay layer, with local fine to medium sand and gravel underlying Zone A.

The Zone B unit consists of silty sand and silty clay deposits from approximately 14 to 30 feet bgs. Groundwater levels in Zone B are influenced by tidal fluctuations in the Estuary. Prior to remedial activities, groundwater in Zone B flowed west across most of the site, and south-southeast in the southeastern portion (411 High Street property). Since the initiation of remedial activities, monitoring of groundwater in Zone B has shown variable flow directions, with occasional sinks and mounds in shifting locations across the site. The B/C confining unit consists of fine sand, silt and clay underlying Zone B.

The Zone C unit consists of thin beds of relatively permeable poorly-graded gravel and well-graded sand interbedded with thicker sandy clay beds below 40 feet bgs. Groundwater flow in Zone C is influenced by tidal fluctuations similar to the Zone B. During high tide, groundwater flow is to the northeast, away from the Estuary, in the northern portion of the site, and toward the southeast in the southern portion of the site. During low tide, groundwater flow is to the southwest, toward the Estuary.

6. **Remedial Investigations:** A number of remedial investigations have been conducted at the 401 and 411 High Street properties between 1983 and 2008. These investigations have identified the three water-bearing zones and the nature and extent of contaminants across the site. These investigations have identified total petroleum hydrocarbons (TPH) as diesel and gasoline, benzene, toluene, ethylbenzene, xylenes, and the chlorinated volatile organic compounds (CVOCs) tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (DCE), 1,1-dichloroethane (DCA), and vinyl chloride as the primary pollutants at the site. In general, the vertical and lateral extent of contamination in soil vapor, soil, and groundwater has been adequately defined, although additional characterization is needed to address the vapor intrusion concern at the adjacent property at 441/445 High Street.
7. **Adjacent Sites:** NEU Investment Corporation owns the property at 3775 Alameda Avenue. The property is located immediately northwest of the site. From the 1940s through the 1980s, the property was occupied by an automobile and scrap metal salvage yard. The property is currently occupied by Brinks Incorporated Armored Car, a fitness center, and an automotive parts wholesale distributor. The property has been affected by migration of a toluene plume emanating from the 1983 spill on the 401 High Street property. In a remedial action unrelated to the site, a 10,000-gallon diesel UST and 1,000-gallon gasoline UST located in the northern central portion of the property were removed in 1988.

8. **Previous Remedial Actions:**

401 High Street

As a result of the toluene spill on July 5, 1983, Unocal excavated a trench along the northwest property boundary (with 3775 Alameda Avenue), and installed four 12-inch diameter recovery wells just northwest of the property boundary to recover free toluene. (Impacted water impacted water largely due to fire-prevention following the spill was also recovered.) An unknown amount of toluene was removed from the recovery wells, trench, and existing depressions where the spilled toluene ponded on the surface. The recovery wells operated from July 1983 to at least October 1984.

In 1988, Unocal began operating a groundwater extraction and treatment system (GWET), including a trench between the tank farm/toluene spill area and the Estuary to control and remove toluene spill and tank farm related contamination detected in the Zone A aquifer on the 401 High Street property. Due to groundwater extraction, combined with natural fluctuations in groundwater level, the Zone A aquifer was periodically dewatered.

In 1990, Unocal removed 8 ASTs from the site.

In 1992, Unocal began operating a soil vapor extraction (SVE) system, including 14 extraction wells, 5 vapor extraction trenches, and 3 air inlet trenches. Between 1992 and 1998, 385 pounds of VOCs were removed from the vadose zone.

In 1993, Unocal began operation of an expanded GWET system consisting of six onsite and eight offsite extraction wells to control and remove contamination in the Zone B aquifer.

In 1996, Unocal removed 41 USTs from the site. Excavated soil was aerated and replaced in the excavation. An SVE system was also installed in the backfilled excavation and connected to the then existing SVE system.

In 1998, Unocal noted that the hydrocarbon removal rates from the SVE system significantly decreased and performed confirmation soil sampling. Unocal concluded that the SVE system had removed VOCs from the vadose zone to asymptotic levels and could be shut down. The SVE system was shut down following the Regional Water Board approval of Unocal's Confirmation Soil Sampling and Health Risk Assessment. The SVE system shutdown was conditioned on (1) that soil around soil boring HA16 was removed and the area confirmed to below industrial PRGs, and (2) that the Zone A GWET system continued to operate. In February and March of 1999, additional soil sampling delineated the extent of contamination around soil boring HA16, and Unocal excavated a 26-foot by 28-foot area to a depth of 3.5 feet.

In 2002, Unocal discontinued the first GWET systems (Zone A and Zone B), due to pending site redevelopment. Unocal calculated that a total of 193 pounds of VOCs had

been removed from both the 401 and 411 High Street properties. At least a portion of 401 High Street was subsequently raised three feet during redevelopment. During excavation for the redevelopment in 2003, three six-inch diameter pipelines, two containing a residue of what were noted by personnel in the field as petroleum fuel, were uncovered along the northwestern property boundary and removed.

In 2004, Unocal constructed a new remedial system, consisting of dual-phase (groundwater and soil gas) extraction (DPE), air sparging (AS), and vacuum-enhanced GWET with four new recovery wells along the east side of the property. The new GWET portion of the system was installed to remove contamination remaining in the Zone B aquifer on the east side of the property. The DPE/AS portion of the system, installed specifically to remediate toluene in the Zone B aquifer along the northern property border, consists of nine co-located Zone A/Zone B DPE well pairs, and nine Zone B AS wells. The GWET became operational in September 2004. The DPE/AS system was placed online in February 2005. In April 2005, the GWET portion of the system was discontinued to prevent contamination from being pulled from the 411 High Street property to the 401 High Street property and to avoid the potential for drawing ozone (which might potentially alter the naturally-occurring reductive dechlorination of solvents) from the yet-to-be installed air sparging system on the 411 High Street property. The AS portion of the system was active until July 26, 2006, and the DPE portion of the system was active until June 15, 2007. The following removals were achieved as of June 2007:

Contaminant	Pounds Removed by Groundwater Extraction	Pounds Removed by SVE
TPH as Gasoline	33	240
BTEX	16	105
CVOCs	1.4	10

411 High Street

Prior to May 1975, ARCO removed three large ASTs, six smaller ASTs, a loading rack and numerous product pipelines and manifolds associated with the former ARCO facility from the site.

The USTs and associated piping in the area occupied by Foster Chemical in the north side of the 411 property were abandoned in place in 1975 and subsequently removed from the site in 1994.

From 1993 to 2002, Unocal operated a GWET system to control and remove contamination in the Zone B aquifer on the 401 property (see 401 High Street above). This system also included 4 extraction wells located on the 411 High Street property.

In February-March 2006, ARCO installed an ozone sparging/SVE system on the 411 High Street property. The system consists of 15 vertical ozone sparging wells screened in the Zone B aquifer, and 15 horizontal SVE wells in Zone A, each 20 feet in length and 2.5 to 3 feet below the surface. The operation of the system commenced in April 2006. The ozone sparging system was converted to air sparging by May 2009 due to maintenance issues associated with ozone generation. In May 2010, the air sparging/SVE system was shut down for a six-month rebound test. As of May 2010, the total mass of volatile hydrocarbons removal was approximately 1,200 pounds. The system was restarted on November 30, 2010, for a five-week rebound study to evaluate if additional contaminant mass had entered the primary flow pathways during the shutdown period. During the study, an estimated 31 pounds of total volatile hydrocarbons were removed by the SVE system. The mass removal rate during the study decreased from 1.3 to 0.61 pounds per day, indicating that no significant rebound occurred during the six-month system shutdown, and asymptotic mass removal rates similar to pre-shutdown conditions. Therefore, Arcadis, on behalf of BP/ARCO requested permanent shutdown of the SVE system and focus on alternative remedial strategies.

9. **Environmental Risk Assessment:**

- a. **Screening Level Assessment:** A screening level environmental risk assessment was carried out to evaluate potential environmental concerns related to identified soil gas, soil, and groundwater impacts. Chemicals evaluated in the risk assessment include the primary chemicals of concern identified at the site: TPH as gasoline and diesel, benzene, toluene, ethylbenzene, xylenes (BTEX), and select chlorinated VOCs.

As part of the assessment, site data were compared to Environmental Screening Levels (ESLs) in *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater* (Interim Final – November 2007, Revised May 2008) compiled by Regional Water Board staff. The presence of chemicals at concentrations above their ESLs indicates that additional evaluation of potential threats to human health and the environment is warranted.

Screening levels for soil gas address the potential for vapor intrusion concerns. Screening levels for soil address: 1) direct exposure, 2) leaching to groundwater, and 3) nuisance concerns. Screening levels for groundwater address: 1) beneficial uses (drinking water and surface water recharge), 2) vapor intrusion, and 3) nuisance concerns.

- b. **Soil Gas Assessment:** At 401 High Street, data collected in 2007 indicated that TPH as gasoline and benzene in soil gas exceeded ESLs for vapor intrusion along the northern portion of the property near the border with 411 High Street. These detections appear to be contiguous with the larger area of impacted soil gas at 411 High Street, described below.

At 411 High Street, data collected in 2007 indicated that TPH as gasoline and diesel, and benzene in soil gas across the central portion of the property exceeded ESLs for vapor intrusion concern. PCE also exceeded the ESL for vapor intrusion concern at SVP-29, to the east of the High Street entrance to the site.

Sub-slab soil gas samples were also collected beneath the adjacent property at 441/445 High Street. Health risks calculated by BP/ARCO may not address the risk associated with benzene, TPH as gasoline and diesel, and may have used sub-slab to indoor air attenuation factors that are no longer consistent with regulatory guidance. Therefore, additional assessment and remedial action, and potentially, mitigation are warranted.

- c. **Soil Assessment:** At 401 High Street, data collected in 2007 indicated that TPH as gasoline exceeded the ESL at isolated borings along the west side of the site. Additional samples exceeded the ESLs for TPH as gasoline and diesel, and benzene along the northern portion of the property near the border with 411 High Street. Because these samples (collected at 9 feet bgs) were collected from the saturated zone, these results are addressed in the groundwater assessment below.

At 411 High Street, data collected in 2007 indicated that TPH as gasoline and diesel, and benzene exceeded the ESLs across portions of the site and apparently onto portions of the adjoining 441 High Street property.

- d. **Groundwater Assessment:** At 401 High Street, data collected in 2007 indicated that TPH as gasoline and diesel, and toluene exceeded the ESLs at several locations within the area of the 1983 surface release of toluene. In particular, two locations in Zone B groundwater had co-located elevated concentrations of TPH as gasoline and toluene, which is consistent with historical groundwater monitoring results. Elsewhere on the 401 High Street property, benzene in Zone B exceeded the ESL in wells along the northern portion of the property near the border with the 411 High Street property. These detections appear to be contiguous with the larger area of impacted groundwater at 411 High Street.

At 411 High Street, data collected in 2007 indicated that TPH as gasoline and diesel, and benzene exceeded the ESLs in southern and central portions of the site, predominantly in Zone B. PCE and vinyl chloride slightly exceeded the ESLs in Zone B groundwater along the northern portion of the 401/411 High Street property line.

10. **Remedial Action Plan, 401 High Street:**

On October 28, 2010, Chevron/Unocal submitted a revised final remedial action plan (RAP) which proposes enhanced bioremediation with sulfate addition to address toluene contamination in the vicinity of well DPE-2B.

11. **Remedial Action Plan, 411 High Street**

On August 19, 2010, Arcadis (on behalf of BP/ARCO) submitted a RAP that proposes a phased approach as remediation. This approach has these main elements: additional investigation, a remedial design, full-scale implementation, and further assessment to determine necessary remediation of the adjacent property at 441/445 High Street.

- a. A conceptual remedial design was proposed to collect additional data and document the results of a DPE pilot test in the Zone A and an injection test in Zone B. A cone penetrometer test (CPT)/laser induced fluorescence (LIF) investigation of the southern portion of the site was also proposed to better define remedial actions in Zone B. The remedial design would include the proposed full-scale remedial actions based upon the results of the pilot tests.
- b. Full-scale remediation will be implemented predicated upon approval of the remedial design.
- c. A sub-slab soil vapor investigation at the adjacent property at 441/445 High Street was proposed to assess whether additional remediation/mitigation is required. Quarterly soil gas monitoring is proposed for up to one year. Engineering controls and/or remedial activities will then be evaluated and implemented.

12. **Basis for Cleanup Standards:**

- a. **General:** State Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to this discharge and requires attainment of background levels of water quality, or the highest level of water quality which is reasonable if background levels of water quality 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. Investigations and plans submitted support the Regional Water Board's initial conclusion that background levels of water quality may not be restored. This order and its requirements are consistent with Resolution No. 68-16.

State 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. This order and its requirements are consistent with the provisions of Resolution No. 92-49, as amended.

- b. **Beneficial Uses:** The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Regional Water 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 Regional Water Board and approved by the State Water Board, U.S. EPA, and the Office of Administrative Law where required.

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 total dissolved solids (greater than 3,000 mg/L), low yield (less than 200 gallons per day), or naturally-high contaminant levels. Groundwater underlying the site qualifies as a potential source of drinking water because it does not meet any of these exception criteria. As documented in several sources [411 High Street site investigation, (JMM, 1991), groundwater data obtained during UST removal activities in the Foster Chemical portion of 411 High Street (Levine-Fricke-Recon, December 1994), and the discharge permit reports for the remediation system at 401 High Street (URS, 2005)], total dissolved solids ranged from 480 to 1,476 mg/L. In addition, URS performed an electrical conductivity study of the dual-phase extraction (DPE) wells at the site in August 2009. Regional Water Board staff's assessment of the data indicated that both the electrical conductivity and total dissolved solids were within the limits for potential sources of drinking water. Furthermore, URS performed a one-day vacuum extraction test at one of the DPE wells in April 2010. A result of this test was the extraction of groundwater at a rate of 1.75 gallons per minute for a total of 750 gallons. This demonstrated the capacity to produce groundwater at a rate in excess of 200 gallons per day. Although the proximity to the Estuary makes sustainable groundwater extraction for drinking water purposes an unlikely scenario at the site, these concentrations and yield do not preclude the use of groundwater as a potential source of drinking water.

The Basin Plan designates the following potential beneficial uses of groundwater underlying and adjacent to the site:

- Freshwater replenishment to surface waters
- Protection from leaching to deeper potable aquifers
- Municipal and domestic water supply
- Industrial process water supply
- Industrial service water supply
- Agricultural water supply

The existing and potential beneficial uses of the Estuary include:

- Estuarine habitat
- Fish migration and spawning
- Industrial process supply or service supply
- Navigation
- Ocean, commercial, and sport fishing
- Preservation of rare and endangered species
- Shellfish harvesting
- Water contact and non-contact recreation
- Wildlife habitat

- c. **Basis for Groundwater Cleanup Standards:** The groundwater cleanup standards for the site are based on applicable water quality objectives for drinking water and for the protection of ecological receptors, prevention of nuisance conditions, and protection of human health under a commercial/industrial indoor air exposure scenario.

Factors for protection of ecological receptors include the lowest marine aquatic habitat goal and surface water quality standards for bioaccumulation and human consumption of aquatic organisms. A 10:1 attenuation of surface water quality objectives (for ecological receptors only) applied for the area inland of the San Francisco Bay Conservation and Development Commission (BCDC) Shoreline Buffer Zone, was agreed upon during an April 15, 2003 meeting between the dischargers and Regional Water Board staff. However, subsequent investigations have demonstrated a lack of a uniform hydrogeologic flow gradient toward the estuary, a potential for preferential pathways, and there is insufficient evidence for adequate biodegradation, therefore negating the consideration of a buffer zone to be applied at a set distance from the shoreline.

The most restrictive of the above factors will apply on a chemical-by-chemical basis. Cleanup to this level will protect beneficial uses of groundwater and will result in acceptable residual risk to human and ecological receptors in a commercial/industrial use scenario.

- d. **Basis for Soil Cleanup Standards:** The soil cleanup standards for the site are based on the protection of ecological receptors, prevention of nuisance conditions, prevention of leaching of contaminants to groundwater, and protection of human health under a commercial/industrial indoor air or direct exposure scenario. The most restrictive of the above factors will apply on a chemical-by-chemical basis. Cleanup to this level will protect beneficial uses of groundwater and will result in acceptable residual risk to human and ecological receptors in a commercial/industrial use scenario.

- e. **Basis for Soil Gas Cleanup Standards:** The soil gas cleanup standards for the site are based on the protection of human health under a commercial/industrial indoor air exposure scenario.
13. **Future Changes to Cleanup Standards:** One of the goals of this remedial action is to restore the beneficial uses of groundwater underlying and adjacent to the site. Results from other sites suggest that full restoration of beneficial uses to groundwater as a result of active remediation at this site may not be possible. If full restoration of beneficial uses is not technologically nor economically achievable within a reasonable period of time, then the dischargers may request modification to the cleanup standards or establishment of a containment zone, a limited groundwater pollution zone where water quality objectives are exceeded. Conversely, if new technical information indicates that cleanup standards can be surpassed, or if site conditions change (zoning, redevelopment) that warrant modifications to the cleanup standards, the Regional Water Board may decide that further cleanup actions should be taken.
14. **Reuse or Disposal of Extracted Groundwater:** 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.
15. **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 dischargers have 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.
16. **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.
17. **CEQA:** The project is adoption of an order (final site cleanup requirements) and actions to be taken by the dischargers to comply with this order, namely implementing the approved cleanup plan and conducting monitoring activities. All cleanup and monitoring activities will occur in the subsurface. Cleanup plan implementation involves mainly adding benign chemicals to the subsurface for in-situ remediation and installing a ventilation system beneath an existing building. The project will have no potential for significant environmental effects and the activities are intended to support site cleanup. The project is therefore exempt from the provisions of the California Environmental Quality Act (CEQA) under the general rule that “CEQA applies only to projects that have the potential for causing a significant effect on the environment” (14 CCR section 15061(b)(3), also known as the “common sense” exemption).

18. **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.
19. **Public Hearing:** The Regional Water Board, at a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the dischargers (or their 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 which 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 which will cause significant adverse migration of wastes or hazardous substances are prohibited.

B. REMEDIAL ACTION PLAN AND CLEANUP STANDARDS

1. **Implement Remedial Action Plan:** The dischargers shall continue to implement the remedial action plans as described and amended in finding 10.
2. **Groundwater Cleanup Standards:** The following groundwater cleanup standards shall be met in all wells identified in the Self-Monitoring Program:

Constituent	Groundwater Cleanup Standard (ug/l)	Basis
TPH-Gasoline	100	GCCV
TPH-Diesel	100	GCCV
Benzene	1	MCL
Toluene	40	GCCV
Ethylbenzene	30	GCCV
Xylene	20	GCCV
1,1-DCA	5	MCL
1,1-DCE	6	MCL
Cis-1,2-DCE	6	MCL
Tetrachloroethene	5	MCL
1,1,1-Trichloroethane	62	Ecological (MAHG)
Trichloroethene	5	MCL
Vinyl Chloride	0.5	MCL

Notes: Ecological (MAHG) = Marine Aquatic Habitat Goal
MCL = Maximum Contaminant Level (Drinking Water)
GCCV = Gross Contamination Ceiling Value
(*Screening For Environmental Concerns At Sites With Contaminated Soil and Groundwater*, Regional Water Board, Interim Final November 2007, Revised May 2008)

3. **Soil Cleanup Standards:** The following soil cleanup standards shall be met in all vadose zone soils.

Constituent	Soil Cleanup Standard (mg/kg)	Basis
TPH-Gasoline	83	GP
TPH-Diesel	83	GP
Benzene	0.044	GP
Toluene	2.9	GP
Ethylbenzene	3.3	GP
Xylene	2.3	GP
1,1-DCA	0.2	GP
1,1-DCE	1.0	GP
Cis-1,2-DCE	0.19	GP
Tetrachloroethene	0.7	GP
1,1,1-Trichloroethane	7.8	GP
Trichloroethene	0.46	GP
Vinyl Chloride	0.047	DE

Notes: DE = Direct Exposure

GP = Groundwater Protection (Leaching)

(*Screening For Environmental Concerns At Sites With Contaminated Soil and Groundwater*, Regional Water Board, Interim Final November 2007, Revised May 2008).

4. **Soil Gas Cleanup Standards:** The following soil cleanup standards shall be met in all on-site soil gas.

Constituent	Soil Gas Cleanup Standard (ug/m ³)	Basis
TPH-Gasoline	29,000	VI
TPH-Diesel	29,000	VI
Benzene	280	VI
Toluene	180,000	VI
Ethylbenzene	3,300	VI
Xylene	58,000	VI
1,1-DCA	5,100	VI
1,1-DCE	120,000	VI
Cis-1,2-DCE	20,000	VI
Tetrachloroethene	1,400	VI
1,1,1-Trichloroethane	1,300,000	VI
Trichloroethene	4,100	VI
Vinyl Chloride	100	VI

Notes: VI = Vapor Intrusion into Buildings, commercial/industrial land use scenario (*Screening For Environmental Concerns At Sites With Contaminated Soil and Groundwater*, Regional Water Board, Interim Final November 2007, Revised May 2008).

C. TASKS

1. **IMPLEMENT REMEDIAL ACTION PLAN (401/411 HIGH STREET)**

COMPLIANCE DATE: August 1, 2012

Chevron/Unocal shall submit a report acceptable to the Executive Officer documenting the implementation of the remedial action plan (RAP) in Finding 10. Additional remediation should be considered in the vicinity of DPE-7B due to the very erratic trends at this well, as well as the response to the vacuum extraction performed at DPE-2B in April 2010. The report shall include the following:

- a. Summary of baseline monitoring results along with detailed sulfate

injection data (may be included in applicable sampling report; additional monitoring requirements are presented in the attached self-monitoring program).

- b. Documentation of additional remediation, as needed in the vicinity of DPE-7B or other wells, should target remediation goals be exceeded in this or other wells.

2. PREPARE REMEDIAL DESIGN FOR 411 HIGH STREET

COMPLIANCE DATE: February 1, 2012

BP/ARCO (or Arcadis on their behalf) shall submit a report acceptable to the Executive Officer documenting the implementation of the remedial design portion of the RAP in Finding 11.a. The report shall include the following:

- a. Results of the helium tracer air distribution test, CPT/LIF, DPE and injection testing
- b. Final remedial design based on the results above.
- c. Schedule for all remedial activities.

3. IMPLEMENT FULL-SCALE SYSTEM FOR 411 HIGH STREET

COMPLIANCE DATE: April 1, 2012

BP/ARCO (or Arcadis on their behalf) shall submit a report acceptable to the Executive Officer documenting the implementation of the full-scale system portion of the RAP in Finding 11.b. The report shall include the following:

- a. Documentation of NPDES permit, if required by final design.
- b. As-built design of full-scale system, as applicable to the final design.
- c. Results of initial monitoring and system effectiveness.

4. **IMPLEMENT OFFSITE ASSESSMENT OF ADJACENT PROPERTY AT 441/445 HIGH STREET**

COMPLIANCE DATE: July 1, 2012

BP/ARCO (or Arcadis on their behalf) shall submit a report acceptable to the Executive Officer documenting the implementation of the adjacent property at 441/445 High Street assessment portion of the RAP in Finding 11.c. The report shall include the following:

- a. Results of the sub-slab soil vapor investigation
- b. Recommendations for additional remediation/mitigation (if necessary) based on those results.
- c. Schedule for all remedial activities, as necessary.

5. **IMPLEMENT OFFSITE REMEDIAL ACTION/MITIGATION OF ADJACENT PROPERTY AT 441/445 HIGH STREET**

COMPLIANCE DATE: 90 days after Executive Officer approval of Task 4

BP/ARCO (or Arcadis on their behalf) shall submit a report acceptable to the Executive Officer documenting the implementation of the approved recommendations in Task 4. The report shall include the following:

- a. Documentation of access agreement process.
- b. As-built design of approved additional remediation/mitigation measures.
- c. Results of initial monitoring and system effectiveness.

6. **FIVE-YEAR STATUS REPORT (401/411 HIGH STREET)**

COMPLIANCE DATE: May 1, 2016, and every five years thereafter, except as noted below

The primarily-responsible dischargers shall each submit a technical report acceptable to the Executive Officer evaluating the effectiveness of the approved remedial action plans. The report shall include:

- a. Summary of effectiveness in controlling contaminant migration and protecting human health and the environment
- b. Comparison of contaminant concentration trends with cleanup standards

- c. Performance data (e.g., vapor/groundwater volume extracted, chemical mass removed, mass removed per million cubic feet of vapor/gallons of groundwater extracted)
- d. Significant modifications to remediation systems.

Compliance of this task is not required for the status of Tasks 1, 3, or 5, if the Executive Officer has approved the proposal and implementation of system curtailment (Tasks 9 and 10) under a final closure scenario for those corresponding tasks.

7. **PROPOSED LONG-TERM RISK MANAGEMENT (401/411 HIGH STREET)**

COMPLIANCE DATE: August 1, 2012

The primarily-responsible dischargers shall submit (separately for each property) a report acceptable to the Executive Officer proposing a long-term risk management plan. The report shall include:

- a. A proposed Site Risk Management Plan that is compatible with local land use plans and regulations, that does not unduly interfere with any proposed development or use by the property owner(s), and that does not significantly impact normal usage of the site. The proposed Site Risk Management Plan shall clearly demonstrate how the primarily-responsible dischargers will manage any long-term residual pollution related to the site, and must clearly set forth responsibilities, detailed protocols for coordinating with any affected parties, and deadlines for response actions that the primarily-responsible dischargers will take whenever site contamination is, or is anticipated to be, encountered such that any construction or maintenance type work is not significantly delayed or unduly burdened. The proposed Site Risk Management Plan shall also include the written approval of the respective site owner(s).
- b. Proposed deed restrictions for the 401 and 411 High Street properties that incorporate the long-term management measures contained in the Site Risk Management Plan. The goal of the proposed deed restrictions is to limit on-site occupants' exposure to site contaminants to acceptable levels. To that end, the proposed deed restrictions shall address the use of groundwater beneath the site as a source of drinking, industrial, or irrigation water, and shall adequately address disturbance of the integrity of any cap or any remedial measures taken and any equipment or monitoring systems installed. The proposed deed restrictions shall also include the written approval of the respective site owner(s), and shall name the Regional Water Board as a beneficiary and shall anticipate that

the Regional Water Board will be a signatory.

8. **DOCUMENTATION OF LONG-TERM RISK MANAGEMENT (401/411 HIGH STREET)**

COMPLIANCE DATE: 90 days after Executive Officer approval of Task 7

The primarily-responsible dischargers shall submit (separately for each property) a technical report acceptable to the Executive Officer documenting that the deed restrictions have been duly signed and have been recorded with the appropriate County Recorder. The report shall include a copy of the Site Risk Management Plan and recorded deed restrictions.

9. **COMPLIANCE WITH LONG-TERM RISK MANAGEMENT (401/411 HIGH STREET)**

COMPLIANCE DATE: One year after the compliance date for Task 8, and annually thereafter

The primarily-responsible dischargers shall submit (separately for each property) a technical report acceptable to the Executive Officer documenting how the Site Risk Management Plan has been implemented. The report shall be in the form of an annual Site Risk Management Plan compliance report.

10. **PROPOSED CURTAILMENT (401/411 HIGH STREET)**

COMPLIANCE DATE: 60 days prior to proposed curtailment

The primarily-responsible dischargers shall submit a technical report acceptable to the Executive Officer containing a proposal to curtail remediation. Curtailment includes system closure (e.g., well abandonment), system suspension (e.g., cease extraction but wells retained), and significant system modification (e.g., major reduction in extraction rates, and/or closure of individual extraction wells within extraction network). The report should include the rationale for curtailment. Proposals for final closure should demonstrate that cleanup standards have been met, contaminant concentrations are stable, and contaminant migration potential is minimal. Proposals for curtailment based on the separate completion of Task 1 or of Tasks 3 and 5, may be considered by the Regional Water Board. However, this consideration shall be subject to demonstration that closure will not adversely affect the implementation of remaining tasks.

11. **IMPLEMENTATION OF CURTAILMENT (401/411 HIGH STREET)**

COMPLIANCE DATE: 60 days after Executive Officer approval of Task 10

The primarily-responsible dischargers shall submit a technical report acceptable to the Executive Officer documenting completion of the tasks identified in Task 9. Curtailment shall also include removal of investigative and remedial infrastructure.

12. **EVALUATION OF NEW HEALTH CRITERIA (401/411 HIGH STREET)**

COMPLIANCE DATE: 90 days after requested by Executive Officer

The primarily-responsible dischargers shall submit a technical report acceptable to the Executive Officer evaluating the effect on the approved remedial action plan of revising one or more cleanup standards in response to any revision of the criteria used to establish the cleanup standards.

13. **EVALUATION OF NEW TECHNICAL INFORMATION (401/411 HIGH STREET)**

COMPLIANCE DATE: 90 days after requested by Executive Officer

The primarily-responsible dischargers shall submit a technical report acceptable to the Executive Officer evaluating any new technical information which bears on the approved remedial action plan and cleanup standards for this site. In the case of a new cleanup technology, the report should evaluate the technology using the same criteria used in the feasibility study. Such technical reports shall not be requested unless the Executive Officer determines that the new information is reasonably likely to warrant a revision in the approved remedial action plan or cleanup standards.

14. **EVALUATION OF NEW LAND USE INFORMATION (401/411 HIGH STREET)**

COMPLIANCE DATE: 90 days after requested by Executive Officer

The primarily-responsible dischargers shall submit a technical report acceptable to the Executive Officer evaluating any change in the City of Oakland's land use classification (general plan or zoning) for the site that would allow residential or other sensitive uses. The report shall propose revised cleanup standards that are protective of all uses allowed under the new land use classification. The report should evaluate the effect of the change on the approved remedial actions and any implemented institutional constraints. The report should document procedures to be used by the dischargers to prevent or minimize human exposure to soil and groundwater contamination protective of the anticipated use. Such procedures may include additional remedial action and/or institutional constraints. To the extent these procedures involve actions to be taken by the property owners, this report shall be submitted jointly with the property owners.

15. **Delayed Compliance:** If the dischargers [here and elsewhere] are delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the dischargers shall promptly notify the Executive Officer, and the Regional Water Board may consider revision 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 California Water Code Section 13050(m).
2. **Good 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 California 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 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 California Water Code Section 13267(c), the dischargers 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 which 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 professional 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 EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control (QA/QC) records for Regional Water Board review. This provision does not apply to analyses that can only reasonably be performed on-site (e.g., temperature).
8. **Document Distribution:** Copies of all correspondence, technical reports, and other documents pertaining to compliance with this order shall be provided to the following agencies:
 - a. Oakland City Fire Department, Fire Prevention Bureau, Hazardous Materials Unit
 - b. Alameda County Environmental Health, Hazardous Materials Section (electronic submittals only)
9. **Reporting of Changed Owner or Operator:** The property owners shall file a technical report on any changes in site occupancy or ownership associated with the site 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) 622-2300 during regular office hours (Monday through Friday, 8:00 to 5:00).

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 to the Office of Emergency Services required pursuant to the Health and Safety Code.

11. **Secondarily-Responsible Dischargers:** Within 90 days after being notified by the Executive Officer that primarily-responsible dischargers (Chevron/Unocal and

BP/ARCO), have failed to comply with this order, Oakland High Street Storage Partners, LP (for 401 High Street part of the site) and the High Street Trusts (for the 411 High Street part of the site) shall then be responsible for complying with this order for the portion of the property they own. Task deadlines above will be automatically adjusted to add 90 days.

- 12. **Rescission of Existing Orders:** This order supersedes and rescinds Order Nos. 90-133, 93-125, 98-041, and R2-2006-0084.
- 13. **Periodic SCR Review:** The Regional Water Board will review this order periodically and may revise it when necessary.

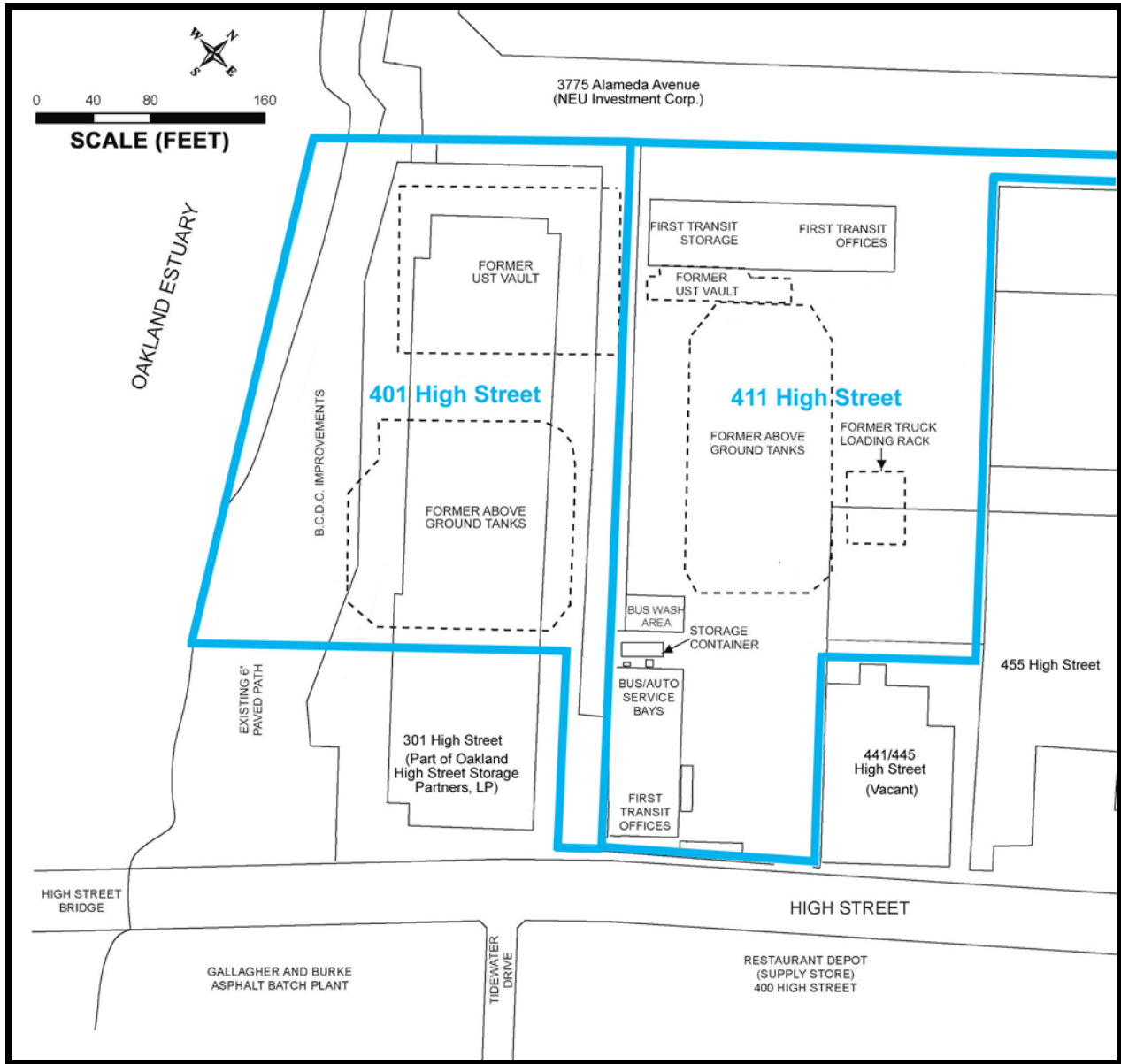
I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on FILL IN DATE.

Bruce H. Wolfe
Executive Officer

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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
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Attachments: Figure 1. Site Map
Self-Monitoring Program

FIGURE 1 – SITE MAP
401 & 411 High Street, Oakland, Alameda County



[Property boundaries are approximate. Easement along northwest edge of 411 High Street extends approximately 250 feet further to the northeast. Refer to Assessors Parcel No. 33-2250-16 for 401 High Street and Assessors Parcel No. 33-2250-15 for 411 High Street.]

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM FOR:

UNION OIL COMPANY OF CALIFORNIA, AKA UNOCAL, A SUBSIDIARY OF
CHEVRON CORPORATION

CHEVRON CORPORATION

ATLANTIC RICHFIELD COMPANY – A BP AFFILIATED COMPANY

BP AMOCO P.L.C.

RICHARD KOCH 411 HIGH STREET ANNUITY TRUST

NANCY KOCH 411 HIGH STREET ANNUITY TRUST

OAKLAND HIGH STREET PARTNERS, LP

for the properties located at

401 and 411 HIGH STREET

OAKLAND, 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. R2-2011-XXXX (site cleanup requirements).
2. **Monitoring:** The dischargers shall measure groundwater elevations quarterly in all monitoring wells, and shall collect and analyze representative samples of groundwater according to the following tables:

Zone A Monitoring Wells					
Well #	Sampling Frequency	Analyses	Well #	Sampling Frequency	Analyses
AMW-1A	SA	8015/8260	DPE-7A	SA	8015/8260
AMW-2A	SA	8015/8260	DPE-8A	SA	8015/8260
AMW-3A	SA	8015/8260	DPE-9A	SA	8015/8260
AMW-4A	SA	8015/8260	FMW-1A	SA	8015/8260
AMW-5A	SA	8015/8260	FMW-2A	SA	8015/8260
AMW-13A	SA	8015/8260	FMW-3A	SA	8015/8260
DPE-1A	SA	8015/8260	MW-17A	SA	8015/8260
DPE-2A	SA	8015/8260	MW-31A	SA	8015/8260
DPE-3A	SA	8015/8260	MW-32A	SA	8015/8260

DPE-4A	SA	8015/8260	W-3A	SA	8015/8260
DPE-5A	SA	8015/8260	MW-35A	SA	8015/8260
DPE-6A	SA	8015/8260	MW-36A	SA	8015/8260

Zone B Monitoring Wells					
Well #	Sampling Frequency	Analyses	Well #	Sampling Frequency	Analyses
AMW-1B	SA	8015/8260	DPE-7B	SA	8015/8260
AMW-2B	SA	8015/8260	DPE-8B	SA	8015/8260
AMW-3B	SA	8015/8260	DPE-9B	SA	8015/8260
AMW-4B	SA	8015/8260	FMW-1B	SA	8015/8260
AMW-5B	SA	8015/8260	FMW-2B	SA	8015/8260
AMW-7B	SA	8015/8260	FMW-3B	SA	8015/8260
AMW-9B	SA	8015/8260	MW-17B	SA	8015/8260
AMW-10B	SA	8015/8260	MW-31B	SA	8015/8260
AMW-11B	SA	8015/8260	MW-32B	SA	8015/8260
AMW-12B	SA	8015/8260	MW-33B	SA	8015/8260
AMW-13B	SA	8015/8260	MW-34B	SA	8015/8260
AMW-14B	SA	8015/8260	MW-36B	Q	8015/8260
APZ-1B	SA	8015/8260	MW-37B	Q	8015/8260
DPE-1B	SA	8015/8260	MW-38B	Q	8015/8260
DPE-2B	SA	8015/8260	MW-39B	Q	8015/8260
DPE-3B	SA	8015/8260	MW-40B	Q	8015/8260
DPE-4B	SA	8015/8260	RW-1	Q	8015/8260
DPE-5B	SA	8015/8260	RW-9	SA	8015/8260
DPE-6B	SA	8015/8260	RW-10	SA	8015/8260

Notes:

Q = Quarterly

SA = Semi-Annually

8015 = EPA Method 8015 or equivalent

8260 = EPA Method 8260 or equivalent

(Use these methods to sample for all analytes historically detected at the site)

Wells RW-5, RW-6, RW-7, and RW-8 were removed from the monitoring program since these wells were replaced by other wells in the program. All wells removed from the program shall be properly destroyed by appropriate permit. These monitoring

requirements **are in addition** to the sampling requirements proposed in the remedial action plans (Section 10) or future remedial actions as warranted by the tasks in Section C. The dischargers shall sample any new monitoring or extraction wells quarterly and analyze groundwater samples for the same constituents as shown in the above table.

3. **Semi-Annual 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 semi-annual period (e.g., report for first semi-annual period of the year is due July 30). The first semi-annual monitoring report following the adoption of this order shall be due **on July 30, 2011**. 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 should be prepared for water-bearing zones A and B. Historical groundwater elevations shall be included in the second semi-annual report each year. Due to known tidal fluctuations at the site, water level measurements shall be obtained from all wells within a span not to exceed four hours or only when minimal tidal range occurs. The measurements shall be obtained synchronously at the 401 and 411 High Street sites, and the data from both sites shall be used to prepare groundwater elevation maps. In addition, one of the closest Zone B wells to the Estuary shall be measured at the beginning and end of water level measurements to assess the amount of tidal fluctuation during the measurement period. The presence of floating free product shall also be determined at each well and noted in the monitoring reports.
 - c. **Groundwater Analyses:** Groundwater data shall be presented in tabular form, and isoconcentration maps should be prepared for each of the key contaminants for water-bearing zones A and B, as appropriate. The groundwater data shall be sampled as synchronously as practicable at the 401 and 411 High Street sites, and the data from both sites shall be used to prepare the isoconcentration maps. The report shall indicate the analytical method used, detection limits obtained for each reported constituent, and a summary of QA/QC data. A complete set of historical groundwater sampling results shall be included in the second semi-annual report each year. The report shall describe any significant increases in contaminant concentrations since the last report, and any measures proposed to address the increases.
 - d. **Groundwater/Soil Vapor Extraction:** The report shall include, if applicable, groundwater and soil vapor 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 reporting period. 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 reporting period. Historical mass removal results shall be included in the second semi-annual 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 reporting period. In addition, the second semi-annual report of each year shall summarize the results of the monitoring for that year, and include any significant modifications to remediation systems.
5. **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 dischargers have 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.
6. **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.
7. **Record Keeping:** The dischargers or their agents 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.
8. **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.