Richmond Refinery Landfarms 1-5
RCRA Post-Closure Permit Renewal
Revised Part B Application

Chevron USA
841 Chevron Way
Richmond, California

September 7, 2012
Revised October 16, 2015

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Certified this 19 day of October, 2015 in Richmond, California.

Dave Feiglstok
Richmond Refinery Health, Environment and Safety Manager
Chevron USA

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1.0 Introduction

1.1 Purpose

This revised Part B application is provided for renewal of the *Hazardous Waste Facility Post-Closure Permit* for Landfarms 1-5, which are situated within the Chevron USA Inc. (Chevron), Richmond Refinery. The California Department of Toxic Substances Control (DTSC) issued the *Hazardous Waste Facility Post-Closure Permit* (DTSC, 2003) for Landfarms 1-5 on March 4, 2003, with an effective date beginning on March 7, 2003, and expiration date of March 7, 2013. A copy of the Post-Closure Permit is provided as Appendix A. Chevron submitted the *RCRA Subtitle C Site Identification Form* (Part A Application) and *Richmond Refinery Landfarms 1-5 RCRA Post-Closure Permit Renewal Part B Application* (Chevron, 2012) to the DTSC on September 7, 2012. On January 12, 2015, the DTSC issued the *First Notice of Deficiency, Post-Closure Permit Renewal, Part B Application, Chevron USA Inc. Richmond Refinery, Contra Costa County, EPA ID No. CAD009114919* (DTSC, 2015a). Between March 25 and April 17, 2015, Chevron incorporated the comments and recommendations the DTSC presented in the *First Notice of Deficiency*, and provided the revised application documents to the DTSC for review. On May 19, 2015, the DTSC issued the *Second Notice of Deficiency, Post-Closure Permit Renewal Application, Chevron USA Inc., Richmond Refinery, Contra Costa County, EPA ID No. CAD 009114919* (DTSC, 2015b). Chevron has incorporated the comments received from the DTSC in the First and Second Notices into this revised application.

1.2 Document Organization and Contents

This revised Part B permit application is being submitted for renewal of the current Post-Closure Permit. This revised Part B application reflects the current conditions of the landfarms and has been prepared in accordance with the permit application requirements of Title 22, California Code of Regulations (CCR), Article 2. A permit completeness checklist is provided as Appendix B, cross referencing the regulatory requirements with their respective locations in this Part B application. For reference, a copy of the RCRA Hazardous Waste Part A permit application is included as Appendix C.

1.3 Site Contact Information

Facility Owner: Chevron USA Inc.,
6001 Bollinger Canyon Road
San Ramon, California, 94583

Facility Operator: Chevron USA Inc.
841 Chevron Way
Richmond, California, 94801

Facility Contact; Mr. Dave Feiglstok
Chevron USA Inc.
(510) 242-4000

2.0 General Facility Description [22 CCR 66270.14(b)(1), 66270.14(b)(13), and 66264.118(b)(3)]

2.1 Location

Landfarms 1-5 are situated within the Chevron USA Inc. Richmond Refinery, 841 Chevron Way, Richmond, Contra Costa County, California. A site location map is provided on Figure 1. A site detail map of Landfarm 1 is provided on Figure 2,

and Figure 3 shows site details for Landfarms 2-5. The landfarms cover approximately 29 acres of the 2,900-acre Refinery property , are zoned for general industrial use, and are situated more than 1,900 feet from the nearest (eastern) property boundary. The Refinery is bordered to the south by the Interstate 580 freeway (I-580), to the east by the Richmond Parkway, and to the west and north by San Pablo Bay. Access to Landfarms 1-5 is through secured Refinery Gates 31 and 91.

2.2 Facility History

Landfarms 1-5 operated between mid-1970s to 1987. Landfarms 1-4 were built over existing waste areas and Landfarm 5 was built over fill. Historical landfills underlie portions of Landfarms 1-3. Prior to the start of landfarming operations, 7 to 20 feet of fill were placed at each of the landfarms. The fill material originated from a variety of sources, including adjacent pond and channel dredging and soil from the San Pablo Tank Farm construction activities.

After submitting a hazardous waste permit application to the United States (U.S.) Environmental Protection Agency (U.S. EPA), Chevron was notified on February 10, 1987, that the landfarms did not qualify for the permit. On March 31, 1988, Chevron submitted the original *Closure/Post-Closure Plan for the Richmond Refinery Landfarms* (Chevron, 1988) to the U.S. EPA and DTSC. On February 27, 1996, Chevron presented the revised conceptual plan for closing the landfarms to the DTSC in a meeting with Ms. Wei Wei Chui (DTSC), Mr. Tony Morales (DTSC), Ms. Elizabeth Christian (Regional Water Quality Control Board [RWQCB]), and Mr. Ron Leach (U.S. EPA). The closure plan was revised and resubmitted on May 5, 1996, on December 30, 1996, and finally on May 28, 1997. DTSC approved the May 28, 1997 *Revised Landfarms Closure Plan* (Chevron, 1997) on March 19, 1998 (DTSC, 1998).

Chevron completed construction of the vegetative cap as described in the closure plan in the summer of 1999, and submitted the *Revised Landfarms Closure Construction Completion Certification Report* on March 27, 2000 (Chevron, 2000b). On September 19, 2000, DTSC issued the approval of the Closure Certification for Landfarms 1-5 (DTSC, 2000). Chevron submitted the *Post-Closure Permit Application for Landfarms 1 through 5* on March 20, 2000 (Chevron, 2000a), and a *Revised Post-Closure Permit Application for the Landfarm Units 1 Through 5* on January 7, 2002 (Chevron, 2002). The DTSC issued the *Hazardous Waste Facility Post-Closure Permit* (DTSC, 2003) for Landfarms 1-5 on March 4, 2003, with an effective date beginning on March 7, 2003, and expiration date of March 7, 2013.

Pursuant to SB 1082, the RWQCB has been designated as the lead agency for purposes of RCRA groundwater monitoring and corrective action. Several Site Cleanup Requirements (SCR) and Waste Discharge Requirements (WDR) Orders have been issued since 1990, which have been satisfied and rescinded. The two RWQCB Orders currently in effect for the facility require monitoring in the vicinity of Landfarms 1-5. The two RWQCB Orders are WDR Order R2-2011-0036 (RWQCB, 2011a) and SCR Order R2-2012-0015 (RWQCB, 2012).

2.3 Physical Description of the Facility

Landfarms 1-5, the five former land treatment units that are the subject of this permit renewal application, were closed in accordance with the DTSC-approved *Revised Landfarms Closure Plan* (Chevron, 1997) including vegetative caps. Details of the Landfarms construction are available in the DTSC-approved *Revised Landfarm Closure Construction Completion Certification Report.* Since the time of the closure of Landfarms 1-5 in 1999, the vegetation has been maintained and the poplar trees become well-established. No substantial modifications have been made to the cap since the submittal of the *Revised Post-Closure Permit Application* on January 7, 2002, and DTSC issuance of the Post-Closure Permit on March 4, 2003. Oblique aerial photographs of Landfarms 1 and Landfarms 2-5 are included on Figures 4 and 5, respectively.

2.3.1 Geology and Hydrogeology [22 CCR 66270.14(b)(11)(F)]

The *Refinery-Wide Report of Waste Discharge* (Dames & Moore, 1988) presents a detailed description of the Refinery's regional hydrogeology. Local conditions, such as stratigraphy and hydraulic properties, are described in site-specific reports. The following is a brief summary of the pertinent hydrogeologic conditions detailed in those reports.

There are four physiographic provinces within the Refinery: the Flats Zone; Ridge Zone; Transition Zone; and Alluvial Zone. Landfarms 1-5 are located within the Flats Zone. In the Flats Zone, the Refinery is underlain by up to six main water-bearing zones within a vertical sedimentary sequence overlying Franciscan Complex bedrock. The two uppermost water-bearing zones are evaluated under the current groundwater monitoring program. The uppermost water-bearing zone is designated as the "A" Zone, which is separated from the second water-bearing zone ("C" Zone) by estuarine deposits (Bay Mud) that act as an aquitard. The "A" Zone is composed of low- to medium-permeability heterogeneous fill materials, including clays, silts, sands, gravels and some man-made debris, such as concrete. The "C" Zone is composed of clayey and sandy alluvial deposits interbedded with clayey estuarine deposits. Sand and silt lenses occur at varying depths within the "C" Zone and are generally not laterally continuous (BEDM, 1991).

As required by RWQCB Orders R2-2011-0036 (RWQCB, 2011a) and R2-2012-0015 (RWQCB, 2012), groundwater elevation measurements are collected semi-annually at wells and sumps located throughout the Refinery for use in preparing groundwater elevation contour maps. These maps illustrate the groundwater elevations and can be used to evaluate groundwater flow patterns across the Refinery. Results of the groundwater monitoring were recently presented to the DTSC in the February 27, 2015 report titled *2014 Annual Monitoring Report, Refinery-Wide Groundwater Monitoring Program and Landfarms Post-Closure Monitoring Program* (Leidos, 2015). Because of the presence of groundwater extraction systems and hydraulic barriers in the vicinity of the landfarms, the depth to the seasonal high water table is variable across the landfarms, and ranges from approximately 1.41 to 12.89 feet below ground surface. The direction of groundwater flow in both the "A" and "C" Zones is also variable, as it is influenced by the presence of the groundwater extraction system, designated as the Groundwater Protection System (GPS) and impermeable barrier walls. Generally, "A" Zone groundwater flow in the area of Landfarm 1 is northeasterly, toward the GPS. In the area of Landfarms 2 and 3, "A" Zone groundwater flow is generally to the north/northwest, toward the GPS. In the area of Landfarms 4 and 5, groundwater flow is generally westerly, toward the GPS. "C" Zone groundwater flow in the area of Landfarm 1 is primarily southerly, toward the 50/100-Foot Channel, which is kept de-watered, but a portion of "C" Zone groundwater beneath the eastern boundary of Landfarm 1 flows northeasterly. "C" Zone groundwater flow in the area of Landfarms 2-5 flows westerly, toward the 50/100-Foot Channel. The distribution of groundwater contaminants in the vicinity of the landfarms is shown in the periodic groundwater monitoring reports submitted to the DTSC for review.

Groundwater flow velocities in both the "A" and "C" Zones vary widely across the Refinery, including the landfarms. Historically, ranges of groundwater velocity have been calculated and presented in the monitoring reports. Calculated ranges for groundwater flow velocity at the Refinery are as follows:

Zone	**Groundwater Velocity Range**
"A" Zone	0.0007 to 1,810 feet/year
"C" Zone	0.01 to 279 feet/year

The "A" Zone velocities were calculated using a hydraulic conductivity range of $1 \cdot 10^{-8}$ to $1 \cdot 10^{-2}$ centimeters per second (cm/sec) (typical of clay to sand), a hydraulic gradient range of 0.0055 to 0.035 feet per foot (ft/ft), and an effective porosity range of 0.08 to 0.20. The "C" Zone velocities were calculated based on a hydraulic conductivity range of $1 \cdot 10^{-6}$ to $1 \cdot 10^{-2}$ cm/sec (clay to sand), a hydraulic gradient range of 0.0008 to 0.0054 ft/ft, and an effective porosity range of 0.08 to 0.2.

The wide range in flow velocities is due in large part to two factors:

1) Locally variable "A" Zone hydraulic gradients are affected by GPS water level drawdown.
2) Heterogeneous soil and fill types beneath the Refinery (fill, sands, silts and clays) have widely varied hydraulic conductivities and porosities.

Water levels are collected from 28 "A" Zone/"C" Zone well pairs to assess Refinery-wide vertical hydraulic gradients. Vertical gradients across the Refinery vary locally due to GPS and other features affecting "A" and "C"

Zone water levels. The vertical gradient is generally upward along the eastern edge of the San Pablo Ridge, in the vicinity of the Effluent Sector and around the Landfarms 2-5 GPS alignments. A downward gradient was observed in the area of Landfarm No. 1 and the area south of the 50/100-Foot channel to the Castro Sector. Locally there is an upward gradient along the alignment of the 50/100-Foot Channel.

Monitoring for the presence of free-phase liquid hydrocarbons (FPLH) is conducted in accordance with the *Free-Phase Liquid Petroleum Hydrocarbon Recovery Evaluation Plan* (Chevron, 2000c). FPLH is typically recovered using passive absorbent pads at wells containing measurable thicknesses of greater than 0.5 foot. Currently, 34 wells at the Refinery are visited bi-weekly as a part of the hydrocarbon recovery program to maximize the volume of hydrocarbon recovered. In addition, hydrocarbon is recovered using a vacuum truck from several sumps at the refinery and from five recovery wells connected to the GPS system on the northwest side of Landfarm 2. Hydrocarbon is also recovered from the Alkane Recovery System and GPS sumps containing FPLH.

2.3.2 Grading and Surface Water Drainage

The final cover precipitation and drainage run-off control features were designed to control a 24-hour storm event with a 25-year recurrence interval in conformance with the requirement cited in 22 CCR 66265.272(c). The final cover on the surface of the landfarms is sloped and built to a sufficient elevation to provide drainage of rainfall and to prevent localized ponding. The system has also been designed such that, if the capacity of the drainage system is exceeded, the overflow will run away from the closure units and will not inundate the final cover. The lowest elevation of the closed landfarms is Elevation +9.0 feet (RRD). This elevation is above the anticipated maximum 100-year flood elevation of +8.6 feet. Hence, inundation of the final cover should not occur. The sites are not adjacent to any significant water bodies, so wave overtopping is also not an issue. Due to the topography of the adjacent areas, run-off from other areas is unlikely to impact the landfarms. In the event that a more severe storm was to occur, the Refinery would implement inspection and repair operations similar to those following an earthquake (see Section 2.7).

Run-on is not considered to be an issue for the landfarms as the sites are mounds with drainage ditches located at the perimeter and are located above the maximum anticipated flood level. Surface runoff from the exterior slopes of the closure units is collected in the lined perimeter drainage ditches and directed to the Refinery's storm water retention basins.

2.3.3 Groundwater Capture and Management

Chevron has implemented groundwater corrective action at the site by installing and operating the GPS. The objective of the GPS for the entire Refinery, including the landfarms areas, is to establish and maintain a physical or hydraulic barrier to prevent the off-site movement of potentially contaminated "A" Zone groundwater. The GPS includes a perimeter system that consists of either extraction trenches, or a combination of low-permeability soil/bentonite barrier walls with either extraction trenches or extraction wells located upgradient (with respect to groundwater flow) of the barrier walls. Groundwater is continually pumped from the trenches to the Refinery's effluent treatment system, and the resulting hydraulic depression establishes and maintains a capture zone intended to prevent migration of potentially contaminated groundwater past the GPS alignment.

Infiltration through the final cover is ultimately collected in the GPS extraction trenches and extraction wells, or in the shallow drainage collection trench south of Landfarms 2-5.

2.4 Facility Setting and Topographic Map [22 CCR 66270.14(b)(18) and 66270.14(c)(3)]

A topographic map showing the site setting, topography, surface water drainage patterns and other relevant information is provided as Appendix D. The map also shows surrounding land uses for a distance of at least 2000 feet around the landfarms, structures, access roads, and monitoring wells that are included in the landfarm post-closure monitoring program. The locations of the run-on and run-off control features (lined ditches) are shown on the topographic map. The landfarms are surrounded by unpaved roadways, which are primarily used by landfarms maintenance personnel. Chain barriers surround the landfarms, which prevents any vehicle access onto the landfarms.

2.5 Wind Rose Diagram [22 CCR 66.270.14(b)(18)(E)]

A wind rose diagram constructed using hourly wind speed and direction data collected at the Refinery weather station is presented on the topographic map (Appendix D).

2.6 Floodplain Information [22 CCR 66264.18(b) and 66270.14(b)(11)]

The most current copy of the FEMA FIRM map is included as Appendix E, but it is not accurate with respect to current Facility topography and controls such as dike elevations. The landfarms are located outside of the 100-year floodplain, based on an evaluation of the topographic elevations along the Refinery perimeter completed by Dames & Moore in 1988, and presented in the *Refinery-Wide Report of Waste Discharge* (ROWD) (Dames & Moore, 1988). The extent of flooding expected from the 100-year flood within the Refinery is shown in Section 3 of the ROWD report, and also presented on the Topographic Map included as Appendix D. Chevron periodically inspects the condition of the perimeter dikes for issues such as erosion and settlement, which has historically not been observed. If settlement or erosion of the perimeter dikes is discovered, repairs will be made promptly to ensure the refinery is protected from inundation due to a 100-year flood.

2.7 Seismic Requirements [22 CCR 66270.14(b)(11)(A)]

The seismic standards requirements do not apply to Landfarms 1-5 as they are not new facilities or are not undergoing substantial modification.

The DTSC has previously requested that Chevron have a procedure in place for inspection of the closed landfarms following the event of an earthquake. Chevron will perform an inspection of the landfarms following an earthquake that generates ground shaking of Modified Mercali Intensity VI or greater at or near the landfarms. An event of this intensity is generally described as “Felt by all. People walk unsteadily. Many frightened. Windows crack. Dishes, glassware, knickknacks, and books fall off shelves. Pictures fall off walls. Furniture moved or overturned. Weak plaster, adobe buildings, and some poorly built masonry buildings cracked. Trees and bushes shake visibly.”

To address this request, Chevron prepared the *Landfarms Post Earthquake Inspection and Corrective Action Plan* which was part of the DTSC-approved *Revised Landfarms Closure Plan* (Chevron, 1997) submitted on May 28, 1997, and the *Revised Post-Closure Permit Application* (Chevron, 2002) submitted on January 7, 2002. The plan has been updated and the *Revised Landfarms Post-Earthquake Inspection and Corrective Action Plan* (Chevron, 2015d) which includes as-built Landfarms 1-5 construction drawings is provided as Appendix F.

2.8 Wastes Received at the Facility

The landfarms were in operation for the biological treatment of oily wastes generated from on-site petroleum processing. During the period of operation, wastes (including hazardous wastes K049, K051 and K169) were applied to the surface of the landfarms and tilled into the top 6 to 12 inches of fill. The principal wastes applied were oil/water separator sludges (Landfarms 1, 2, 4 and 5), non-leaded tank bottoms (Landfarms 1, 2, 3 and 4), oil/water mixtures, algae water, pond sediments and oily dirt.

Additional information pertaining to wastes that had been placed at Landfarms 1-5 prior to closure is presented in Section 2.2.3 of the implemented *Revised Landfarms Closure Plan* (Chevron, 1997), which is included as Appendix G.

2.9 Contact Person for the Post-Closure Care Period

During the post-closure period, the contact person will be the Richmond Refinery Health, Environment and Safety (HES) Manager located at:

Chevron Richmond Refinery
841 Chevron Way
Richmond, California 94801
Attention: Richmond Refinery HES Manager
Telephone: (510) 242-4000

3.0 Post-Closure Notices [22 CCR 66264.119]

Post-closure notices as required per 22 CCR 66264.119 were recorded on July 10, 2000. Copies of the notification to the City of Richmond and Contra Costa County Recorder's Office are provided as Appendix H.

4.0 Compliance with Other Federal Laws [22 CCR 66270.3]

Chevron has determined that the project is in compliance with other federal laws, and a copy of the determination is provided as Appendix I.

5.0 Closure Plan and Report [22 CCR 66270.14(b)(13)]

5.1 Closure Plan

Chevron submitted the original *Closure/Post-Closure Plan for the Richmond Refinery Landfarms* to the U.S. EPA and DTSC on March 31, 1988 (Chevron, 1988). On February 27, 1996, Chevron presented a revised conceptual plan for closing the landfarms to the DTSC in a meeting with Ms. Wei Wei Chui (DTSC), Mr. Tony Morales (DTSC), Ms. Elizabeth Christian (RWQCB), and Mr. Ron Leach (U.S. EPA). The *Revised Landfarms Closure Plan* was submitted to the DTSC on May 5, 1996. The plan was modified and the *Revised Landfarms Closure Plan* was resubmitted to the DTSC on December 30, 1996, revised and resubmitted again on May 28, 1997 (Chevron, 1997). The DTSC-approved the May 28, 1997 *Revised Landfarms Closure Plan* on March 19, 1998 (DTSC, 1998). A complete copy of the May 28, 1997 *Revised Landfarms Closure Plan* is included as Appendix G.

These closure plans were prepared to conform with State regulations 22 CCR 66265 and federal regulations 40 CFR 265, both of which address the closure of interim status land treatment facilities. As required by the DTSC 1988 Stipulation & Order (HWCA 87/88-019), and the U.S. EPA 1988 Consent Agreement (RCRA 09-88-0005), the closure plan was developed following the guidelines set forth in the U.S. EPA's *Guidance Manual on Hazardous Waste Land Treatment Closure* / *Post-Closure* (U.S. EPA Guidance Document), April 1987.

The closure units were designed to reduce surface water infiltration through the surface of the landfarms fill and soil and to prevent lateral off-site migration of "A" Zone groundwater from the landfarms. The performance standards for this closure are spelled out in 22 CCR 66265.111, which require that the facilities be closed in a manner that:

- Minimizes the need for further maintenance; and
- Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated rainfall or runoff, or waste decomposition products to the ground or surface waters or to the atmosphere.

Additional regulatory objectives for the closure of land treatment facilities, as spelled out in 22 CCR 66265.280(a), are:

- Prevention of the migration of hazardous waste and hazardous waste constituents from the treated area into the groundwater;
- Prevention of the release of contaminated runoff from the facility into surface water;

- Prevention of the release of airborne particulate contaminants caused by wind erosion; and
- Compliance with Section 66265.276 concerning the growth of food-chain crops.

In compliance with applicable regulations, Chevron elected to close the landfarms by establishing a final vegetated cover over the units. As discussed with the DTSC (February 27, 1996 landfarms presentation), the final vegetative cover over the closure units consists of a minimum of 12 inches of vegetated fill.

During closure, the landfarms were regraded into low mounds to facilitate surface drainage and improve the visual appearance of the sites. The landfarms soils were lightly compacted and/or recompacted with light tracked equipment to support the construction of the final cover while still allowing for easy vegetation root penetration. The final grades were designed to divert rainfall runoff away from the former landfarms sites. Infiltration into the landfarms soils is reduced by the improved surface grading and the surface vegetation, which take up water by evapotranspiration. The inclusion of a layer of clean soil over the entire landfarms area serves to prevent run-off from direct contact with the wastes and also to prevent wind erosion of the wastes.

The physical design of the closure units was based on results of settlement analyses, slope stability analyses for both static and dynamic cases, and groundwater protection analyses. The precipitation and drainage control systems were designed to handle runoff from a 24-hour storm event with a 25-year recurrence interval.

5.2 Certification of Closure

Chevron completed construction of the vegetative cap as described in the DTSC-approved closure plan in the summer of 1999, and submitted the *Revised Landfarms Closure Construction Completion Certification Report* on March 27, 2000 (Chevron, 2000b). A copy of the *Revised Landfarms Closure Construction Completion Certification Report*, which includes as-built drawings showing the final facility configuration, is included as Appendix J.

On September 19, 2000, DTSC issued the approval of the Closure Certification for Landfarms 1-5 (DTSC, 2000).

6.0 Post-Closure Plan [22 CCR 66270.14(b)(13), 66264.118 and 66264.280]

6.1 Written Plan

Post-closure maintenance, inspection and monitoring procedures are described in the *Revised Landfarms Post-Closure Monitoring Plan* (Chevron, 2015c), which is presented as Appendix K. This plan updates the procedures for monitoring of vegetation growth and soil fertility that were presented in the previous *Post-Closure Maintenance and Monitoring Plan* included in the January 7, 2002 *Revised Post-Closure Permit Application for the Landfarm Units 1 Through 5 at the Chevron Richmond Refinery* (Chevron, 2002).

Because the vegetation on the landfarms caps is now well-established, a cessation of visual inspection of vegetation condition and soil fertility sampling and analysis is warranted. Chevron will also no longer monitor soil moisture as irrigation will no longer be conducted during the dry months. Maintenance of the vegetation, landfarm cap, run-on and run-off structures and groundwater monitoring will continue to be conducted in accordance with the *Revised Landfarms Post-Closure Monitoring Plan* provided as Appendix K.

6.2 Monitoring and Maintenance Activities [22 CCR 66264.118(b)(1), 66264.118(b)(2)]

The monitoring activities described in the *Revised Landfarms Post-Closure Monitoring Plan* include cap integrity inspections, groundwater monitoring (performed in accordance with RWQCB Orders), surface water drainage system integrity and performance evaluations, free-phase hydrocarbon thickness measurements and recovery, and annual cap settlement surveys. These monitoring and maintenance activities have been designed to ensure that cap integrity, final cover and other containment systems are maintained during the post-closure period. The monitoring and inspection schedules for the programs conducted at the landfarms are compiled in Table 1.

6.2.1 Monitoring and Reporting

Results of groundwater sample analyses, evaluation of the operation of the GPS, calculation of free-phase hydrocarbon recovery, and discussion of facility maintenance are presented in the periodic monitoring reports prepared in accordance with RWQCB WDR Order No. R2-2011-0036 (RWQCB, 2011a), SCR Order R2-2012-0015 (RWQCB, 2012) and the Revised Self-Monitoring and Reporting Program (RWQCB, 2014) , which are compiled as Appendix L. Groundwater samples are collected in accordance with the procedures described in the March 25, 2015 *Richmond Refinery Groundwater Monitoring Program Standard Operating Procedures* (Chevron, 2015b), a copy of which is included as Appendix M. Monitoring wells are inspected periodically, and repairs made as necessary to ensure representative samples of groundwater are collected. Monitoring well inspection procedures are detailed in the March 23, 2015 *Monitoring Well Inspection and Maintenance Program Plan* (Chevron, 2015a), which is included as Appendix N.

Results of groundwater quality and corrective action effectiveness monitoring were recently presented to the DTSC in the February 27, 2015 report titled *2014 Annual Monitoring Report, Refinery-Wide Groundwater Monitoring Program and Landfarms Post-Closure Monitoring Program* (Leidos, 2015) which is not reproduced herein.

There are two types of monitoring being conducted in accordance with the RWQCB Orders in the area of the landfarms as follows:

- Corrective Action Monitoring of the uppermost hydrostratigraphic unit (A-Zone) is conducted to verify the effectiveness of the GPS in controlling lateral migration of contaminated A-Zone groundwater toward the point of compliance. Additionally, the Corrective Action Monitoring program includes groundwater sample collection and analyses for selected parameters at the A-Zone wells listed in the Orders. The locations of the A-Zone monitoring piezometers/sumps that are associated with landfarms monitoring are shown on the topographic map included as Appendix D.
- Detection Monitoring of the deeper C-Zone hydrostratigraphic unit beneath the landfarms is conducted to provide an early indication of a release into the C-Zone groundwater which directly underlies the A-Zone. Detection monitoring involves measuring the chemical concentrations of selected parameters in wells, and evaluation of data following the procedures of the *Statistical Evaluation Plan for the Revised Self-Monitoring and Reporting Program, Order No. R2-2011-0036* (URS, 2015) which is included as Appendix O.

Water Quality Protection Standard (WQPS) Concentration Limits (CLs) have been developed for the Site constituents of concern and monitoring parameters and are presented in the Orders. For constituents that have never been detected at the Site, the CLs are the Practical Quantitation Limit (PQL) for the laboratory test method for that constituent. For those constituents that were historically detected, the CLs were developed statistically using an intra-well comparison method. A compilation of CLs developed for A- and C-zone monitoring wells is presented in the Orders. The groundwater sample results are compared against the established CLs. A noted exceedance of a CL is verified by two subsequent sampling events, and the groundwater data further evaluated to detect whether a statistically-significant upward concentration is present. If the exceedance of the CL is confirmed by the additional sampling, a notification to the RWQCB is required. The results of the trend evaluation and any CL exceedances are reported to the RWQCB and DTSC in the groundwater monitoring reports.

6.2.2 Inapplicability of Vadose Zone Monitoring [22 CCR 66264.97(d)]

As described in the October 31, 2002 memorandum to the DTSC, there is no separation between residual treated landfarm wastes and groundwater, and as a result, there is no vadose zone present beneath the landfarms, and no vadose zone monitoring is currently conducted. A copy of the memorandum is included as Appendix P.

6.2.3 Inapplicability of Surface Water Monitoring [22 CCR 66264.97(c)(1)]

The landfarms are situated within the active Chevron Richmond Refinery, within a drainage basin that is managed under the Refinery's National Pollutant Discharge Elimination System (NPDES) permit (RWQCB, 2011b), and no natural streams or surface water bodies are located that could potentially be affected by a release of wastes from

the units. The landfarms are surrounded by lined swales, and any precipitation runoff from the capped surfaces is directed to the Facility's effluent treatment system for treatment prior to discharge in accordance with the conditions of the NPDES permit. Monitoring of surface water is not a required monitoring program included in the current Post-Closure Permit. The current NPDES permit (R2-2011-0049) is included as Appendix L.

6.3 Amendment of Plan [22 CCR 66264.118(d)]

During the post-closure period, Chevron understands that it may submit a written notification of or request for a permit modification to authorize a change to the post-closure plan. The written notification or request will include a copy of the amended post-closure plan for review and approval by the DTSC.

7.0 Security

7.1 Security Requirements [22 CCR 66264.14 and 66270.14(b)(4)]

The landfarms are located entirely within the active Chevron Richmond Refinery, which is a private facility not open to the public. The Refinery, which is a U.S. Foreign Trade Zone under U.S. Customs and Border Protection supervision, maintains a 24-hour per day security presence comprised of guards at manned gates, mobile security patrols, video monitoring and other continuous surveillance systems. All staff and visitors to the Refinery must enter and exit through the guarded gates, and must be cleared by authorized personnel prior to entry. The perimeter of the Refinery is secured by a 6-foot-tall cyclone fence, which is generally topped by three rows of barbed wire. Signs are located at regular intervals on the fence. The perimeter of the Refinery is routinely patrolled by Chevron Plant Protection to inspect gates and fences and to spot any unauthorized persons within Chevron Property. All unguarded gates are locked and only assigned Refinery personnel have access.

Access to the landfarms area is controlled by the Environmental Operations Division (EOD) of the Refinery's Utilities/Environmental Area Business Unit (U/E BU). Security measures utilized by EOD are designed to prevent unknowing or unauthorized access to the landfarms. All visitors to the landfarms are required to check in at the EOD control room before entry into the landfarms. Any unauthorized personnel will be questioned and asked to leave the landfarms. EOD security measures are designed to prevent unknowing or unauthorized access to the landfarms.

The perimeter of each landfarm is protected by a chain fence. Warning signs are posted at 100-foot intervals around the perimeter of each landfarm. These signs are posted in English and Spanish and bear the following wording:

CAUTION
HAZARDOUS WASTE
STORAGE AREA
UNAUTHORIZED PERSONS
KEEP OUT

CUIDADO
ZONA DE RESIDUOS
PELIGROSOS
PROHIBA LA ENTRADA A
PERSONAS NO AUTORIZADAS

7.2 Emergency Preparedness

It is the responsibility of the on shift Battalion Chief to act as the Incident Commander and the U&E Operations Assistant Manager to act as the Emergency Coordinator for emergencies at the landfarms, to determine the degree of Refinery-wide response to emergency incidents. Should implementation of emergency procedures

occur, the Incident Commander and the Emergency Coordinator will then carry out the emergency procedures as outlined in the Landfarms Contingency Plan (Section 10). At least one primary emergency coordinator is available at all times.

External communication equipment includes several telephones located in nearby Operations Control Office buildings that are available to all Chevron personnel and visitors. In the event of an electrical or telephone failure, the offices are equipped with battery-operated two-way backup radios. RI-470 includes a description and listing of the On-Call Emergency Personnel. Individual names, addresses, and phone numbers of all on-call personnel are available at the Refinery Shift Coordinators office and at the Chevron Fire Department dispatcher's office.

Personnel near the landfarms are notified of emergency situations by the activation of evacuation sirens and speakers located throughout the Refinery. Sirens are located on the east and west boundaries of the facility so they can be heard by all individuals working within and just outside the operational areas (including areas near the landfarms). The sirens are tested on a scheduled weekly/monthly basis (inner-Refinery tests are weekly and community alarm tests are monthly) by the Refinery Emergency Services Group. Additionally, there is also an intercom system located in all occupied buildings throughout the Refinery.

7.2.1 Emergency Equipment [22 CCR 66270.14(a) and (b)]

Although no emergency equipment is stored directly on the landfarms themselves, Chevron is well prepared to respond in the case of major emergencies:

- Emergency equipment includes firefighting equipment, first-aid equipment, respirators, protective clothing, and spill response and control equipment.
- The equipment is inspected on a weekly/monthly basis to ensure proper operation and adequate supplies.
- Equipment that does not pass inspection is noted on the appropriate checklist and repaired/replaced as soon as possible.
- Personal protection equipment (PPE) such as hard hats, gloves, and safety glasses, etc., are required for all respondents and readily available.
- Reusable items are decontaminated, dried, and properly replaced in the proper storage location after use.
- Self-contained breathing apparatus are stored in carrying cases or on designated storage racks.
- Safety showers and eyewashes are located throughout the facility.
- Dry chemical fire extinguishers and foam units with hoses are located throughout the facility.
- Dry chemical fire extinguishers are tested and, if necessary, recharged annually and a tag affixed that indicates the date of the test.
- All foam units and fire hoses are inspected to ensure that they are in good condition.
- Emergency communication equipment (radios) are in daily use, and readily available.

7.2.2 Water and Fire Control [22 CCR 66264.32(c) and (d)]

Fire protection equipment is accessible through the Richmond Refinery Chevron Fire Department located within the Refinery. Fire hydrants are located at strategic locations throughout the Refinery, including near the landfarms. A series of surface water swales that direct storm water throughout the Refinery can be used to manage and capture water generated during fire-fighting efforts, and that water then treated and discharged under the existing NPDES permit.

7.2.3 Post Fire Erosion Control

Though there is a potential for landfarms vegetation to be damaged by fire, the integrity of the cap is unlikely to be affected and exposure of wastes not expected to occur. Following a fire that has the potential to affect the vegetative cap, the landfarm will be inspected, in accordance to the Contingency Plan implementation procedures detailed in Section 10.2, to ensure that the potential for erosion and the exposure of wastes is prevented.

8.0 Testing and Maintenance of Equipment [22 CCR 66264.33]

The landfarms are closed, inactive units located within the active Refinery. No facility communications, alarm systems, fire protection, spill control, and decontamination equipment are present on the landfarms.

9.0 Arrangements with Emergency Agencies [22 CCR 66264.37]

Any emergency at the inactive landfarms would be managed by the Chevron Richmond Refinery Fire Department. The fire department is fully equipped to respond to all emergencies, and is prepared to assure an adequate response:

- The Chevron Refinery Fire Department is a State-recognized fire department with State-certified firefighter/emergency medical technicians.
- Chevron Richmond Refinery is a member of the Petro-chemical Mutual Aid organization, which is comprised of Industrial, Municipal, Government and other private organizations with a focus on Emergency Mutual Aid assistance and sharing of lessons learned. This organization also includes the regional ambulance and air ambulance companies for this area.

The Refinery fire department has assessed the potential for emergencies at the landfarms and based on the nature of potential emergencies at the landfarms, have determined that no arrangements with additional emergency agencies are necessary.

10.0 Landfarms Contingency Plan [22 CCR 66270.14(b)(7)]

10.1 Introduction

The objectives of the Contingency Plan provided herein are to help facility personnel and outside agencies respond quickly and effectively to situations involving the landfarms, such as fires, explosions or any release of hazardous waste or hazardous waste constituents that may threaten human life, property or the environment. Due to the nature of the closed landfarms, the primary objective of this plan is the protection of the environment. While some conceivable incidents, such as a major earthquake, could result in damage to the cap and resulting exposure of hazardous waste or hazardous waste constituents to air, soil, or surface water, they would not present conditions immediately dangerous to human life or property.

The Contingency Plan is tailored to the specific landfarm setting and post-closure conditions. The Contingency Plan also represents the 16 years of post-closure care conditions and experiences. Based on the nature and setting of the landfarms, the potential hazards are limited to:

- fire,
- flood, and
- earthquake.

Flood conditions are not expected based the presence of man-made dikes separating the landfarms from the San Pablo Bay shoreline and on the 16 years of post-closure care during which a wide range of storm-events have occurred, none of which created a flood condition at the Site. In the unlikely event a future storm event did cause a flood condition, the cap could potentially be damaged which is addressed by the Contingency Plan. Similarly, the potential damage or condition caused by an earthquake would be damage to the cover. Fires have occurred at the landfarm, resulting in damage to the landfarm vegetation; there is no risk of explosion or release of waste associated with fires since the landfarms have a soil cover over the treated waste materials. The fire response measures have been proven to be effective and will be continued.

10.2 Implementation

The Landfarms Contingency Plan is implemented immediately whenever there is an incident that disturbs the closed landfarm cap and exposes wastes which could threaten human health or the environment. After the occurrence of a potentially damaging event, preferably within 24 hours, the landfarms closure facilities will be inspected and temporary repairs will be performed as necessary to the closure facilities as soon as is practicable. Immediately following the inspection, Chevron will notify the DTSC of suspected releases of wastes or waste byproducts to the environment as a result of a major natural event. As soon as practicable, preferably within 48 hours, Chevron will have a qualified engineer perform an inspection of the landfarms. The engineer will identify damage and recommend appropriate repairs.

The decision to implement the plan is made by the Emergency Coordinator. If the Landfarms Contingency Plan is implemented, the nature of the incident and response will be documented. Within 15 days of the incident, the Emergency Coordinator will submit a report to the DTSC. The report will include:

- Name, address and telephone number of the operator;
- Date, time and type of incident;
- Name and quantity of material involved;
- Extent of injuries;
- An assessment of actual or potential hazards to human health or the environment; and
- Estimated quantity and disposition of recovered material.

The following personnel or areas have copies of this Landfarms Contingency Plan. The primary copy is maintained by the Chevron Project Manager.

- Chevron Project Manager,
- EOD Safety Operator,
- Richmond Refinery Fire Department Captain, and
- Environmental Library.

10.3 Emergency Coordinator

It is the responsibility of the Refinery Shift Coordinator (RSC), in consultation with U/E BU, EOD, and the Chevron Project Manager, to determine the degree of response and notification to hazardous waste incidents. At least one emergency coordinator is available at all times. The U/E BU Operations Assistant will be the primary emergency coordinator for incidents at the landfarms. The role of backup emergency coordinator, at times when the U/E BU Operations Assistant could not be contacted, is a rotating assignment among Refinery senior management. Chevron maintains an electronic Manager On Call system where upon activation of the system by the RSC or Plant Protection, the scheduled manager will be contacted with a brief summary of the emergency. The Manager on Call, upon consultation with the RSC will assign an appropriate Emergency Coordinator.

The Refinery U/E BU Operations Assistant (as primary Emergency Coordinator), EOD Safety Operator and Chevron Project Manager must be notified of all emergencies at the landfarms. Key contact information is listed below. The Refinery Shift Coordinator, the Manager on Call and the EOD Safety Operator responsibilities are always staffed, because of the continuous operation of the Refinery, by a rotating group of personnel. The current Refinery Shift Coordinator, Manager on Call and EOD Safety operator can be reached at any time by calling Plant Protection.

	Key Landfarms Emergency Contacts		
Title	Name	Mobile Phone	Office Phone
Refinery Plant Protection-Emergency Number			510-242-5555
Refinery Plant Protection-Non-Emergency Number			510-242-4200
Landfarms Emergency Coordinator (Primary)	Michael Sibbitt	510-672-0210	510-242-5675
Refinery Shift Coordinator	(Rotating Assignment)	510-242-5555	510-242-5555
EOD Safety Operator	(Rotating Assignment)	510-242-5555	510-242-4200
Chevron Project Manager	Brad Rogers	714-504-4792	510-242-9700

The Plant Protection group, the Refinery Shift Coordinator, Landfarms Emergency Coordinator, and the EOD Safety Operator are all located on site, at the following mailing address:

Chevron Richmond Refinery
841 Chevron Way
Richmond, CA 94801

The Chevron Project Manager is situated at the following nearby facility:

Chevron Training and Development Facility
940 Hensley Street
Richmond, CA 94801

If it has been determined that, by the nature of the incident, that reporting to the State Office of Emergency Services, the Refinery Shift Coordinator or designee shall call:

California Office of Emergency Services Hazardous Materials Response	1-800-852-7550
Federal National Response Center	1-800-424-8802
Contra Costa County Office of Emergency Services	925-228-5000

10.4 Emergency Equipment List

No emergency equipment is located at the landfarms. The Refinery fire department has equipment and trained personnel to respond to fires, chemical releases, explosions and medical emergencies.

10.4.1 Communications Equipment

Personnel working within the Chevron Richmond Refinery carry some form of electronic communication equipment. Communication between site personnel in the field and personnel in the office is typically conducted over a push-to-

talk radio system. The radios are powered by rechargeable battery packs which can supply power for more than 8 hours between charges. Radios are kept in their charge stands when not in use, or when personnel are in their offices. All guard, supervisor, and manager positions have been assigned radios. Additional radios are available and provided to field personnel to ensure they can communicate with managers in the office.

Hard line telephones are present in buildings on the facility. Cellular telephones may be used in lieu of hard line telephones.

10.4.2 Fire Fighting Equipment

No fire-fighting equipment is stored within the landfarms. Fire protection services are provided by the Refinery Fire Department. All vehicles and heavy equipment in normal use at the landfarms are required to carry a dry chemical fire extinguisher. Fire extinguishers are also available inside all Refinery buildings.

10.4.3 Personal Protective Equipment

Various items of PPE are required for personnel working at the landfarms depending on the task. A job safety analysis (JSA) is prepared for each task and hazard assessment is performed prior to starting each task. The JSA will specify the PPE needs above and beyond the minimum required hard hat and safety glasses. The following is a list of PPE items that may be used, depending on the nature of the task.

1. Hard Hats – Issued to all employees and contractor staff at time of employment and replaced as needed.
2. Safety Glasses – Non-Prescription or Prescription Glasses - Issued to all employees and contractor staff at time of employment and replaced as needed.
3. Chemical Goggles – Issued to all employees and contractor staff at time of employment and replaced as needed.
4. Gloves – Latex Rubber Gloves are available to employees and contractor staff for use in routine operations. Neoprene Rubber and/or Nitrile gloves are used whenever exposure to substances or constituents that would damage or penetrate latex gloves might be reasonably expected.
5. Boots – Substantial leather footwear, preferably steel-toed boots are required to be worn by all personnel working on the facility.
6. Protective Clothing – Workers subject to contact with wastes are provided protective clothing which, depending on the nature of the contaminant and work situation, may include coated Tyvek suits, uncoated Tyvek suits, flame-resistant Nomex suits, latex or nitrile inner gloves, nitrile or butyl outer gloves, booties, harnesses or respirators. Selection of protective clothing is performed in consultation with a Certified Industrial Hygienist.

10.4.4 Gas Monitors and Analyzers

A selection of gas monitors and analyzers for detection of toxic, combustible, or oxygen deficient atmospheres is maintained by the Refinery Fire Department staff and available for use at the landfarms.

10.4.5 Spill Containment and Control Equipment and Supplies

The landfarms are closed, inactive waste management units. There is a low potential for a spill of hazardous waste or hazardous waste constituents at this location. Spill containment and control equipment and supplies are not kept at the landfarms. A large selection of spill containment and control equipment is staged at the Richmond Refinery and is available for emergency use at the landfarms. Additionally, several emergency response equipment suppliers are present within a few minutes response time to the facility. These suppliers are included in the list of contractors in the following section.

10.4.6 Contractor Equipment

The following is a list of contractors with emergency response equipment that could be utilized in the event of an emergency at the landfarms:

- Vacuum and Tank Trucks
  Sturgeon & Sons (510) 455-1099
  Decon Environmental (510) 732-5444
  Rain for Rent (925) 458-0200

- Heavy Equipment

  Dutra Dredging and Construction
  1000 Point San Pedro Road
  San Rafael, CA
  (415) 258-6876

  Equipment available:
  - Drag lines
  - TD9 Dozer with blade
  - Pontoon barges
  - Hydraulic dredges

  Goebel Construction
  (On Refinery)
  D.J. Goebel
  (707) 974-1239

  Equipment available:
  - Trucks
  - Heavy equipment including excavators, backhoes and graders
  - Loaders
  - Miscellaneous equipment

  Bigge Crane Service
  10700 Bigge Ave
  San Leandro, CA
  (510) 638-8100

  Equipment available:
  - Various cranes can be outfitted with drag line or clam shell,
  - truck mounted cranes

- Rental Pumps

  Big 4 Rents
  2400 San Pablo Dam Road
  San Pablo, CA 94806
  (510) 307-4444

  Pumps available:
  - Diaphragm pumps (mud and trenches)
  - Diesel, trailer mounted pumps
  - Electric pumps
  - Gasoline pumps

  Cresco Rental
  (510) 233-5677

  Pumps available:
  - Diaphragm pumps (mud and trenches)
  - Diesel, trailer mounted pumps
  - Electric pumps
  - Gasoline pumps

10.4.7 Response Vans

Emergency response vehicles are maintained by the Refinery Fire Department and are available to respond to an emergency at the landfarms.

10.4.8 First Aid Equipment

First Aid kits are located in every building on the Refinery, and in each of the contractor's vehicles. There are no buildings located within the landfarms.

10.4.9 Post-Emergency Equipment Management

All equipment used to respond to an emergency will be properly decontaminated when the response action is over. Additionally, all wastes generated through the response and decontamination process will be managed in accordance with applicable laws and regulations, including the Refinery's NPDES permit.

10.5 Evacuations

Refinery personnel and contractors are present at the landfarms periodically (a few hours per month) to perform inspections, maintenance and sample collection as necessary. Due to the nature of the closed landfarms, there is little potential for an incident to occur due to a release at the landfarms. In the event of a fire, explosion, odor, release of hazardous waste or hazardous waste constituents occurring at the nearby active Refinery, affected personnel will follow the Refinery's evacuation procedures and directions. Based on the nature and location of the emergency, evacuation may occur in any direction.

During a fire, explosion or release at the Refinery that may affect personnel at the landfarms, the EOD Safety Operator will direct any evacuation by:

- Contacting personnel by radio or cell phone using the EOD Control House sign-in records.
- Evacuating personnel to the appropriate primary evacuation area or shelter-in-place building.
- Notifying the Chevron Fire Department dispatcher.
- Notifying the Chevron Project Manager.

10.6 Detailed Emergency Procedures

This section presents the detailed emergency procedures to be carried out immediately whenever there is an imminent or actual emergency situation.

10.6.1 General Emergency Instructions for All Personnel

Whenever there is an actual or impending emergency, there are certain key actions which must be taken to protect facility personnel and the environment. The key points to remember in any emergency are:

1. Notify the appropriate people.
2. Call the appropriate emergency response providers (always initially call Refinery Plant Protection 242-5555) and get assistance immediately.
3. Protect the people. Notify persons in the landfarms area.
4. Rescue anyone injured or exposed to the hazard. However, do not enter a dangerous situation thereby putting yourself at risk.
5. Do not take unnecessary chances. Use protective equipment. If you are not sure if the equipment is enough, use the maximum protection.
6. Care for any injured people. Once in a safe location make sure they receive medical attention.

7. Minimize the loss. Control the leak and/or extinguish the fire as soon as possible.
8. Account for all employees.
9. Protect the environment. Contain run-off water used to extinguish fires. Contain spills to ensure material does not migrate offsite.
10. Assure governmental agencies are notified.

10.6.2 Community Notification – Emergency Coordinator

In the unlikely case that an emergency at the landfarms may impact the community, the Chevron Project Manager must make certain the following notifications have been made by the Refinery Shift Coordinator:

1. Richmond Fire/Police Dispatcher (911),
2. California State Office of Emergency Services at (800) 852-7550,
3. Contra Costa County Office of Emergency Services (925-228-5000).

These three phone calls must be made by agreement with local government agencies and as required by law. Other calls to additional regulatory agencies may be required depending upon the circumstances of the emergency. The Refinery Shift Coordinator will make these calls and this must be verified by the Chevron Project Manager.

Follow up calls should be made to all agencies that were originally notified and any agencies that participated. Some agencies may have been notified indirectly, potentially including:

- Contra Costa County Health Services Department (925) 692-2500
- Bay Area Air Quality Management District (415) 771-6000
- California Highway Patrol (925) 646-4980

REMEMBER TO GIVE THE "ALL CLEAR" WHEN THE INCIDENT IS OVER.

10.6.3 Injury

In the event of an injury call the Refinery Plant Protection emergency phone number 242-5555 and explain what has happened and your location. They will dispatch trained EMT's and call for ambulances. If in the field, radio or call Refinery Plant Protection for help, and state the problem and your location, listen for instructions.

10.6.4 Specific Emergency Procedures

The following contain specific instructions on responses to fires or power failure.

10.6.4.1 Fire Notification

1. The person discovering the fire should radio the situation to a Supervisor, and contact the Refinery Fire Department as indicated in Step 2, below.
2. Telephone the Refinery Fire Department, Dial 555 on a site phone, or (510) 242-5555 on a cell phone (alternatively, press the emergency button on a Refinery radio and speak to an emergency dispatcher).

   Tell the Fire Department:

   - There is an incident at the landfarms.
   - Your name and phone number.
   - Describe what is burning.
3. Notify the Chevron Project Manager defined in Section 10.3.

4. Contain contaminated water run-off. Do not let it run-off the facility or into surface waters.
5. Account for all employees.

10.6.4.2 Power Failure

No electrical equipment is located within the landfarms, and no special procedures are required.

10.6.4.3 Incident Resolution

The Refinery Shift Coordinator with assistance from the EOD Head Operator will complete a detailed record of the emergency and submit it to the Chevron Project Manager. Facility policy requires a root cause analysis if there is an incident of significance, fire, or injury. This will provide the information needed to prepare follow up reports, as required by company policy, federal, State, and local regulations.

10.7 Procedures to Update Contingency Plan

The contingency plan will be amended or updated as necessary whenever:

- Management conducts a required after-the-event critique of the response and recommends amendments to the plan,
- The Refinery permit is revised,
- The list of Emergency Coordinators changes,
- The landfarms change in a way that materially increases the potential for fires, explosions or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency.

It is the responsibility of the Chevron Project Manager to ensure the Contingency Plan is kept up-to-date.

11.0 Financial Assurance and Guarantee for Post-Closure [66270.14(b)(16) and 66270.14(b)(17)]

Chevron annually updates the post-closure care cost estimate for Landfarms 1-5 in accordance with 22 CCR 66264.144 and includes these costs in the required annual corporate guarantee of financial assurance. An updated compilation of post-closure tasks and costs, with an explanation of the basis for the estimates in 2015 dollars, has been prepared and is presented as Appendix Q. If this cost estimate is updated in future years, as opposed to applying the annual inflation process, Chevron will provide DTSC with the updated cost estimate.

12.0 Training Programs [22CCR 66270.14(b)(12)]

12.1 Training Program Overview

The training program for the landfarms is designed to instruct personnel in general and specific hazardous waste management procedures, safety and personal protection requirements, and emergency response actions. The training program is tailored to the specific landfarm post-closure conditions and post-closure care activities. The training program also represents the knowledge of required personnel skills based on the 16 years of post-closure care. As previously identified, the landfarm conditions and maintenance and monitoring requirements are well defined. The activities associated with the post-closure care of the landfarms include the following:

- Periodic inspections of cap condition;
- Groundwater monitoring and sampling;
- Annual surveying of cap settlement; and

- Vegetation maintenance.

Additionally, the training program reflects the limited nature of hazards associated with the landfarm as described in Section 10.

This training is provided at an introductory level within 6 months of assignment to the landfarms, and on a continuing basis to ensure that procedures are properly followed and to evaluate the effectiveness of the training program. Training may occur in a classroom, on a computer, or on the job. Lists of the required training along with records of training completion are maintained by Chevron USA for Chevron employees, and by the subcontracted suppliers for their staff. Employees that may be involved in the handling and management of hazardous wastes at the landfarms are also required to complete at least a 24-hour Occupational Safety and Health Administration (OSHA) course (29 CFR 1910.120).

Training includes initial and refresher sessions and addresses the following primary topics:

- Contingency Plan Implementation (see Section 10),
- Behavior-Based Safety Program,
- Emergency Procedures,
- Hazardous Waste Management Training,
- Hazard Recognition and Job Safety Analysis, and
- Task-specific technical procedures for sampling, inspections and maintenance.

A matrix of training requirements for personnel that perform post-closure maintenance, inspections or sampling at the landfarms is provided at the end of this section.

12.1.1 Initial Training

Personnel assigned to perform work at the landfarms attend an orientation session which familiarizes them with the layout of the landfarms and general operating procedures. They are then required to participate in additional training courses, selected based upon the type of work they will be performing. Personnel new to the task will work under the guidance of more experienced personnel until they have demonstrated that they are competent in performing their assigned task.

12.1.2 Continuing Training

Trained landfarms personnel participate in continuing (refresher) training on a once per calendar year basis, depending on the type of work they are expected to perform. The continuing training schedule is developed by the employee's respective organizations (Chevron develops the schedule for Chevron employees, and subcontractor training organizations develop schedule for their staff).

12.2 Training Director

The current Chevron Project Manager, who is trained in hazardous waste management procedures, will act as the primary training director for staff involved in landfarms maintenance, inspection and oversight activities. Based on the course to be taught, the Chevron Project Manager will select or approve the appropriate training course and instructor.

12.3 Personnel, Job Titles, Descriptions, Required Skills and Training

An adequate number of properly-trained personnel tasked to perform inspections, sampling and post-closure maintenance of the landfarms is ensured. The personnel work under the direction of the Chevron Project Manager, or designee. All personnel working within the landfarms are required to have the training necessary for their specific position, as well as general safety and emergency response procedures.

12.3.1 Chevron Project Manager

- Responsible for hazardous waste compliance at the landfarms.
- Coordinates required landfarm maintenance activities.
- Directs subcontractors on landfarms maintenance, inspection and regulatory compliance activities.
- Works with the Refinery Shift Coordinator to lead emergency response efforts and prepare necessary reports and notifications.
- Ensures landfarms activities are performed in accordance with all regulatory permits and commitments.

Required Training and Skills

The Chevron Project Manager will have received 40-hour OSHA Hazardous Waste Operator (HAZWOPER) training (CFR 1910.120) as required, and maintain current certificates of 8-hour refresher training. The Chevron Project Manager must have knowledge of, or the resources to gain knowledge of, the physical and chemical characteristics of hazardous wastes placed within the closed landfarms, as well as applicable regulations pertaining to closed landfarms. The incoming Chevron Project Manager ideally works under the supervision of the incumbent Chevron Project Manager to become familiar with the operations of the landfarms and the responsibilities of the position.

12.3.2 Landfarms Inspectors

- Performs annual inspections of the landfarm cap to detect differential settlement, erosion or other cap damage that may require repair;
- Performs inspections of the landfarms cap and run-on/run-off control structure surfaces following significant rainfall events (more than 1 inch in 24 hours) to identify potential cap damage due to erosion or drainage swale clogging due to presence of debris; and
- Notifies Chevron Project Manager of any damage to the cap that may require repair.

Required Training and Skills

The Landfarms Inspectors or designees will have received 24 or 40-hour OSHA training (CFR 1910.120). The Landfarms Inspectors must have knowledge of, or the resources to gain knowledge of, the physical and chemical characteristics of hazardous wastes placed within the closed landfarms, as well as applicable regulations pertaining to closed landfarms. The incoming Landfarms Inspectors ideally work under the supervision of the incumbent Inspectors to become familiar with the operations of the landfarms and the responsibilities of the position.

12.3.3 Field Technicians

- Performs groundwater sample collection in accordance with the RWQCB Orders and the Post-closure Permit, and
- Directs the activities of the Operations and Maintenance Technicians and reports significant maintenance issues that may be discovered to the Chevron Project Manager.

Required Training and Skills

The Field Technicians must have good organizational and analytical skills to perform all required sampling appropriately, in accordance with regulatory requirements, and following correct procedures. The Field Technicians will have received 40-hour OSHA training (CFR 1910.120). The Field Technicians receive extensive training on field sampling procedures, field instrument operation, safe work practices and recordkeeping.

12.3.4 Operations and Maintenance Technicians

- Operations & Maintenance Technicians are responsible for vegetation mowing/pruning, maintenance of the landfarm cap, and run-on/run-off control structure maintenance and cleaning

- Operations & Maintenance Technicians are responsible for reporting significant maintenance problems to the Field Technicians

Required Training and Skills

Operations & Maintenance Technicians whose job duties include work at the landfarms receive training as described in this plan. Operations & Maintenance technicians receive annual Hazardous Waste Operations (HAZWOPER) refresher training as required by 29 CFR 1910.120. The Chevron Project Manager or designee reviews pertinent compliance issues at the facility with the staff as new regulations or operating procedures are introduced.

12.4 Training Records

Training records are compiled by Chevron for Chevron employees and subcontractor training managers for the respective subcontractor staff. These records are maintained in electronic files per 22 CCR 66264.16(d)(4).

12.5 Record Retention

In compliance with 22 CCR 66264.16(e), records for current personnel are kept until closure of the landfarms, and training records for former landfarms personnel are kept for at least 3 years from the date the employee last worked at the landfarms.

12.6 Training Matrix

Staff that perform activities at the landfarms receive training in the following topics.

Landfarms Training Matrix	Chevron Project Manager	Landfarms Inspectors	Field Technicians	Maintenance Technicians
Landfarms Setting and Introduction				
- Landfarms Orientation Session	x	x	x	x
- Introduction to Training Requirements	x	x	x	x
- Mentoring by Experienced Staff	x	x	x	x
Contingency Plan and Emergency Response				
- Introduction to Contingency Plan	x	x	x	x
- Roles and Responsibilities	x	x	x	x
- Emergency Communication and Alarms	x	x	x	x
- Contingency Plan Updates	x			
- Agency Reporting	x			
Hazardous Waste Management				
- Introduction to Landfarms and Historical Processes	x	x	x	x
- OSHA HAZWOPER	x	x	x	x

Landfarms Training Matrix	Chevron Project Manager	Landfarms Inspectors	Field Technicians	Maintenance Technicians
- Reporting Procedures if Cap Damage is Observed	x	x	x	x
- Requirements if Wastes Will Be Disturbed	x	x		
Safe Work Practices				
- Behavior-Based Safety Program	x	x	x	x
- Hazard Analysis/Job Safety Analysis	x	x	x	x
- Motor Vehicle Safety	x	x	x	x
- Selection of PPE	x	x	x	x
Job-Specific Technical Training		x	x	x

13.0 Corrective Action [22 CCR 66270.14(d)(1)(A)]

Pursuant to SB 1082, the RWQCB has been designated as the lead agency for purposes of RCRA groundwater monitoring and corrective action. Several Site Cleanup Requirements (SCR) and Waste Disposal Requirements (WDR) Orders have been issued since 1990 that required corrective actions at the facility, which have been satisfied and rescinded. The two RWQCB Orders currently in effect for the facility require monitoring of the effectiveness of the implemented corrective actions in the vicinity of Landfarms 1-5. The two RWQCB Orders are Waste Discharge Requirements Order R2-2011-0036 and Site Cleanup Requirements Order R2-2012-0015. These two Orders share the same *Revised Self-Monitoring and Reporting Program* (SMRP). Copies of these Orders and SMRP are included as Appendix L.

As discussed in Section 5.1, the landfarms were closed in a manner that prevents exposure to the treated waste materials and minimizes the potential for mobilization of waste constituents. Additional factors that suggest the potential for the public to be exposed to the wastes is unlikely include:

- The landfarms are located within the Chevron property with no public access.
- The landfarms during their operation treated many of the constituents in the wastes applied to the landfarms and only the treatment residuals remain in stable forms in the soil, which are not expected to be mobile. This is supported by the groundwater monitoring program which indicates no confirmed releases from the landfarms over 16 years of post-closure monitoring.
- During closure, the landfarms were covered with a 12 inch vegetated soil cover that prevents exposure to the treated residuals.
- Any groundwater under the landfarms is captured by the Refinery's GPS and treated in the Refinery's waste water treatment plant.

Two historical waste management units underlie Landfarms 1, 2 and 3. Investigation and characterization of the Former Landfill Under Isomax and Landfarm 1, and Former Landfill Under No. 2 and No. 3 Landfarm was presented in *RCRA Facilities Investigation Report for the Landfills Under Isomax and No. 1 Landfarm and Landfill Under Nos. 2 and 3 Landfarms* (BEDM, 1992). As described in RWQCB Order R2-1993-0109, the historical Landfill Under Isomax and No. 1 Landfarm holds approximately 400,000 cubic yards of waste material and clean fill. The waste material included slop oil solids, separator sludge, leaded tank bottoms and other early Refinery wastes. The Landfill Under Landfarms Numbered 2 and 3 holds approximately 80,000 cubic yards of waste material including concrete, clay pipe, oily tank sludges and phthalic anhydride sludge. The locations of these historical landfills are shown on the topographic map included as Appendix D.

Results of groundwater monitoring performed per the SMRP are submitted semi-annually to the RWQCB and DTSC. The most recent monitoring report submitted to the agencies was the February 27, 2015 report titled *2014 Annual Monitoring Report, Refinery-Wide Groundwater Monitoring Program and Landfarms Post-Closure Monitoring Program* (Leidos, 2015). The monitoring includes identification of potential releases from the closed landfarms, as described in Section 6.2.1, and no confirmed releases from the closed landfarms have been detected over the 16 years of post-closure monitoring.

14.0 Additional Information

Additional information related to the Landfarms 1-5 post-closure will be submitted to the DTSC as requested.

15.0 References

BEDM, 1991. "*C" Zone Investigation, Phase 2.* December 16.

BEDM, 1992. *RCRA Facilities Investigation Report for the Landfills Under Isomax and No. 1 Landfarm, and Landfill Under Nos. 2 and 3 Landfarms.* November 24.

Chevron, 1988. *Closure/Post-Closure Plan for the Richmond Refinery Landfarm, Richmond Refinery, California*. March 31.

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Chevron 2000c. *Free-Phase Liquid Petroleum Hydrocarbon Recovery Evaluation Plan, Chevron Richmond Refinery*. December 21.

Chevron, 2002. *Revised Post-Closure Permit Application for the Landfarm Units 1 through 5 at Chevron Richmond Refinery*. January 7.

Chevron, 2012. *RCRA Subtitle C Site Identification Form (Part A) and Richmond Refinery Landfarms 1-5 RCRA Post-Closure Permit Renewal, Part B Application.* September 7.

Chevron, 2015a. *Monitoring Well Inspection and Maintenance Program Plan, Richmond Refinery.* March 23.

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Chevron, 2015c. *Revised Landfarms Post-Closure Monitoring Plan.* April 2.

Chevron, 2015d. *Revised Landfarms Post-Earthquake Inspection and Corrective Action Plan, Richmond Refinery.* April 2.

Dames & Moore, 1988. *Refinery-Wide Report of Waste Discharge, Richmond Refinery, California.* August 31.

DTSC, 1998. *Approval of the Closure and Post-Closure Plan for the Landfarms 1-5 at Chevron Richmond Refinery*. March 19.

DTSC, 2000. *Approval of the Revised Landfarms Closure Construction Completion and Certification Report*. September 19.

DTSC, 2003. *Final Hazardous Waste Facility Post-Closure Permit, Landfarms 1-5, Chevron Richmond Refinery*. March 4.

DTSC, 2015a. *First Notice of Deficiency, Post-Closure Permit Renewal, Part B Application, Chevron USA Inc. Richmond Refinery, Contra Costa County, EPA ID No. CAD00914919.* January 12.

DTSC, 2015b. *Second Notice of Deficiency, Post-Closure Permit Renewal, Part B Application, Chevron USA Inc. Richmond Refinery, Contra Costa County, EPA ID No. CAD00914919.* May 19.

Leidos, 2015. *2014 Annual Monitoring Report, Refinery-Wide Groundwater Monitoring Program and Landfarms Post-Closure Monitoring Program*. February 27.

RWQCB, 2011a. *Order No. R2-2011-0036, Updated Waste Discharge Requirements for the Chevron Products Company, Chevron Richmond Refinery, Richmond, Contra Costa County.* June 14.

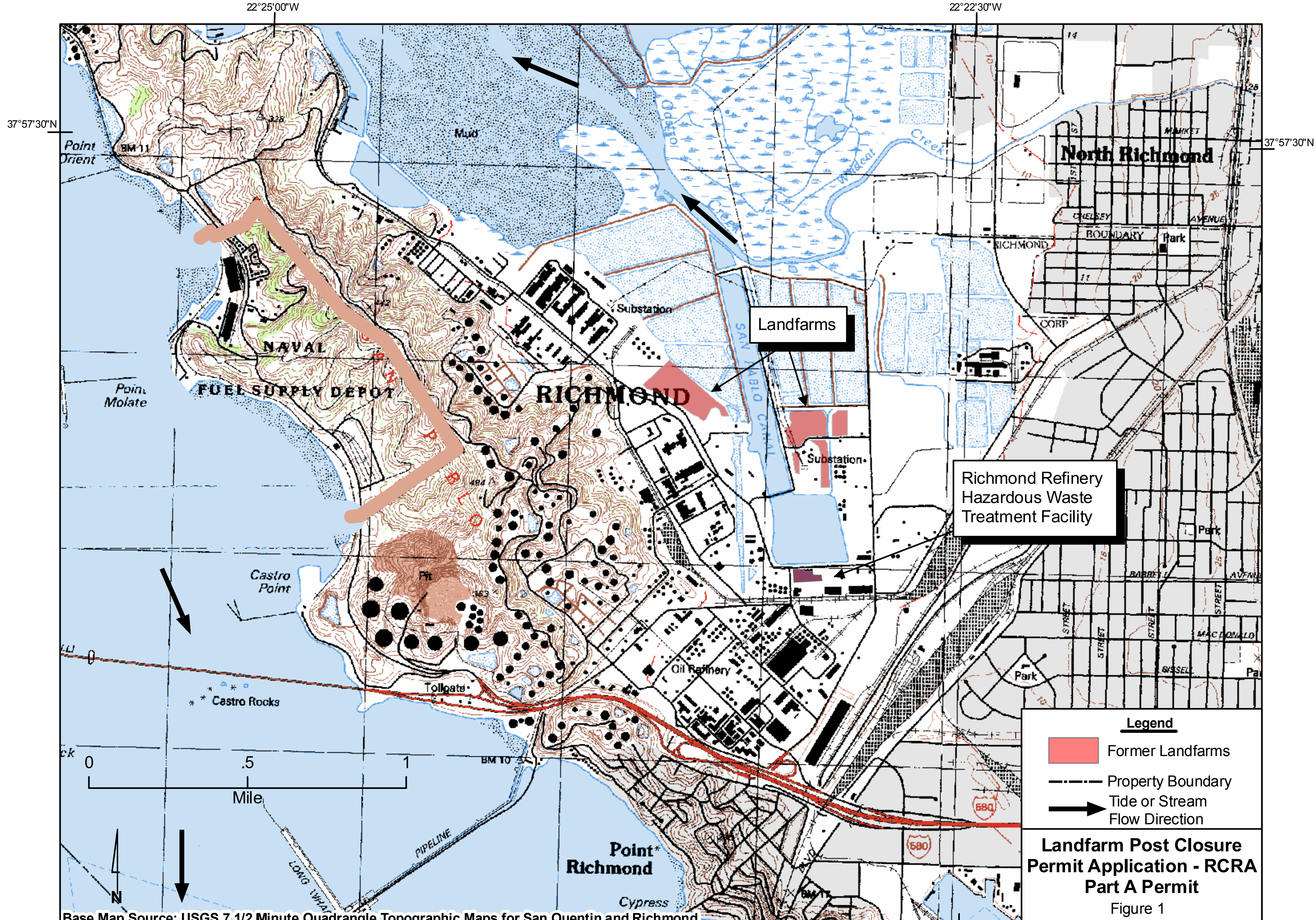
RWQCB, 2011b. *Order No. R2-2011-0049, NPDES No. CA0005134.* July 14.

RWQCB, 2012. *Order No. R2-2012-0015, Site Cleanup Requirements for the Chevron Products Company, Chevron Richmond Refinery, Richmond, Contra Costa County*. February 13.

RWQCB, 2014. *Revised Self-Monitoring and Reporting Program for Chevron Products Company, Chevron Richmond Refinery*. January 22.

URS, 2015. *Statistical Evaluation Plan for the Revised Self-Monitoring and Reporting Program, Order No. R2-2011-0036*. May 28.

Figures



Landfarm Post Closure Permit Application - RCRA Part A Permit

Figure 1

Base Map Source: USGS 7 1/2 Minute Quadrangle Topographic Maps for San Quentin and Richmond

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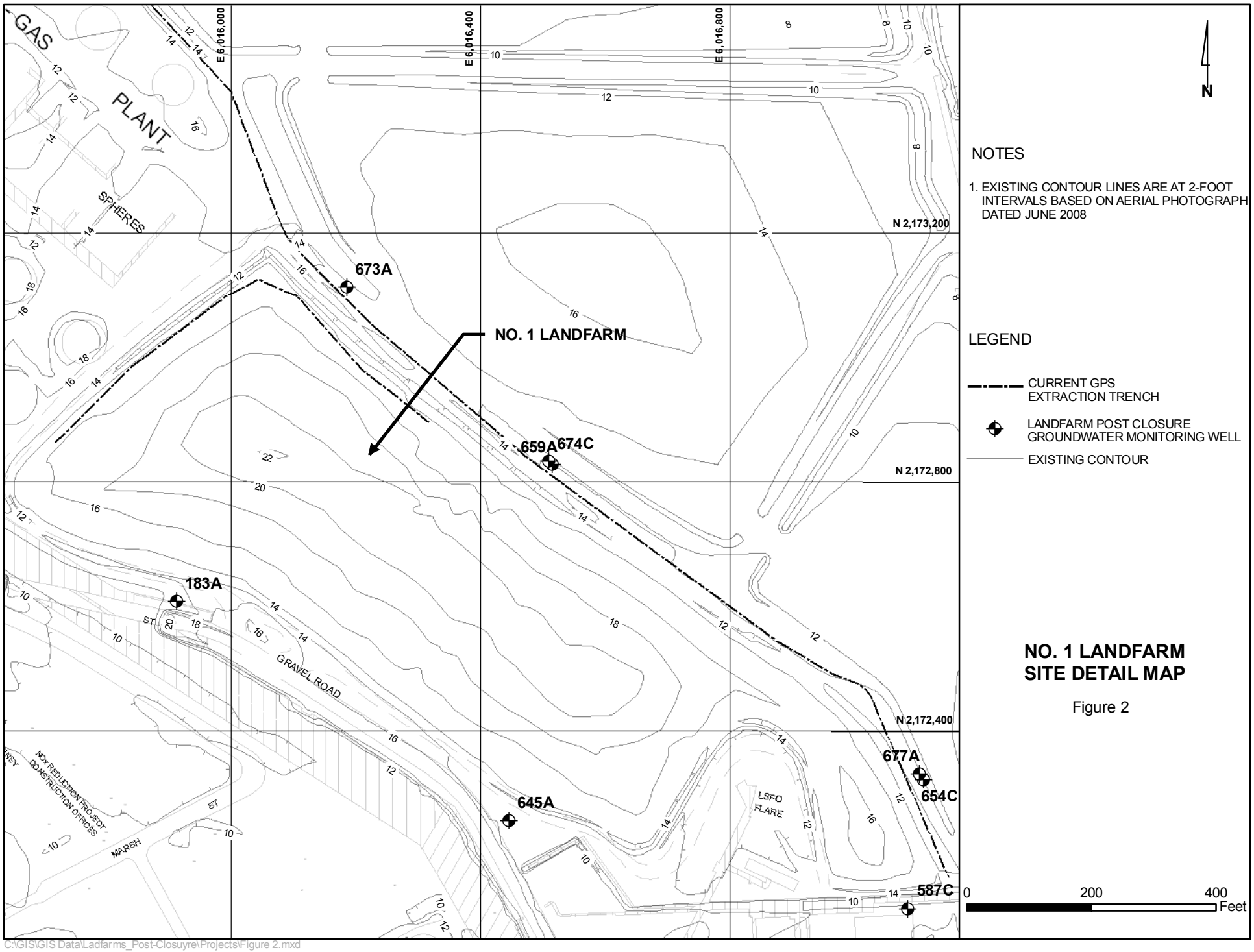
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N
NOTES
1. EXISTING CONTOUR LINES ARE AT 2-FOOT INTERVALS BASED ON AERIAL PHOTOGRAPH DATED JUNE 2008
LEGEND
CURRENT GPS EXTRACTION TRENCH
LANDFARM POST CLOSURE GROUNDWATER MONITORING WELL
EXISTING CONTOUR
NO. 1 LANDFARM
SITE DETAIL MAP
Figure 2
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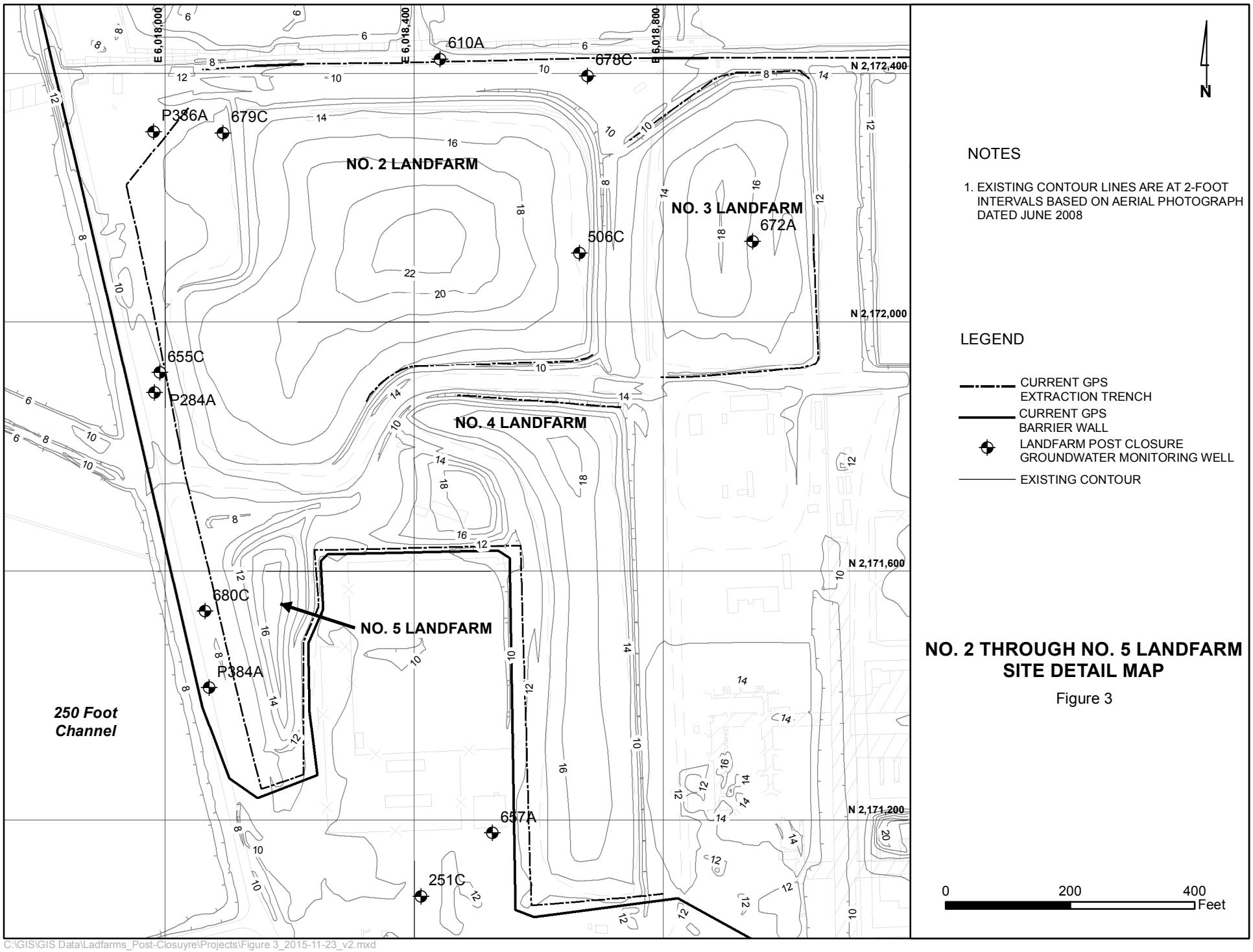

NO. 2 THROUGH NO. 5 LANDFARM SITE DETAIL MAP

Figure 3

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Oblique Aerial View of Landfarm 1 (D81 - Historical Land Treatment Unit)
View Looking Northeast
Photograph Taken May 15, 2012
Richmond Refinery Landfarms 1-5 RCRA Post-Closure Permit Renewal

Figure 4

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Oblique Aerial View of Landfarms 2-5
View Looking South
Photograph Taken July 17, 2012
Richmond Refinery Landfarms 1-5 RCRA Post-Closure Permit Renewal

Figure 5

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Tables

Table 1 - Revised
Landfarms Post-Closure Inspection, Maintenance and Monitoring Activities Schedule
Richmond Refinery Landfarms 1-5 RCRA Post-Closure Permit Renewal Application

Task	Current Responsible Party	Form	Monthly	Quarterly	Semi-Annually	Annually	Biennially	Every 5 Years	After Heavy Rain	As Needed
Vegetation Maintenance	Goebel									X
Settlement Monitoring	Leidos					X				
Soil Cover Inspection - Cap Condition	Leidos					X				
Surface Drainage - NPDES	Leidos					X				
Soil Cover Inspection - Erosion	EOD	YES							X	
Surface Drainage - Maintenance of Drainage Structures	EOD	YES							X	
LNAPL Measurement	Leidos				X					
Piezometer Monitoring	Leidos				X					
Groundwater Quality - Parameters Monitoring	Leidos				X	X	X			
Groundwater Quality - COC Monitoring	Leidos							X		
Inspection Report	Leidos					X				

Appendix A
Hazardous Waste Facility Post-Closure Permit (March 4, 2003)

California Environmental Protection Agency
Department of Toxic Substances Control

HAZARDOUS WASTE FACILITY POST-CLOSURE PERMIT

Facility Name and Location:
Chevron USA Inc. Richmond Refinery
841 Chevron Way
Richmond, California 94801-0627

Facility Owner:
Chevron USA Inc.
575 Market Street
San Francisco, CA 94105

Facility Operator:
Chevron Environmental Management Company
6001 Bollinger Canyon Road
San Ramon, CA 94583-2324

Permit Number: 02-BRK-05

Facility EPA ID No.:
CAD 009 114 919

Effective Date:
March 7, 2003

Expiration Date:
March 7, 2013

Permit Modification History:
None

Pursuant to Section 25200 of the California Health and Safety Code, this RCRA-equivalent Hazardous Waste Facility Post-Closure Permit is hereby issued to Chevron USA Inc. Richmond Refinery. The issuance of this Permit is subject to the conditions set forth in Attachment A and the approved Part "B" Application. The Attachment A consists of 23 pages.

ORIGINAL SIGNED BY

Mohinder S. Sandhu, P.E. , Chief
Standardized Permits and Corrective Action Branch
Hazardous Waste Management Program

March 4, 2003
Date

Attachment "A"
TABLE OF CONTENTS

PART I. DEFINITIONS

All terms used in this Permit shall have the same meaning as those terms have in the California Health and Safety Code, Division 20, Chapter 6.5 and title 22, California Code of Regulations Division 4.5, unless expressly provided otherwise by this Permit.

1. "DTSC" as used in this Permit means the California Department of Toxic Substances Control.

2. "Permittee" as used in this Permit means the Facility Owner and Operator.

3. "HSC" as used in this Permit means the California Health and Safety Code.

4. "CCR" as used in this Permit means the California Code of Regulations.

5. Unless explicitly stated otherwise, all references to items in this Permit shall refer only to items occurring within the same part.

PART II. DESCRIPTION OF THE FACILITY AND OWNERSHIP

1. NAME

The facility name is Chevron USA Inc. Richmond Refinery, 841 Chevron Way, Richmond, California 94801-0627 (hereafter "Facility" or "Refinery").

2. OWNER

The facility owner is Chevron USA Inc., 575 Market Street, San Francisco, California 94105 (hereafter "Owner").

3. OPERATOR

The facility operator is Chevron Environmental Management Company, 6001 Bollinger Canyon Road, San Ramon, California 94583-2324.(hereafter "Operator").

4. LOCATION

Chevron Richmond Refinery Landfarms 1 through 5 are located within the eastern section of the refinery property boundary in the western Contra Costa County, City of Richmond (Refer to Figure 1). Landfarms 1 through 5 cover 29 acres of the 2,900 acres of Refinery property. The Landfarms, zoned as general industrial use, are approximately 1,900 feet from the nearest (eastern) property boundary. The Refinery is bordered to the south by Interstate-580 (I-580), to the east by the Richmond Parkway and to the west and north by San Pablo Bay. Access to Landfarms 1 through 5 is through secured Gate 31. Landfarm 1 can be reached through Channel Street; Landfarms 2, 3, 4, and 5 can be accessed through Ammonia Street and Basin Street, all within the Refinery compound.

5. DESCRIPTION

The Permittee operated Landfarms 1 through 5 between the mid-1970s and 1987. Landfarming was conducted at that time to promote biodegradation of oily wastes (liquid and solid) generated from on-site petroleum processing. Landfarms 1 through 4 were built over existing ponds and Landfarm 5 was built on top of a fill. Historical landfills underlie portions of Landfarms 1 through 5. Prior to start of Landfarming operations, 7 to 20 feet of fill was placed at each of the Landfarms. The fill material originated from adjacent pond and channel dredging and from soil generated by the San Pablo Tank Farm construction activities. During Landfarming, wastes were applied to the surface of the Landfarms and tilled into the top 6 to 12 inches of fill. The principal wastes applied were oil/water separator sludge, leaded and non-leaded tank bottoms, and oil/water mixtures.

U.S. Environmental Protection Agency (U.S. EPA) and DTSC notified the Permittee on February 10, 1987 that Landfarms 1 through 5 did not qualify for a hazardous waste permit because the Landfarms lacked adequate separation between the treatment zone and the seasonal high groundwater table (about one foot below ground surface). In January 1988, U.S. EPA issued to the Permittee a Consent Agreement and Final Order (No. RCRA 09-88-005) to ensure that the Landfarms were closed in accordance with applicable U.S. EPA regulations. DTSC followed by issuing a Stipulation and Order (HWCA 87/99-019) to ensure that the Landfarms were closed in accordance with the applicable California regulations.

On March 31, 1988, the Permittee submitted to DTSC the original "Landfarms Closure Plan". A "Revised Closure Plan" was submitted on May 5, 1996. DTSC approved, with conditions, the "Revised Closure Plan" on March 19, 1998. Closure activities and construction of vegetative cover over the Landfarm units, as described in the approved "Revised Closure Plan", began in May 1998. The Landfarms have been regraded into low mounds to facilitate surface drainage and improve the appearance of the sites. The Landfarm soils were lightly compacted and/or recompacted with light truck equipment to support the construction of the final cover while allowing for easy vegetation root penetration. The final grades are designed to divert rainfall runoff away from the Landfarm sites. Infiltration of water into the Landfarm soils is reduced by the improved surface grading and surface vegetation. The top 12 inches of a vegetative soil layer consists of 6-inch thick clean fill layer overlain by a 6-inch thick relatively loose, nutrient-rich topsoil layer. This prevents run-off from direct contact with the wastes and also prevents wind erosion of the wastes.

On September 30, 1999, the Permittee submitted to DTSC the "Landfarms Closure Construction Completion Certification Report". On September 19, 2000, DTSC issued the approval of the Closure Certification for Landfarms 1 through 5. The Permittee submitted the "Post-Closure Permit Application for Landfarms 1 through 5" on March 20, 2000. A revised "Post-Closure Permit Application" was submitted on January 7, 2002.

The "RCRA Facilities Investigation (RFI) Report" dated November 1992 indicated that soils beneath Landfarms 1 through 5 and the "A" Zone groundwater in its vicinity are impacted by volatile organic compounds (including benzene, ethyl benzene, toluene, xylene), semi-volatile organic compounds (including fluorene, phenanthrene, 1-methyl naphthalene, 2- methyl naphthalene), total volatile hydrocarbon as gasoline (TVH-gasoline), total extractable hydrocarbon as diesel (TEH-diesel), and metals (including chromium, lead, nickel, vanadium). Monitoring activities indicate that free-phase hydrocarbons are present in "A" Zone groundwater in the vicinity of Landfarms 1 through 5. These monitoring activities also indicate that "C" Zone groundwater has not been impacted.

In response to the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) Waste Discharge Requirements (WDR) Order No. 89-175, the Permittee developed and constructed a Groundwater Protection System (GPS) for the Refinery. As part of an overall Refinery-wide GPS, groundwater extraction trenches were installed along the down gradient perimeter of the Landfarms. The Landfarms' GPS also serves as corrective action for the landfills that underlie portions of the Landfarms. The purpose of the GPS is to establish and maintain a physical or hydraulic barrier to prevent the off-site movement of potentially contaminated "A" Zone groundwater.

In response to RWQCB WDR Order No. 00-043 (WDR #00-043), the Permittee developed and implemented the Free-Phase Liquid Petroleum Hydrocarbon Recovery Evaluation Plan for the Facility. The Plan includes the area of Landfarms 1 through 5.

6. FACILITY SIZE AND TYPE FOR FEES

The Facility is categorized as a large post-closure facility for purposes of HSC, Section 25205.19.

PART III. GENERAL CONDITIONS

1. PERMIT APPLICATION DOCUMENTS

The Part "A" Application and Part "B" Application for Landfarms 1 through 5 at Chevron USA Inc. Richmond Refinery dated January 7, 2002 and the following documents are hereby approved and made a part of this Permit by reference (the "Application"):

(a) "Landfarms Post Earthquake Inspection and Corrective Action Plan", dated November 1996,

(b) "Revised Landfarms Closure Plan", dated May 28, 1997,

(c) "Revised Landfarms Post-Closure Monitoring Plan", dated January 7, 2002,

(d) "Groundwater Monitoring Program and Standard Operating Procedures", Chevron U.S.A. Products Company, Richmond, California, dated August 13, 2002,

(e) "Revised Table 1 to Groundwater Monitoring Program Standard Operating Procedures", Chevron U.S.A. Products Company, Richmond, California, submitted with a cover letter dated October 31, 2002 (Standard Operating Procedures),

(f) "Statistical Evaluation Plan for Groundwater Self-Monitoring and Reporting Program, WDR #00-043, Chevron Richmond, California, dated October 18, 2002 (Statistical Evaluation Plan).

2. EFFECT OF PERMIT

(a) The Permittee shall comply with the provisions of the California Health and Safety Code, and Division 4.5 of title 22, California Code of Regulations (title 22, Cal. Code Regs.). DTSC's issuance of this Permit does not release the Permittee from any liability or duty imposed by federal or state statutes or regulations or local ordinances, except the obligation to obtain this Permit. The Permittee shall obtain the permits required by other governmental agencies, including but not limited to, the applicable land use planning, zoning, hazardous waste, air quality, water quality, and solid waste management laws for the construction and/or operation of the Facility.

(b) The Permittee is permitted to monitor and maintain the post-closure facility in accordance with the conditions of this Permit. Any treatment or storage of hazardous wastes not specifically authorized in this Permit is strictly prohibited.

(c) Compliance with the terms of this Permit does not constitute a defense to any action brought under any other law governing protection of public health or the environment, including, but not limited to, one brought for any imminent and substantial endangerment to human health or the environment.

(d) DTSC's issuance of this Permit does not prevent DTSC from adopting or amending regulations that impose additional or more stringent requirements than those in existence at the time this Permit is issued and does not prevent the enforcement of these requirements against the Permittee.

(e) Failure to comply with any term or condition set forth in the Permit in the time or manner specified herein will subject the Permittee to possible enforcement action including but not limited to penalties pursuant to California Health and Safety Code section 25187.

(f) In addition, failure to submit any information required in connection with the Permit, or falsification and/or misrepresentation of any submitted information, is grounds for revocation of this Permit (title 22, Cal. Code of Regs., section 66270.43).

(g) In case of conflicts between the Operation Plan and the Permit, the Permit conditions take precedence.

(h) This Permit includes and incorporates by reference any conditions of WDR #00-043, including the attached Groundwater Corrective Action Self-monitoring and Reporting Program (SMP Attachment), and any subsequent approved modifications issued by the RWQCB to the Facility, and any conditions imposed pursuant to section 13227 of the Water Code.

3. COMPLIANCE WITH CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

A Notice of Exemption has been prepared in accordance with the requirements of Public Resources Code Section 21000 et seq. and the CEQA Guidelines, section 15061(b)(3) et seq. of title 14, California Code of Regulations.

4. POST-CLOSURE CARE AND ENVIRONMENTAL MONITORING

(a) As required by the approved "Revised Landfarms Post-Closure Monitoring Plan", the Permittee shall continue all operations (including pH control) necessary to enhance degradation and transformation and sustain immobilization of constituents of concern in the treatment zone to the extent that such measures are consistent with other post-closure care activities;

(b) The Permittee shall maintain run-on control system capable of preventing run-on onto the treatment zone during peak discharge from at least a 24-hour, 25-year storm as required by the approved "Revised Landfarms Post-Closure Monitoring Plan";

(c) The Permittee shall maintain the run-off management system to collect, control, and properly manage at the least, the water volume resulting from a 24-hour, 25-year storm as required by the approved "Revised Landfarms Post-Closure Monitoring Plan";

(d) As required by the approved "Revised Landfarms Post-Closure Monitoring Plan", the Permittee shall control the release of airborne contaminants to below hazardous or nuisance levels or other levels as necessary to protect human health or the environment.

(e) The Permittee shall control wind dispersal of hazardous waste as required by the approved "Revised Landfarms Post-Closure Monitoring Plan";

(f) The Permittee shall maintain the vegetative cover over closed portions of Landfarms 1 through 5 as required by the approved "Revised Landfarms Post-Closure Monitoring Plan";

(g) The Permittee shall maintain and operate the GPS as required by WDR #00-043;

(h) The Permittee shall implement the Free-Phase Liquid Hydrocarbon Recovery Evaluation Plan as required by WDR #00-043;

(i) The Permittee shall conduct groundwater monitoring for Landfarms 1 through 5 as required by the approved "Revised Landfarms Post-Closure Monitoring Plan" and the SMP Attachment:

(1) The Permittee shall institute a corrective action monitoring program for the "A" Zone as required by the approved "Revised Landfarms Post-Closure Monitoring Plan" and the SMP Attachment,

(2) The Permittee shall institute a detection monitoring program for the "C" Zone as required by the approved "Revised Landfarms Post-Closure Monitoring Plan" and the SMP Attachment,

(3) The Permittee shall comply with the notification and verification resampling requirements of title 22, CCR section 66264.98(j),

(4) The Permittee shall conduct verification resampling within 45 days of identifying potential evidence of a release as indicated by any of the following:

(A) One organic compound that exceeds its practical quantitation limit,

(B) Two or more organic compounds that show a trace or stronger indication of a release,

(C) An inorganic parameter that exceeds the background-derived concentration limit, or

(D) Other evidence as identified by the Permittee or DTSC.

(5) The Permittee shall comply with the requirements of title 22 CCR section 66264.98(k),

(6) The Permittee shall apply a water quality protection standard consisting of:

(A) The monitoring parameters and constituents of concern identified in Table 4 of the SMP Attachment;

(B) The concentration limits for the "A" Zone specified in Table 4 of the SMP Attachment;

(C) The concentration limits for the "C Zone specified in the "Statistical Evaluation Plan for the Landfarm Area" and SMP Attachment,

(D) A point of compliance at the hydraulically down-gradient limit of Landfarm 1 and at the hydraulically down gradient limits of Landfarms 2 through 5; and

(E) The monitoring points specified in Table 3 of the SMP Attachment.

(7) The compliance period for Landfarms 1 through 5 shall be a minimum of 30 years.

(8) The Permittee shall establish, operate, and maintain a groundwater monitoring program that complies with title 22 CCR section 66264.97.

(A) The Permittee shall conduct groundwater monitoring as required by the SMP Attachment and the approved "Revised Landfarms Post-Closure Monitoring Plan".

(B) The Permittee shall follow the sampling and analytical procedures specified in the approved "Groundwater Monitoring Program Standard Operating Procedures", Chevron U.S.A. Products Company, Richmond, California dated August 13, 2002 and its revised Table 1 submitted with a cover letter dated October 31, 2002.

(C) The Permittee shall use the statistical procedures specified in the approved "Landfarms Statistical Evaluation Plan for Groundwater Self-Monitoring and Reporting Program", Chevron Refinery, Richmond, California dated October 18, 2002.

(D) The Permittee shall submit groundwater monitoring reports as required by the SMP Attachment.

(j) The Permittee shall submit to DTSC all reports, notifications, and other submittal which are required by the approved "Revised Landfarms Post-Closure Monitoring Plan", approved "Landfarms Post Earthquake Inspection and Corrective Action Plan", and the SMP Attachment in accordance with the applicable schedules specified in the "Post-Closure Permit Application".

(k) Unless and until changed by written notification from DTSC to the Permittee, all reports, notifications, or other submissions that are required by this Permit shall be sent by certified mail or hand delivered, during working hours to the office of:

Branch Chief
Standardized Permits and Corrective Action Branch
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, California 94710-2721

(l) Unless and until changed by written notification from DTSC to the Permittee, all monitoring reports that are required by this Permit shall be sent by certified mail or hand delivered during working hours to the office of:

Unit Chief
Geological Services Unit
Northern California Region, Sacramento Office
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, California 95826-3200

PART IV. PERMITTED UNITS AND ACTIVITIES

This Permit authorizes post-closure care of the Facility units listed below. The Permittee shall not treat, or store or otherwise manage hazardous waste in any of the following units unless otherwise specified in this Part IV. Any modifications to a unit or activity authorized by this Permit require the written approval of DTSC in accordance with the permit modification procedures set forth in title 22, California Code of Regulations.

UNIT NAME:

Landfarm Unit 1

LOCATION:

Landfarm Unit 1 is adjacent to and north of Channel Street, south of No. 1 Oxidation Pond and east of the 250-foot Channel located within Chevron USA Inc. Richmond Refinery (See Figures 1, 2 and 4).

ACTIVITY TYPE:

Post-Closure Care

ACTIVITY DESCRIPTION:

Maintain the vegetation and vegetative cover on the Landfarm, monitor the soil moisture, soil nutrients and soil pH of the vegetative cover, maintain and protect the Groundwater Protection System (GPS), and monitor the concentration of the constituents of concern in the Landfarm's groundwater.

PHYSICAL DESCRIPTION:

Landfarm Unit 1 consists of 13.5 acres, the largest of the five Landfarms located at Chevron USA Inc. Richmond Refinery. Prior to Landfarm operation, imported fill ranging from 10 to 25 feet thick, was placed at the site. To evaluate the vertical and horizontal extent of residual oil in the soil, reconnaissance survey of the site, consisting of soil core and soil pore liquid sampling, was conducted. Results of this survey indicated that the treatment zone extended from 3 to 7 feet below ground surface.

WASTE SOURCES:

Oily wastes generated from on-site petroleum manufacturing.

WASTE TYPES:

Oily wastes generated from on-site manufacturing of petroleum, including non-leaded and leaded tank bottoms, oil/water separator sludge and spent catalyst beads.

RCRA HAZARDOUS WASTE CODES:

K051, K049, K169

UNIT NAME:

Landfarm Unit 2

LOCATION:

Landfarm Unit 2 is adjacent to Landfarm Units 3, 4, and 5. It is south of the Water Enhancement Wetlands Project and east of the 250-foot Channel located within Chevron USA Inc. Richmond Refinery (See Figures 1, 3 and 4).

ACTIVITY TYPE:

Post-Closure Care

ACTIVITY DESCRIPTION:

Maintain the vegetation and vegetative cover on the Landfarm, monitor the soil moisture, soil nutrients and soil pH of the vegetative cover, maintain and protect the Groundwater Protection System (GPS), and monitor the concentration of the constituents of concern in the Landfarm's groundwater.

PHYSICAL DESCRIPTION:

Landfarm Unit 2 consists of 8 acres. Prior to Landfarm operation, imported fill ranging from 10 to 25 feet thick, was placed at the site. To evaluate the vertical and horizontal extent of residual oil in the soil, reconnaissance survey of the site, consisting of soil core and soil pore liquid sampling, was conducted. Results of this survey indicated that the treatment zone extended from 3 to 5.5 feet below ground surface.

WASTE SOURCES:

Oily wastes generated from on-site petroleum manufacturing.

WASTE TYPES:

Oily wastes generated from on-site manufacturing of petroleum, including oil/water separator sludge and phthalic anhydride bottoms.

RCRA HAZARDOUS WASTE CODES:

K051, K049, K169

UNIT NAME:

Landfarm Unit 3

LOCATION:

Landfarm Unit 3 is south of the Water Enhancement Wetlands Project and east of Landfarm Unit 2 located within Chevron USA Inc. Richmond Refinery (See Figures 1, 3 and 4).

ACTIVITY TYPE:

Post-Closure Care

ACTIVITY DESCRIPTION:

Maintain the vegetation and vegetative cover on the Landfarm, monitor the soil moisture, soil nutrients and soil pH of the vegetative cover, maintain and protect the Groundwater Protection System (GPS), and monitor the concentration of the constituents of concern in the Landfarm's groundwater.

PHYSICAL DESCRIPTION:

Landfarm Unit 3 consists of 3.5 acres. Prior to Landfarm operation, imported fill ranging from 10 to 25 feet thick, was placed at the site. To evaluate the vertical and horizontal extent of residual oil in the soil, reconnaissance survey of the site, consisting of soil core and soil pore liquid sampling, was conducted. Results of this survey indicated that treatment zone extended from 1 to 5 feet below ground surface.

WASTE SOURCES:

Oily wastes generated from on-site petroleum manufacturing.

WASTE TYPES:

Oily wastes generated from on-site manufacturing of petroleum, including non-leaded tank bottoms and oil/water separator sludge.

RCRA HAZARDOUS WASTE CODES:

K051, K049, K169

UNIT NAME:

Landfarm Unit 4

LOCATION:

Landfarm Unit 4 is south of Landfarm Unit 2 within Chevron USA Inc. Richmond Refinery (See Figures 1, 3 and 4).

ACTIVITY TYPE:

Post-Closure Care

ACTIVITY DESCRIPTION:

Maintain the vegetation and vegetative cover on the Landfarm, monitor the soil moisture, soil nutrients and soil pH of the vegetative cover, maintain and protect the Groundwater Protection System (GPS), and monitor the concentration of the constituents of concern in the Landfarm's groundwater.

PHYSICAL DESCRIPTION:

Landfarm Unit 4 consists of 3 acres. Prior to Landfarm operation, imported fill ranging from 10 to 25 feet thick, was placed at the site. To evaluate the vertical and horizontal extent of residual oil in the soil, reconnaissance survey of the site, consisting of soil core and soil pore liquid sampling, was conducted. Results of this survey indicated that the treatment zone extended from 3½ to 5 feet below ground surface.

WASTE SOURCES:

Oily wastes generated from on-site petroleum manufacturing.

WASTE TYPES:

Oily wastes generated from on-site manufacturing of petroleum, including non-leaded tank bottoms and oil/water separator sludge.

RCRA HAZARDOUS WASTE CODES:

K051, K049, K169

UNIT NAME:

Landfarm Unit 5

LOCATION:

Landfarm Unit 5 is south of Landfarm Unit 2 and east of the 250-foot Channel located within Chevron USA Inc. Richmond Refinery (See Figures 1, 3 and 4).

ACTIVITY TYPE:

Post-Closure Care

ACTIVITY DESCRIPTION:

Maintain the vegetation and vegetative cover on the Landfarm, monitor the soil moisture, soil nutrients and soil pH of the vegetative cover, maintain and protect the Groundwater Protection System (GPS), and monitor the concentration of the constituents of concern in the Landfarm's groundwater.

PHYSICAL DESCRIPTION:

Landfarm Unit 5 consists of 1 acre, the smallest of the five Landfarms located at Chevron USA Inc. Richmond Refinery. Prior to Landfarm operation, imported fill ranging from 10 to 25 feet thick, was placed at the site. To evaluate the vertical and horizontal extent of residual oil in the soil, reconnaissance survey of the site, consisting of soil core and soil pore liquid sampling, was conducted. Results of this survey indicated that the treatment zone extended from 2 to 4 feet below ground surface.

WASTE SOURCES:

Oily wastes generated from on-site petroleum manufacturing.

WASTE TYPES:

Oily wastes generated from on-site manufacturing of petroleum, including oil/water separator sludge.

RCRA HAZARDOUS WASTE CODES:

K051, K049, K169

PART V. SPECIAL CONDITIONS WHICH APPLY TO LANDFARM UNITS 1 THROUGH 5

1. As required by the approved "Revised Landfarm Post-Closure Monitoring Plan" dated January 7, 2003, the Permittee shall survey quarterly the vegetative cover of the Landfarms to evaluate and identify the appearance of the vegetation on each Landfarm. Symptoms of drought stress, chlorosis (indicative of nutrient deficiency) or need for irrigation, fertilization, mowing and/or reseeding shall be noted, and maintenance care shall be made to address the observations during the survey. The observation and the resulting effectiveness shall be documented in the Semi-annual Landfarm Status Report.

2. The Permittee shall monitor soil pH and soil nutrients (nitrate, ammonium, and phosphate) semi-annually within each Landfarm following the approved "Revised Landfarm Post-Closure Monitoring Plan".

3. The Permittee shall maintain an electronically controlled stationary sprinkler system to irrigate Landfarm Units 2 through 5, as well as a portion of Landfarm Unit 1 and a self propelled linear sprinkler system for the remaining portion of Landfarm Unit 1. Treated Refinery effluent water that meets the National Pollutant Discharge Elimination System (NPDES) permit requirements will be used for irrigation. The target soil moisture content shall be between 6 and 20 percent. The Permittee shall monitor soil moisture weekly during dry season (May to September) and quarterly thereafter. The Permittee shall modify the frequencies and amounts of irrigation as needed based on the results of weekly inspections. The results of soil monitoring shall be included in the Semi-Annual Landfarms Status Report.

4. As required by the approved "Revised Landfarm Post-Closure Monitoring Plan", the Permittee shall have a qualified engineer inspect the vegetative cover of the Landfarms annually, between September 15 and October 15, prior to the onset of the rainy season, for signs of differential settlement which may cause ponding. If differential settlement has occurred, the surface will be regraded within 30 days to maintain positive drainage. The Permittee shall also perform inspections of the vegetative cover monthly and after a major rainfall event. Records of all inspections and repairs shall be maintained at the Facility.

5. As required by the approved "Revised Landfarm Post-Closure Monitoring Plan", the Permittee shall inspect the drainage swales and culverts annually, between September 15 and October 15, before the rainy season, for cracking, clogging, and erosion. The pumps shall also be inspected and tested annually. If deficiencies are found, they will be corrected within 30 days.

6. In the event that the Landfarms experience the occurrence of the Maximum Credible Earthquake resulting in damage to the vegetative cover and equipment, the Permittee shall evaluate the impact of the earthquake and repair any damage following the approved "Landfarms Post-Earthquake Inspection and Corrective Action Plan". The Permittee shall immediately inspect the Landfarms and verbally report the results of the inspection to DTSC within 18 hours of the event. A written report which includes the information listed in the approved "Landfarms Post-Earthquake Inspection and Corrective Action Plan" shall be submitted to DTSC within 15 days of the incident.

PART VI. CORRECTIVE ACTION

1. The Permittee is conducting corrective action at the Facility under the oversight of the U.S. EPA pursuant to Consent Agreement and Final Order, RCRA 09-88-005, January 20, 1988.

2. In the event the Permittee identifies an immediate or potential threat to human health and/or the environment, discovers new releases of hazardous waste and/or hazardous constituents, or discovers new Solid Waste Management Units (SWMUs) not previously identified, the Permittee shall notify DTSC orally within 24 hours of discovery and notify DTSC in writing within 10 days of such discovery summarizing the findings including the immediacy and magnitude of any potential threat to human health and/or the environment.

3. DTSC may require the Permittee to conduct corrective action to address any immediate or potential threats to human health and/or the environment or newly identified SWMUs or releases of hazardous waste and/or hazardous constituents. Corrective action will be carried out under either a Corrective Action Consent Agreement or Corrective Action Enforcement Order pursuant to California Health and Safety Code, Section 25187.

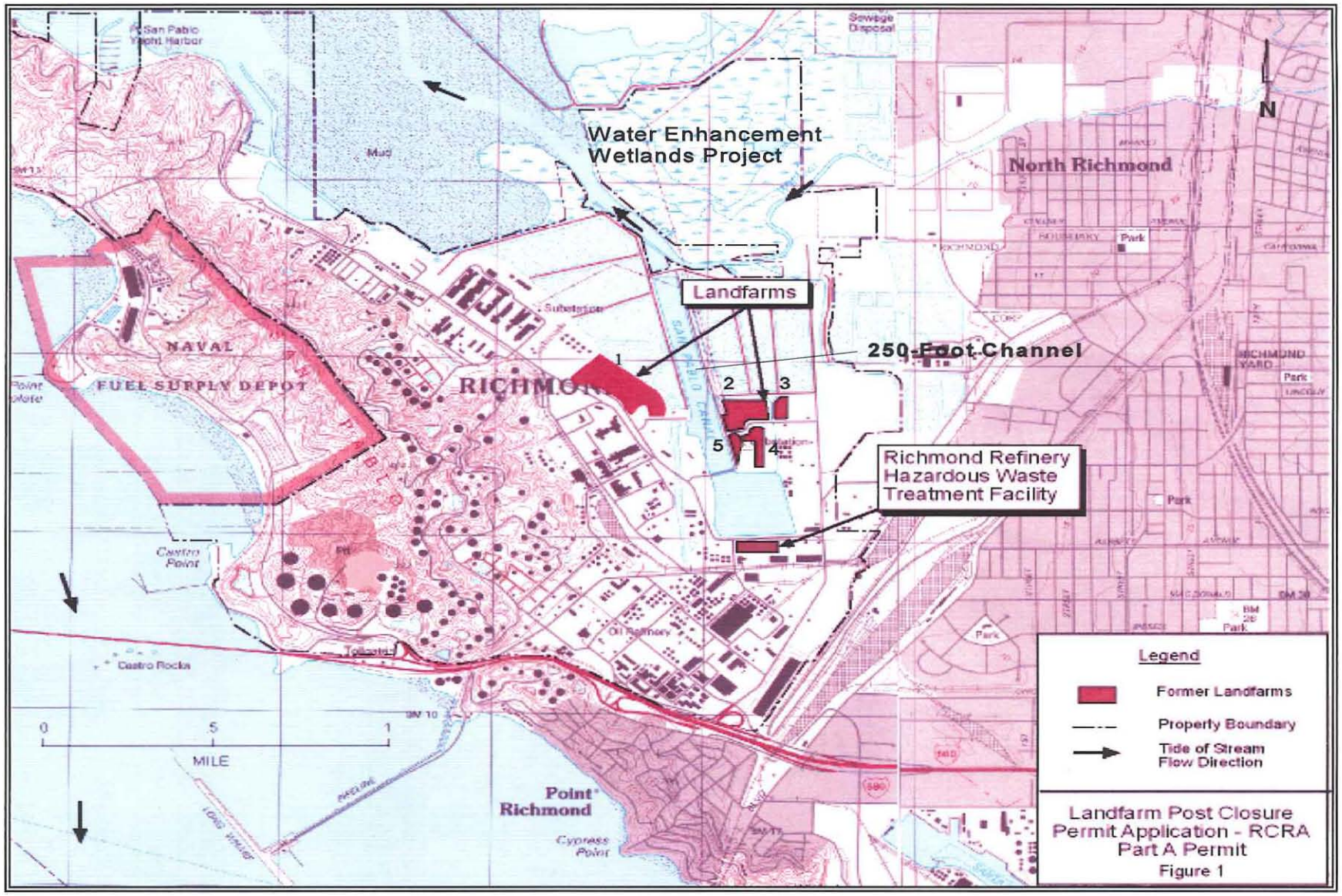

Figure 1. Location map, Chevron USA Inc. Richmond Refinery Landfarms 1 through 5, Richmond, California

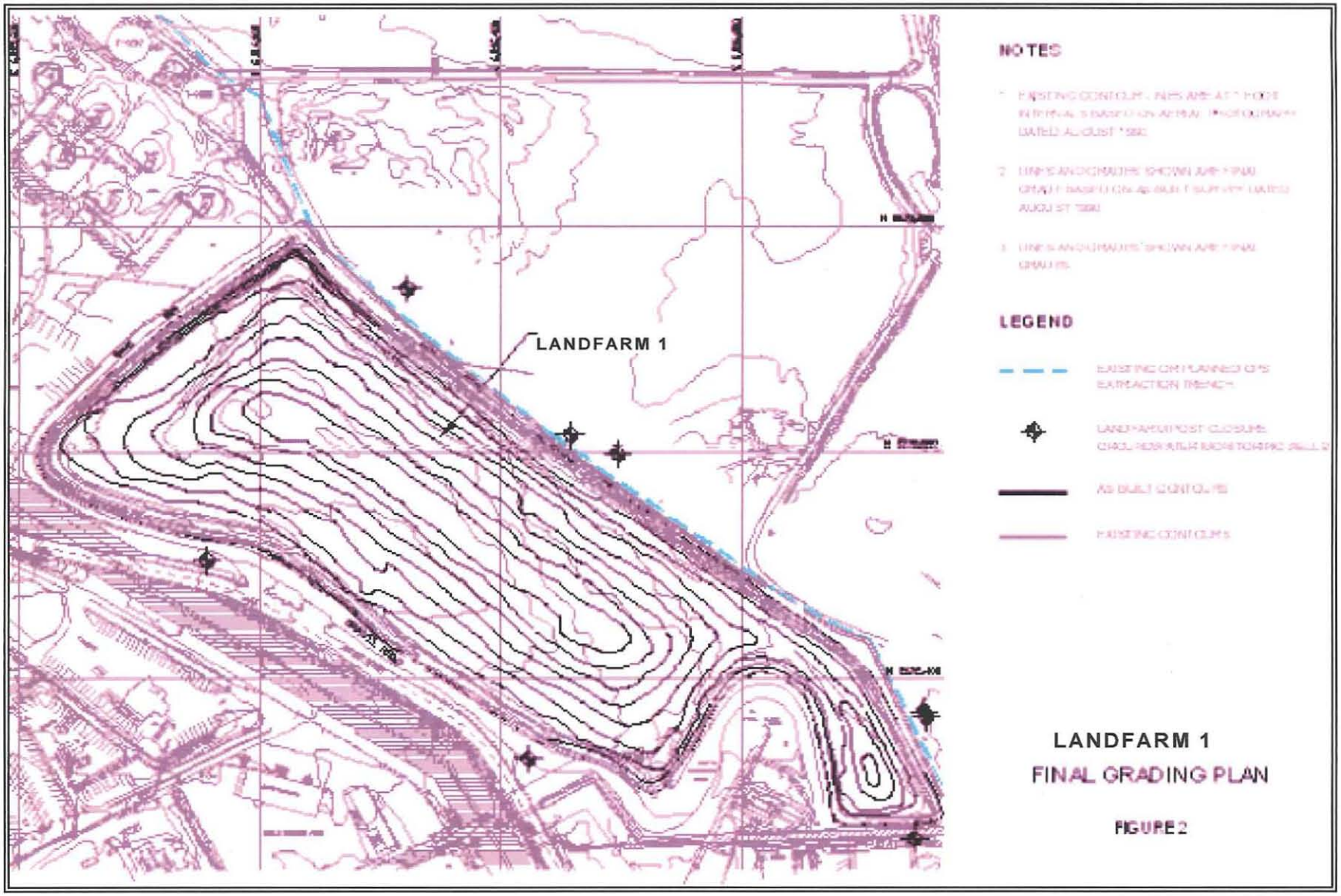

Figure 2. Site Map, Chevron USA Inc. Richmond Refinery Landfarm 1.

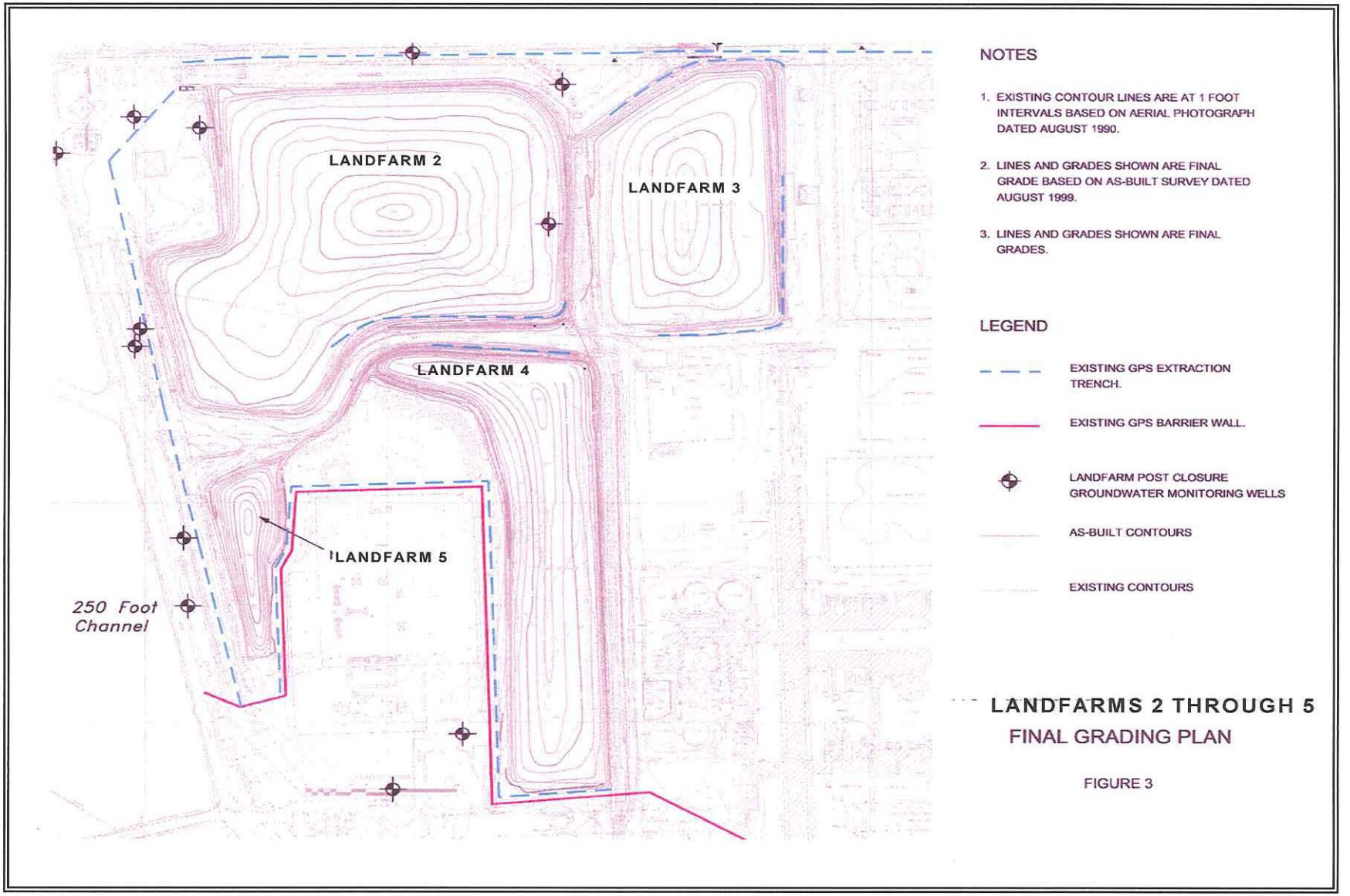

Figure 3. Chevron USA Inc. Richmond Refinery Landfarms 2 through 5.

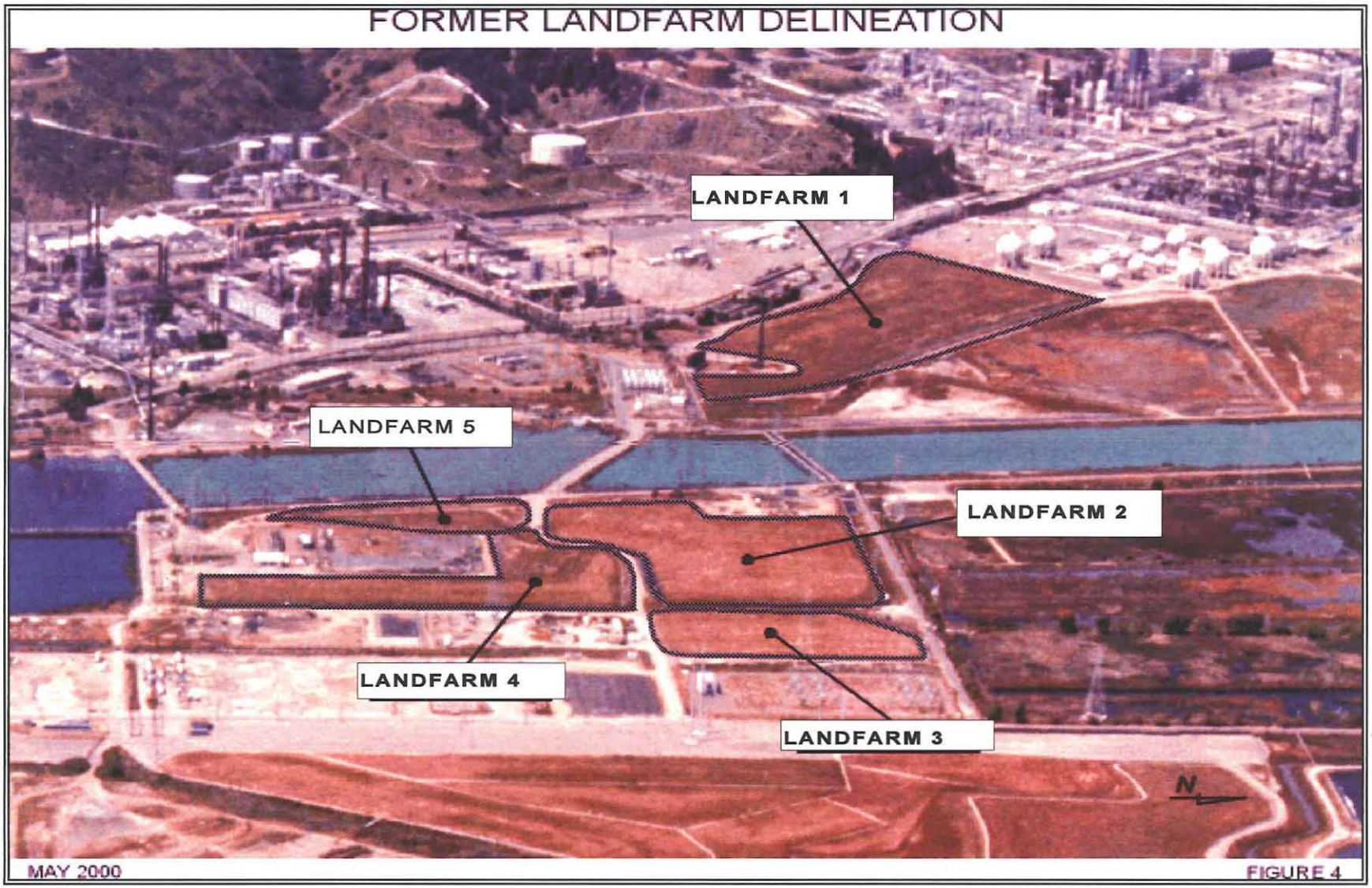

Figure 4. Aerial Photo, Chevron USA Inc. Richmond Refinery Landfarms 1 through5, Richmond, California

Appendix B
Permit Completeness Checklist

Chapter 4
Post-closure Permit Application Checklist
January 2002

Section - Subsection	Requirement	Regulation Title 22 CCR Section	Location in Application / Comment (completed by applicant)
A. General Information			
A - 1 Part A	All applicants must provide the information listed in Title 22 CCR, Section 66270.13 using the Part A application form EPA 8700-23.	66270.13	The Part A application is included as Appendix C in the Part B application
A - 2 Part B Certification	Applications must be accompanied by a certification statement as specified in Title 22 CCR, Section 66270.11(d).	66270.11(d)	The Part A application is included as Appendix C in the Part B application
A - 3 General Description	Brief description of the facility, including the nature of the business and facility contacts	66270.14 (b)(1) and (b)(13) 66264.118(b)(3)	Section 2.0
A - 4 Post-closure Notices	Documentation that notices required under Title 22 CCR Section 66264.119 have been filed	66264.119	Appendix H
A - 5 Other Federal Laws	Compliance with the requirements of applicable federal laws such as the Wild and Scenic Rivers Act, National Historic Preservation Act of 1966, Endangered Species Act, Coastal Zone Management Act, and the Fish and Wildlife Coordination Act	66270.3	Appendix I

Chapter 4
Post-closure Permit Application Checklist
January 2002

Section - Subsection	Requirement	Regulation Title 22 CCR Section	Location in Application / Comment (completed by applicant)
B. Facility Description B - 1 Facility Location	Narrative description of items included on the topographical map identified in Section B-2, including a detailed description of the facility location with an area wide map showing roads and surrounding adjacent properties. Also include an identification of the local jurisdiction(s) in which the facility is located.	66270.14 (b)(11)	Section 2.4, Figures 1-3 and Appendix D
B - 2 Topographical Maps	(a) Topographic map(s) which shows the facility and a distance of 2,000 feet around it, at a scale of 1 inch equal to not more than 200 feet: (1) Contours sufficient to show surface water flow around the facility operations (2) Map scale and date (3) 100-year floodplain area (4) Surface waters including intermittent streams (5) Surrounding land uses (6) A wind rose (7) Map orientation (8) Legal boundaries of the hazardous waste management facility site (b) Location of the following: (1) Access controls (2) Access and internal roads (3) Injection and withdrawal wells (onsite and offsite) (4) Buildings and structures	66270.14 (b)(18) 66270.14(c)(3)	Appendix D

Section - Subsection	Requirement	Regulation Title 22 CCR Section	Location in Application / Comment (completed by applicant)
	(5) Sewers (6) Flood control or drainage barriers (7) Run-on and run-off control systems (8) Existing hazardous waste management units and solid waste management units (9) The waste management area boundaries (10) The point(s) of compliance (11) Groundwater monitoring well locations		
B - 3 Floodplain	Floodplain requirements	66264.18 (b) 66270.14(b)(11)	Appendix D, Appendix E
C. Closure / Post-closure Plan C - 1 Closure / Post-closure Plan	Copy of the approved closure plan, closure report and certification, and post-closure plan	66270.14 (b)(13)	Appendix G, Appendix J, Appendix K
D. Security D - 1 Security Requirements	Adequate security and requirement details	66264.14 66270.14(b)(4)	Section 7.1
D - 2 Emergency Preparedness	(a) Emergency equipment (b) Testing and maintenance of equipment (c) Water and fire control (d) Documentation of arrangements with emergency	66270.14(a) and (b) 66264.32(c) and (d) 66264.33 66264.37	Section 7.2.1, Section 8.0, Section 10.0, Section 9.0

Section - Subsection	Requirement	Regulation Title 22 CCR Section	Location in Application / Comment (completed by applicant)
	agencies (e) Equipment and power failure		
E. Financial Responsibility E - 1 Cost Estimates	Copy of the most recent post-closure cost estimate	66270.14 (b)(16)	Appendix Q
E - 2 Financial Responsibility Mechanisms	Copy of the established financial assurance mechanism for post-closure care of the facility	66270.14 (b)(16)	Appendix Q
F. Inspection and Maintenance F - 1 Closure Structures	(a) List of wastes (b) Liner and cap system description (c) Liner system foundation description (d) Leachate collection/detection system operation and design (If applicable) (e) Run-on control system (f) Run-off control system (g) Cap maintenance	66264.301 66264.309 66264.310 66270.21 (a) and (b)	Appendix G, Appendix J
F - 2 Inspection Plan	Inspection Plan which includes the following: (a) Inspection schedule (b) Inspection description (c) Inspection checklist (d) Inspection log (e) Inspection remedial actions	66264.15 (b) and (c) 66264.118(b)(2) 66270.14(b)(5)	Table 1, Appendix K

Chapter 4
Post-closure Permit Application Checklist
January 2002

Section - Subsection	Requirement	Regulation Title 22 CCR Section	Location in Application / Comment (completed by applicant)
G. Monitoring Requirements G - 1 Groundwater Monitoring Plan	See Appendix I Section 6.0. (a) Purpose of plan (b) Waste management history (c) Uppermost aquifer (d) Nature and extent of plume (e) Analytical parameters (f) Concentration limits (g) Monitoring program description (h) Water Quality Sampling and Analysis Plan (i) Statistical Evaluation Plan (j) Monitoring System Operation and Maintenance Plan (k) Summary of existing environmental monitoring data	66270.14(c)(1) 66264.97	Section 2.3.1, Section 6.2.1, Appendix L, Appendix M, Appendix O, Appendix N
G - 2 Surface Water Monitoring Plan	See Appendix I, Sections 9.0, 10.0, 11.0 (a) Purpose of plan (b) Waste management history (c) Surface water features (d) Nature and extent of plume (e) Analytical parameters (f) Concentration limits (g) Monitoring program description (h) Water Quality Sampling and Analysis Plan (i) Statistical Evaluation Plan	Article 6 66264.90 - 66264.100 66264.97(c)	Section 6.2.3, Appendix L

Section - Subsection	Requirement	Regulation Title 22 CCR Section	Location in Application / Comment (completed by applicant)
	(j) Monitoring System Operation and Maintenance Plan (k) Summary of existing environmental monitoring data		
G - 3 Vadose Zone Monitoring Plan	See Appendix I, Section 8.0 (a) Purpose of plan (b) Waste management history (c) Vadose zone description (d) Nature and extent of plume (e) Analytical parameters (f) Concentration limits (g) Monitoring program description (h) Vadose Zone Sampling and Analysis Plan (i) Statistical Evaluation Plan (j) Monitoring System Operation and Maintenance Plan (k) Summary of existing environmental monitoring data	Article 6 66264.97(d)	Section 6.2.2, Appendix P
H. Environmental Monitoring & Response Programs for Air, Soil, and Soil-Pore Gas	Demonstrate compliance with Article 17 requirements.	Article 17 66264.700 - 66264.708	As described in Section 6.2.1, the RWQCB has been designated as the lead agency for purposes of RCRA groundwater monitoring pursuant to SB1082. Two RWQCB-issued Orders are in effect – Waste Discharge Order

Section - Subsection	Requirement	Regulation Title 22 CCR Section	Location in Application / Comment (completed by applicant)
			Requirements (WDR) Order No. R2-2011-0036 and Site Cleanup Requirements (SCR) Order R2-2012-0015, which are presented in Appendix L.
I. Air Emission Standards for Process Vents	Demonstrate compliance with Article 27 (RCRA AA) requirements.	Article 27 66264.1030 - 66264.1036	Not applicable
J. Air Emission Standards for Equipment Leaks	Demonstrate compliance with Article 28 (RCRA BB) requirements.	Article 28 66264.1050 - 66264.1065	Not applicable
K. Air Emission Standards for Tanks, Surface Impoundments, and Containers	Demonstrate compliance with Article 28.5 (RCRA CC) requirements.	Article 28.5 66264.1080 - 66264.1090	Not applicable
L. Seismic Requirements	Demonstrate compliance with seismic standards.	66270.14(b)(11)(A) 66264.18(a) 66264.25 66264.228 66264.310	For 66264.25, Closure Plan included as Appendix G, all other citations not applicable
M. Corrective Action M - 1 Location on	The location of the corrective action unit(s) on the required topographic map	66270.14(d)(1)(A)	Appendix D

Section - Subsection	Requirement	Regulation Title 22 CCR Section	Location in Application / Comment (completed by applicant)
Topographic Map			
M - 2 Solid Waste Management Units	Characterization of the Solid Waste Management Unit(s): (a) Type of unit (b) Location of each existing or closed unit on the topographic map (c) General dimensions and structural description including engineering drawings for each unit (if available) (d) Dimensions and materials of construction of each unit, if available (e) Dates when the unit was in operation (f) Description of the wastes placed in the unit (g) Quantity or volume of wastes	66270.14(d)(1)	Appendix G, Appendix D
M - 3 Release from SWMU	Provide all information available, including releases reported under CERCLA , on whether or not any releases have occurred from any of the solid waste management units at the facility. (a) Information on releases must include the following concerning prior or current releases: (1) Date of the release (2) Type of waste or constituent released (3) Quantity or volume released (4) Nature of the release (5) Monitoring and other analytical data available to	66270.14(d)(1) and (2)	Section 13.0

Section - Subsection	Requirement	Regulation Title 22 CCR Section	Location in Application / Comment (completed by applicant)
	describe the nature and extent of the release (b) If no releases, describe the methodology used to determine that releases from solid waste management units are not present.		
M - 4 Public Exposure	Provide information on the potential for the public to be exposed to releases. At a minimum, this must include: (a) Reasonably foreseeable potential releases (b) Potential pathways of human exposure (c) Potential magnitude and nature of exposure	66270.10(j)	Section 5.1, Section 13.0, Section 7.2.3
M - 5 Corrective Action Program	(1) Characterization of contamination (2) Concentration limits (3) Corrective Action Plan (4) Monitoring program(s) (5) Background values (6) Sampling, analysis and statistical procedures	66270.14 (c)(8)	Appendix G, Appendix L, Appendix O
N. Potential Redevelopment Information	Any information or applicable discussion related to the proposed or potential future redevelopment of the site	66270.14(b)(19)	Not applicable
O. Additional Information	Any additional information related to the proposed activity or facility which is requested by DTSC	66270.14(b)(19)	Not applicable

Appendix C
RCRA Hazardous Waste Part A Application

OMB# 2050-0024; Expires 01/31/2017

SEND COMPLETED FORM TO: The Appropriate State or Regional Office.

United States Environmental Protection Agency
RCRA SUBTITLE C SITE IDENTIFICATION FORM

1. Reason for Submittal (MARK ALL BOX(ES) THAT APPLY)

Reason for Submittal:

- ☐ To provide an Initial Notification (first time submitting site identification information / to obtain an EPA ID number for this location)
- ☐ To provide a Subsequent Notification (to update site identification information for this location)
- ☐ As a component of a First RCRA Hazardous Waste Part A Permit Application
- ■ As a component of a Revised RCRA Hazardous Waste Part A Permit Application (Amendment # 0)
- ☐ As a component of the Hazardous Waste Report (If marked, see sub-bullet below)
  - ☐ Site was a TSD facility and/or generator of >1,000 kg of hazardous waste, >1 kg of acute hazardous waste, or >100 kg of acute hazardous waste spill cleanup in one or more months of the report year (or State equivalent LQG regulations)

2. Site EPA ID Number

EPA ID Number: CAD009149199

3. Site Name

Name: Chevron USA, Inc. Richmond Refinery

4. Site Location Information

Street Address: 841 Chevron Way

City, Town, or Village: Richmond | County: Contra Costa

State: California | Country: USA | Zip Code: 94801-0627

5. Site Land Type

☑ Private ☐ County ☐ District ☐ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other

6. NAICS Code(s) for the Site (at least 5-digit codes)

A. 324110 | C. | B. | D.

7. Site Mailing Address

Street or P.O. Box: P.O. Box 1272

City, Town, or Village: Richmond

State: California | Country: USA | Zip Code: 94802-0272

8. Site Contact Person

First Name: Dave | MI: | Last: Feiglstok

Title: Manager, Health Environment and Safety

Street or P.O. Box: P.O. Box 1272

City, Town or Village: Richmond

State: California | Country: USA | Zip Code: 94802

Email: dfeiglstok@chevron.com

Phone: 510-242-1400 | Ext.: | Fax: 510-242-3515

9. Legal Owner and Operator of the Site

A. Name of Site's Legal Owner: Chevron USA Inc. | Date Became Owner: mid-1970s

Owner Type: ☑ Private ☐ County ☐ District ☐ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other

Street or P.O. Box: 6001 Bollinger Canyon Road

City, Town, or Village: San Ramon | Phone: 925-842-1000

State: California | Country: USA | Zip Code: 94583

B. Name of Site's Operator: Chevron USA Inc. | Date Became Operator: mid-1970s

Operator Type: ☑ Private ☐ County ☐ District ☐ Federal ☐ Tribal ☐ Municipal ☐ State ☐ Other

10. Type of Regulated Waste Activity (at your site)
Mark "Yes" or "No" for all current activities (as of the date submitting the form); complete any additional boxes as instructed.

A. Hazardous Waste Activities; Complete all parts 1-10.

Y ☑ N ☐ **1. Generator of Hazardous Waste**
If "Yes," mark only one of the following – a, b, or c.

☑ a. LQG: Generates, in any calendar month, 1,000 kg/mo (2,200 lbs/mo.) or more of hazardous waste; **or** Generates, in any calendar month, or accumulates at any time, more than 1 kg/mo (2.2 lbs/mo) of acute hazardous waste; **or** Generates, in any calendar month, **or** accumulates at any time, more than 100 kg/mo (220 lbs/mo) of acute hazardous spill cleanup material.

☐ b. SQG: 100 to 1,000 kg/mo (220 – 2,200 lbs/mo) of non-acute hazardous waste.

☐ c. CESQG: Less than 100 kg/mo (220 lbs/mo) of non-acute hazardous waste.

If "Yes" above, indicate other generator activities in 2-10.

Y ☐ N ☑ **2. Short-Term Generator** (generate from a short-term or one-time event and not from on-going processes). If "Yes," provide an explanation in the Comments section.

Y ☐ N ☑ **3. United States Importer of Hazardous Waste**

Y ☐ N ☑ **4. Mixed Waste (hazardous and radioactive) Generator**

Y ☐ N ☑ **5. Transporter of Hazardous Waste**
If "Yes," mark all that apply.

☐ a. Transporter

☐ b. Transfer Facility (at your site)

Y ☑ N ☐ **6. Treater, Storer, or Disposer of Hazardous Waste** Note: A hazardous waste Part B permit is required for these activities.

Y ☐ N ☑ **7. Recycler of Hazardous Waste**

Y ☐ N ☑ **8. Exempt Boiler and/or Industrial Furnace**
If "Yes," mark all that apply.

☐ a. Small Quantity On-site Burner Exemption

☐ b. Smelting, Melting, and Refining Furnace Exemption

Y ☐ N ☑ **9. Underground Injection Control**

Y ☐ N ☑ **10. Receives Hazardous Waste from Off-site**

B. Universal Waste Activities; Complete all parts 1-2.

Y ☐ N ☑ **1. Large Quantity Handler of Universal Waste (you accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste managed at your site. If "Yes," mark all that apply.**

a. Batteries ☐
b. Pesticides ☐
c. Mercury containing equipment ☐
d. Lamps ☐
e. Other (specify) _____ ☐
f. Other (specify) _____ ☐
g. Other (specify) _____ ☐

Y ☐ N ☑ **2. Destination Facility for Universal Waste**
Note: A hazardous waste permit may be required for this activity.

C. Used Oil Activities; Complete all parts 1-4.

Y ☐ N ☑ **1. Used Oil Transporter**
If "Yes," mark all that apply.

☐ a. Transporter

☐ b. Transfer Facility (at your site)

Y ☐ N ☑ **2. Used Oil Processor and/or Re-refiner**
If "Yes," mark all that apply.

☐ a. Processor

☐ b. Re-refiner

Y ☐ N ☑ **3. Off-Specification Used Oil Burner**

Y ☐ N ☑ **4. Used Oil Fuel Marketer**
If "Yes," mark all that apply.

☐ a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner

☐ b. Marketer Who First Claims the Used Oil Meets the Specifications

D. Eligible Academic Entities with Laboratories—Notification for opting into or withdrawing from managing laboratory hazardous wastes pursuant to 40 CFR Part 262 Subpart K

- ❖ You can ONLY Opt into Subpart K if:
  - you are at least one of the following: a college or university; a teaching hospital that is owned by or has a formal affiliation agreement with a college or university; or a non-profit research institute that is owned by or has a formal affiliation agreement with a college or university; AND
  - you have checked with your State to determine if 40 CFR Part 262 Subpart K is effective in your state

Y☐ N☐ 1. Opting into or currently operating under 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories **See the item-by-item instructions for definitions of types of eligible academic entities. Mark all that apply:**

☐ **a. College or University**

☐ **b. Teaching Hospital that is owned by or has a formal written affiliation agreement with a college or university**

☐ **c. Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university**

Y☐ N☐ 2. Withdrawing from 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories

11. Description of Hazardous Waste

A. Waste Codes for Federally Regulated Hazardous Wastes. Please list the waste codes of the Federal hazardous wastes handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more spaces are needed.

K049						
K051						
K169						

B. Waste Codes for State-Regulated (i.e., non-Federal) Hazardous Wastes. Please list the waste codes of the State-Regulated hazardous wastes handled at your site. List them in the order they are presented in the regulations. Use an additional page if more spaces are needed.

12. Notification of Hazardous Secondary Material (HSM) Activity

Y ☐ N ☑ Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 261.2(a)(2)(ii), 40 CFR 261.4(a)(23), (24), or (25)?

If "Yes," you must fill out the Addendum to the Site Identification Form: Notification for Managing Hazardous Secondary Material.

13. Comments

14. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. For the RCRA Hazardous Waste Part A Permit Application, all owner(s) and operator(s) must sign (see 40 CFR 270.10(b) and 270.11).

Signature of legal owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
	Mr. Dave Feigistok	10/19/2015
	Health, Environment and Safety Mgr	

EPA ID Number | C | A | D | 0 | 0 | 9 | 1 | 1 | 4 | 9 | 1 | 9 |

OMB#: 2050-0024; Expires 01/31/2017

United States Environmental Protection Agency

HAZARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact	**First Name:** Dave	**MI:**	**Last Name:** Feiglstok	
	Contact Title: Manager, Health, Environment and Safety			
	Phone: 510-242-1400	**Ext.:**	**Email:** dfeiglstok@chevron.com	
2. Facility Permit Contact Mailing Address	**Street or P.O. Box:** P.O. Box 1272			
	City, Town, or Village: Richmond			
	State: California			
	Country: USA	**Zip Code:** 94802		
3. Operator Mailing Address and Telephone Number	**Street or P.O. Box:** 6001 Bollinger Canyon Road			
	City, Town, or Village: San Ramon			
	State: California	**Phone:** 925-842-1000		
	Country: USA	**Zip Code:** 94583-2324		
4. Facility Existence Date	**Facility Existence Date (mm/dd/yyyy):** 1975			

5. Other Environmental Permits

A. Facility Type *(Enter code)*	B. Permit Number	C. Description
N	CA0005143	NPDES Permit, RWQCB Order R2-2011-0049
E	R2-2011-0036	Waste Discharge Requirements, RWQCB issued.
E	R2-2012-0015	Site Cleanup Requirements, RWQCB issued.
P	A0010	Title V Air Permit, BAAQMD issued.
E	M1984.15.1	Shoreline Activities Permit, BCDC issued.
E	M1984.043.013	Maintenance Dredging Permit, BCDC issued.
F	2009-00052S	Dredging Permit, ACOE issued.
E	PRC 8818.1	State Lands Commission General Lease (incl dredging)
F	2118.03(EAC)	Maintenance Dredging Water Quality Certification, RWQCB issued.
R	06BRK13	RCRA Treatment/Storage Operating Permit, DTSC.

6. Nature of Business: The Richmond Refinery is an integrated petroleum refinery which produces a broad range of petroleum products including transportation fuels and lubricants.

7. Process Codes and Design Capacities – Enter information in the Section on Form Page 3

A. PROCESS CODE – Enter the code from the list of process codes below that best describes each process to be used at the facility. If more lines are needed, attach a separate sheet of paper with the additional information. For "other" processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in Item 8.

B. PROCESS DESIGN CAPACITY – For each code entered in Item 7.A; enter the capacity of the process.

1. AMOUNT – Enter the amount. In a case where design capacity is not applicable (such as in a closure/post-closure or enforcement action) enter the total amount of waste for that process.
2. UNIT OF MEASURE – For each amount entered in Item 7.B(1), enter the code in Item 7.B(2) from the list of unit of measure codes below that describes the unit of measure used. Select only from the units of measure in this list.

C. PROCESS TOTAL NUMBER OF UNITS – Enter the total number of units for each corresponding process code.

Process Code	Process	Appropriate Unit of Measure for Process Design Capacity
Disposal		
D79	Underground Injection Well Disposal	Gallons; Liters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-feet; Hectares-meter; Acres; Cubic Meters; Hectares; Cubic Yards
D81	Land Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day or Liters Per Day
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards
D99	Other Disposal	Any Unit of Measure Listed Below
Storage		
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment	Gallons; Liters; Cubic Meters; or Cubic Yards
S05	Drip Pad	Gallons; Liters; Cubic Meters; Hectares; or Cubic Yards
S06	Containment Building Storage	Cubic Yards or Cubic Meters
S99	Other Storage	Any Unit of Measure Listed Below
Treatment		
T01	Tank Treatment	Gallons Per Day; Liters Per Day
T02	Surface Impoundment	Gallons Per Day; Liters Per Day
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons Per Day; Metric Tons Per Hour; or Million BTU Per Hour
T04	Other Treatment	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Short Tons Per Day; BTUs Per Hour; Gallons Per Day; Liters Per Hour; or Million BTU Per Hour
T80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; or Million BTU Per Hour

Process Code	Process	Appropriate Unit of Measure for Process Design Capacity (for T81 – T94)
Treatment (Continued)		
T81	Cement Kiln	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; Liters Per Hour; Kilograms Per Hour; or Million BTU Per Hour
T82	Lime Kiln	
T83	Aggregate Kiln	
T84	Phosphate Kiln	
T85	Coke Oven	
T86	Blast Furnace	
T87	Smelting, Melting, or Refining Furnace	
T88	Titanium Dioxide Chloride Oxidation Reactor	
T89	Methane Reforming Furnace	
T90	Pulping Liquor Recovery Furnace	
T91	Combustion Device Used in the Recovery of Sulfur Values from Spent Sulfuric Acid	
T92	Halogen Acid Furnaces	
T93	Other Industrial Furnaces Listed in 40 CFR 260.10	
T94	Containment Building Treatment	Cubic Yards; Cubic Meters; Short Tons Per Hour; Gallons Per Hour; Liters Per Hour; BTU Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Metric Tons Per Day; Gallons Per Day; Liters Per Day; Metric Tons Per Hour; or Million BTU Per Hour
Miscellaneous (Subpart X)		
X01	Open Burning/Open Detonation	Any Unit of Measure Listed Below
X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds Per Hour; Kilograms Per Hour; Gallons Per Hour; Liters Per Hour; or Gallons Per Day
X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; BTU Per Hour; or Million BTU Per Hour
X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters
X99	Other Subpart X	Any Unit of Measure Listed Below

Unit of Measure	Unit of Measure Code
Gallons	G
Gallons Per Hour	E
Gallons Per Day	U
Liters	L
Liters Per Hour	H
Liters Per Day	V
Short Tons Per Hour	D
Short Tons Per Day	N
Metric Tons Per Hour	W
Metric Tons Per Day	S
Pounds Per Hour	J
Kilograms Per Hour	X
Million BTU Per Hour	X
Cubic Yards	Y
Cubic Meters	C
Acres	B
Acre-feet	A
Hectares	Q
Hectare-meter	F
BTU Per Hour	I

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (shown in line number X-1 below): A facility has a storage tank, which can hold 533.788 gallons.

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. PROCESS DESIGN CAPACITY (2) Unit of Measure	C. Process Total Number of Units	For Official Use Only
X	1	S	0	2	533.788	G	001	
	1	D	8	1	29.0	B	5	
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
1	0							
1	1							
1	2							
1	3							

Note: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the line sequentially, taking into account any lines that will be used for "other" process (i.e., D99, S99, T04, and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04, and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	For Official Use Only
X	2	T	0	4	100.00	U	001	

9. Description of Hazardous Wastes - Enter Information in the Sections on Form Page 5

A. EPA HAZARDOUS WASTE NUMBER – Enter the four-digit number from 40 CFR, Part 261 Subpart D of each listed hazardous waste you will handle. For hazardous wastes which are not listed in 40 CFR, Part 261 Subpart D, enter the four-digit number(s) from 40 CFR Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY – For each listed waste entered in Item 9.A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in Item 9.A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE – For each quantity entered in Item 9.B, enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure, taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all listed hazardous wastes.

For non-listed waste: For each characteristic or toxic contaminant entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

NOTE: THREE SPACES ARE PROVIDED FOR ENTERING PROCESS CODES. IF MORE ARE NEEDED:

1. **Enter the first two as described above.**
2. **Enter "000" in the extreme right box of Item 9.D(1).**
3. **Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 9.E.**

2. PROCESS DESCRIPTION: If code is not listed for a process that will be used, describe the process in Item 9.D(2) or in Item 9.E(2).

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER – Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. **Select one of the EPA Hazardous Waste Numbers and enter it in Item 9.A. On the same line complete Items 9.B, 9.C, and 9.D by estimating the total annual quantity of the waste and describing all the processes to be used to store, treat, and/or dispose of the waste.**
2. **In Item 9.A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Item 9.D.2 on that line enter "included with above" and make no other entries on that line.**
3. **Repeat step 2 for each EPA Hazardous Waste Number that can be used to describe the hazardous waste.**

EXAMPLE FOR COMPLETING Item 9 (shown in line numbers X-1, X-2, X-3, and X-4 below) – A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D(1))
X	1	K	0	5	4	900	P	T	0	3	D	8	0				
X	2	D	0	0	2	400	P	T	0	3	D	8	0				
X	3	D	0	0	1	100	P	T	0	3	D	8	0				
X	4	D	0	0	2												Included With Above

EPA ID Number | C | A | D | 0 | 0 | 9 | 1 | 1 | 4 | 9 | 1 | 9 |

OMB#: 2050-0024; Expires 01/31/2017

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D(1))
	1	K	0	4	9	NA	NA	D	8	1							Post Closure Care
	2	K	0	5	1	NA	NA	D	8	1							Post Closure Care
	3	K	1	6	9	NA	NA	D	8	1							Post Closure Care
	4																
	5																
	6																
	7																
	8																
	9																
1	0																
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3	4																
3	5																
3	6																

EPA ID Number C A D 0 0 9 1 1 4 9 1 9 OMB#: 2050-0024; Expires 01/31/2017

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)

10. Map

Attach to this application a topographical map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all spring, rivers, and other surface water bodies in this map area. See instructions for precise requirements.

11. Facility Drawing

All existing facilities must include a scale drawing of the facility (see instructions for more detail).

12. Photographs

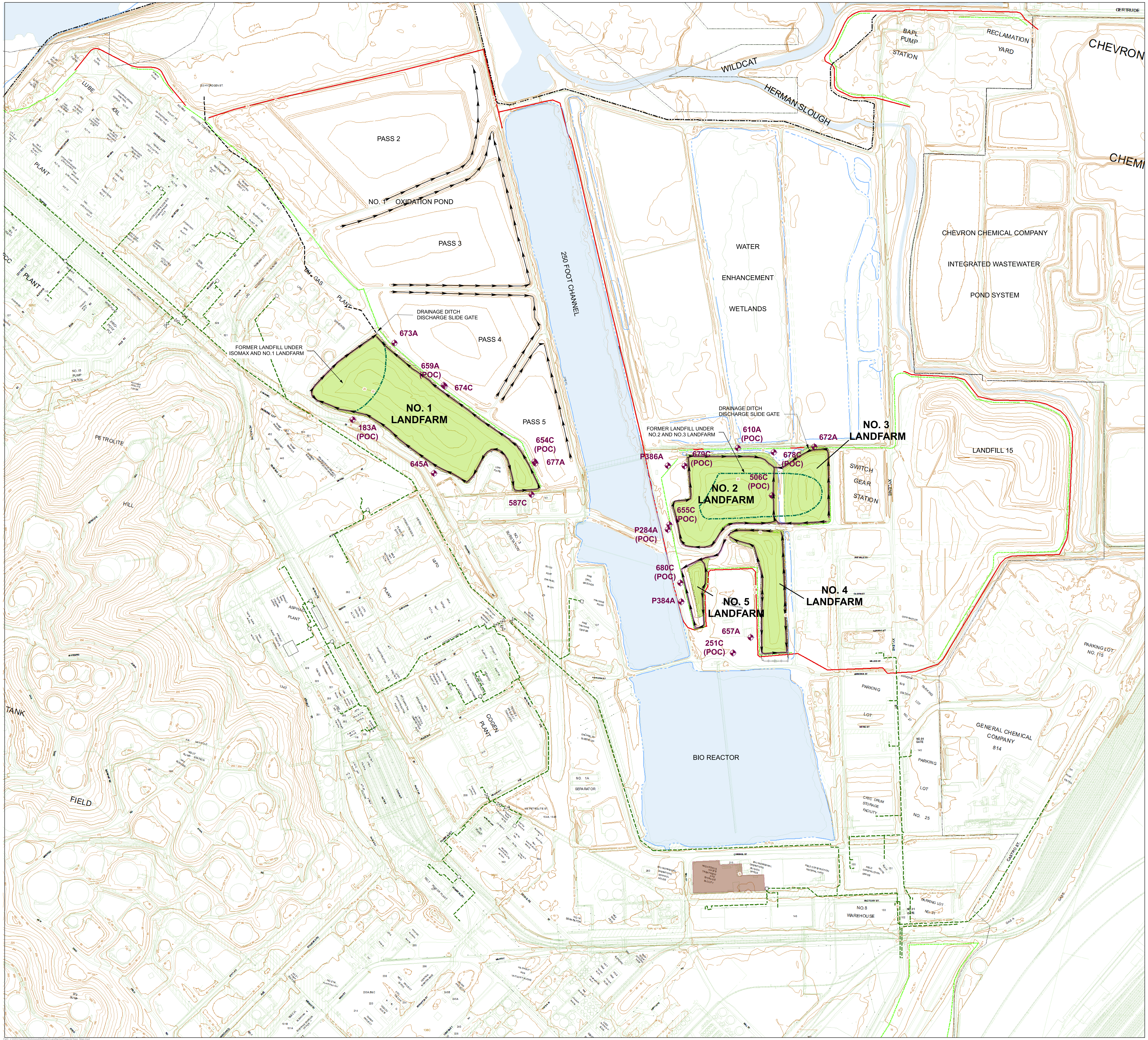
All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, and disposal areas; and sites of future storage, treatment, or disposal areas (see instructions for more detail).

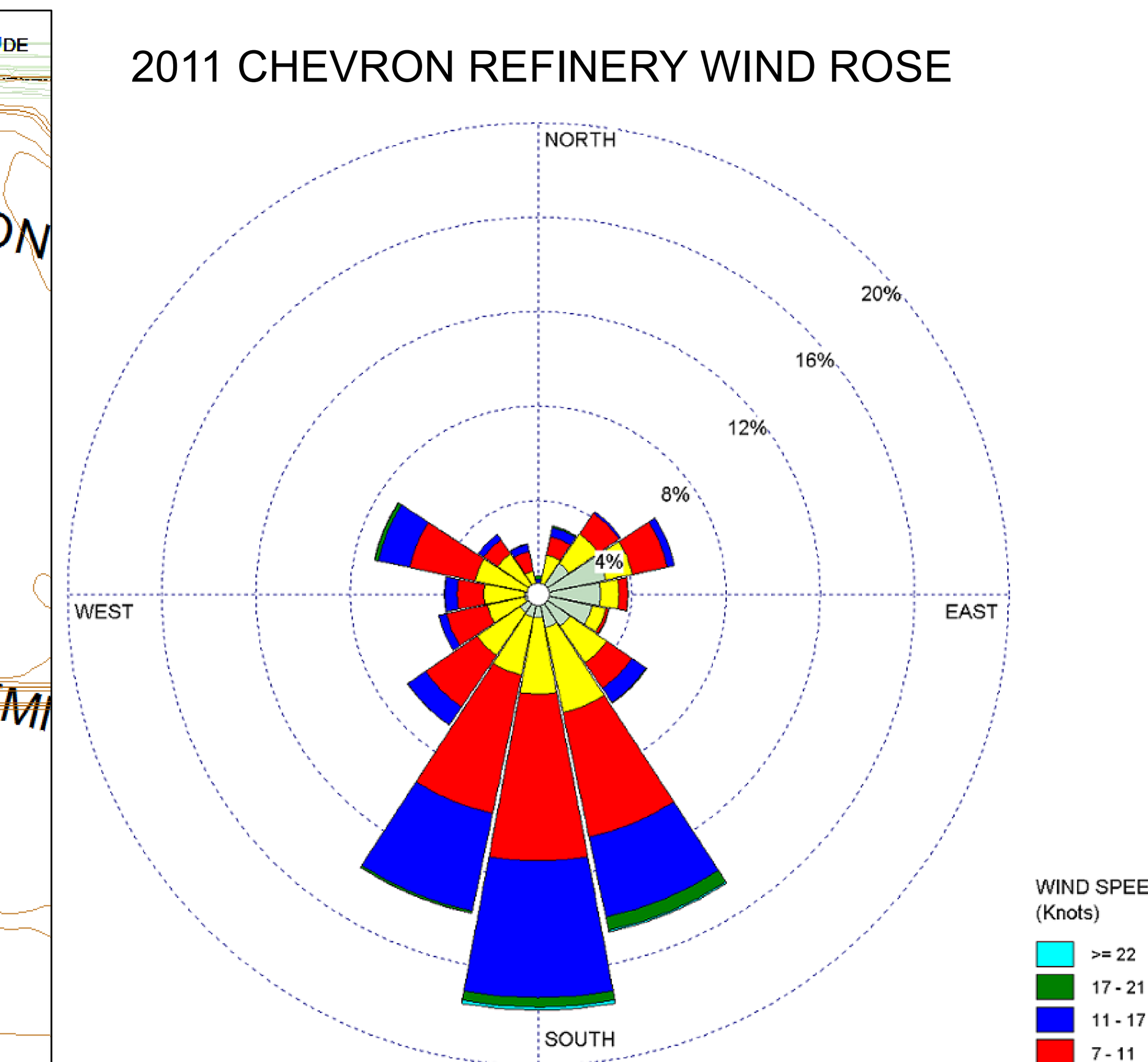
13. Comments

This RCRA Hazardous Waste Part A Permit application is being submitted for renewal of Hazardous Waste Facility Post-Closure Permit No. 02-BRK-05. The Post-Closure Permit is for post-closure care of five landfarms; the Department of Toxic Substances Control (DTSC) approved the Closure Certification for the landfarms on September 19, 2000. The Post-Closure Permit was issued by the Department of Toxic Substances Control (DTSC), effective March 7, 2003. The permit expiration date is March 7, 2013.

Since the Post-Closure Permit was issued in 2003, post-closure care of the five landfarms has been in compliance with the Post-Closure Permit and applicable requirements including the monitoring and corrective action requirements specified in the Regional Water Quality Control Board (RWQCB) issued orders - Waste Discharge Requirements, Order No. R2-2011-0036, and Site Cleanup Requirements, Order No. R2-2012-0015.

Appendix D
Topographic Map





CHEVRON REFINERY
RICHMOND, CA
DATES: 1/1/11-12/31/11

LEGEND:

- PROPERTY LINE
- SURFACE WATERS AND / OR INTERMITTENT STREAMS
- CHAIN BOUNDARY AROUND LANDFARMS
- DRAINAGE DITCH
- 100 YEAR FLOOD PLAIN BOUNDARY (AS PUBLISHED IN BEDM REFINERY-WIDE REPORT OF WASTE DISCHARGE VOLUME 1 DATED AUGUST 31, 1988.)
- MONITORING AND POINT OF COMPLIANCE (POC) WELLS
- HAZARDOUS WASTE TREATMENT FACILITY
- GPS BARRIER WALL
- GPS TRENCH
- GROUND SURFACE ELEVATION CONTOUR
- LANDFARMS
- FORMER LANDFILL (SWMU)
- PERIMETER SWALE*
- SANITARY SEWER SYSTEM
- STORM WATER SYSTEM

NOTE:

UPDATED FLOODPLAIN FROM ROWD SUBMITTED

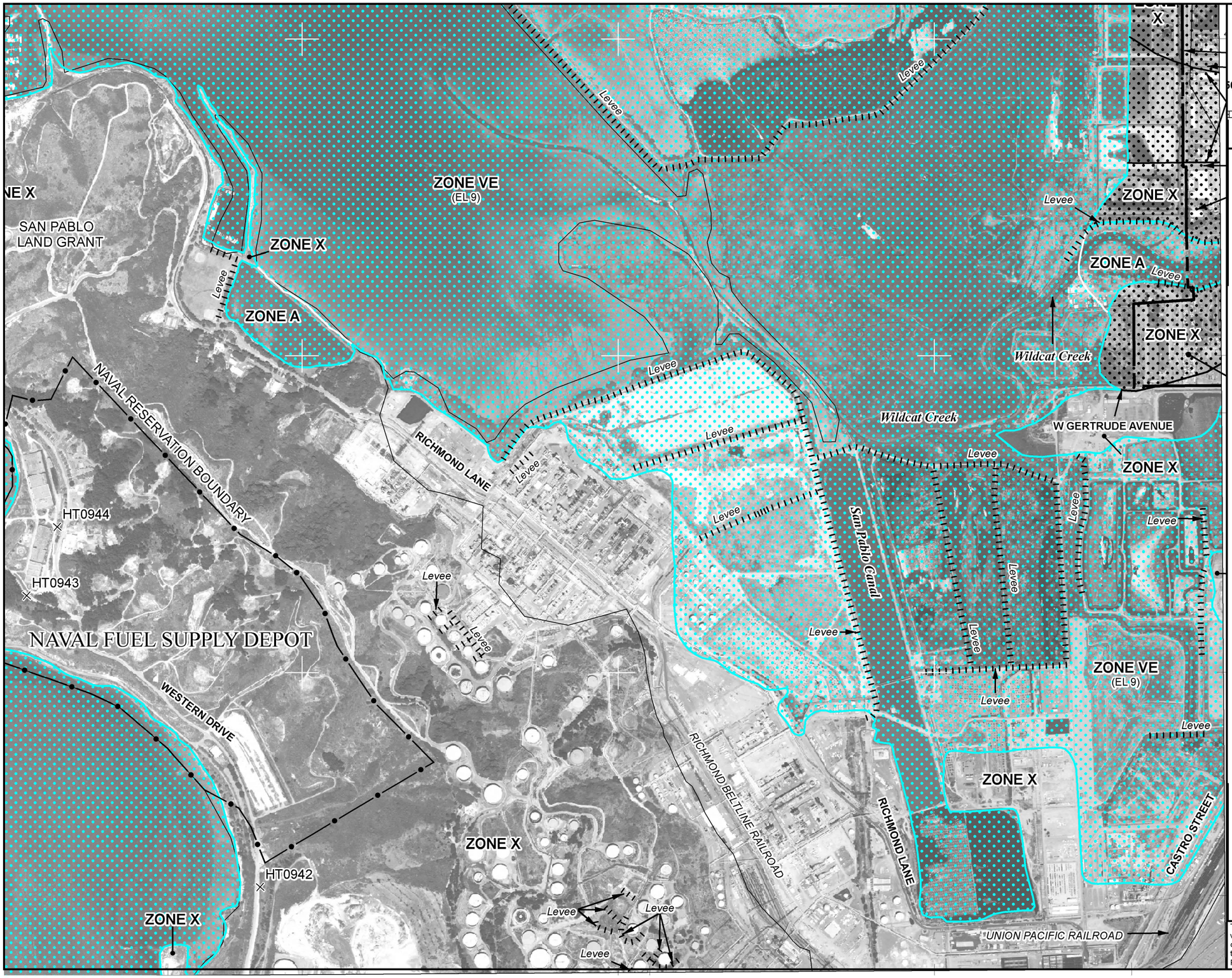
* RUN-ON/RUN-OFF CONTROL STRUCTURE (SEE APPENDIX J FOR AS-BUILT DETAILS)

0 100 200 400 600 Feet

TOPOGRAPHIC MAP

Post-Closure Permit Application
for Landfarm Units 1 through 5
Chevron Richmond Refinery
Richmond, California

Appendix E
FIRM Map



MAP SCALE 1" = 1000'

500 0 1000 2000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0210F

FIRM

FLOOD INSURANCE RATE MAP

CONTRA COSTA COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 210 OF 602
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

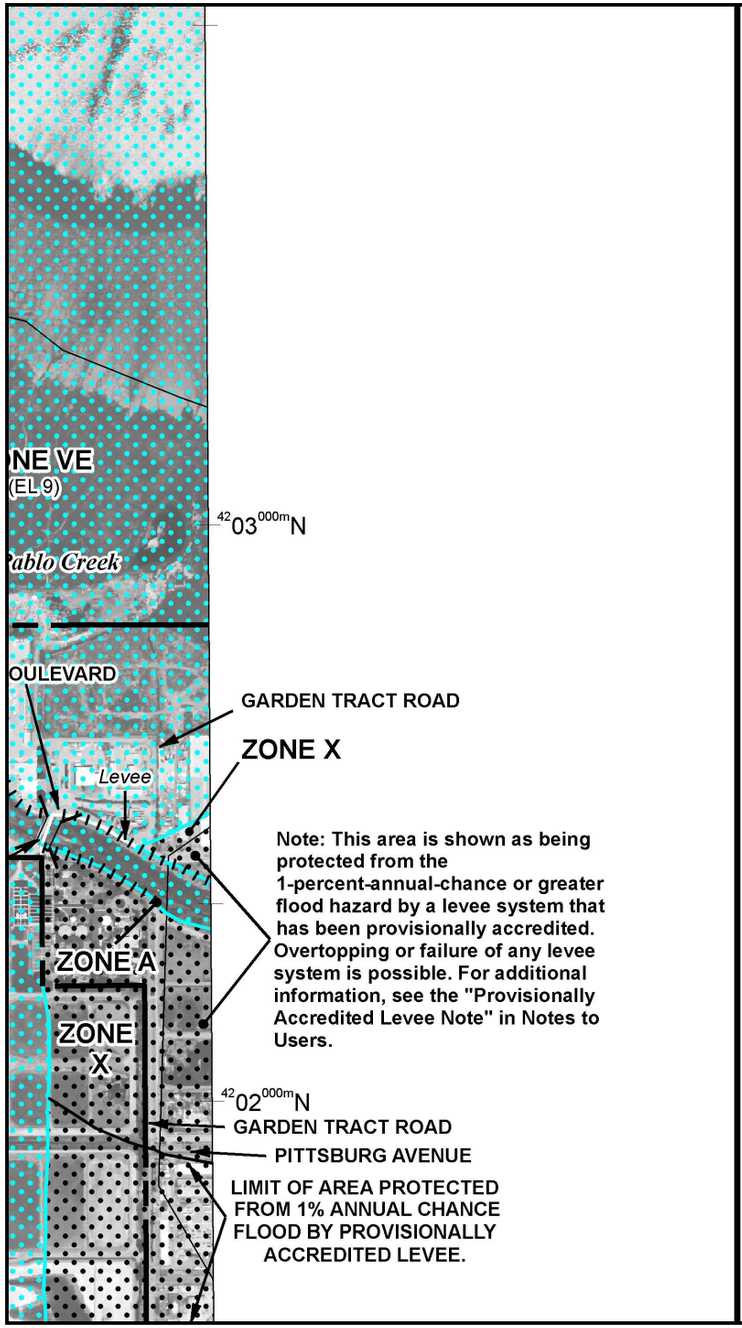
COMMUNITY	NUMBER	PANEL	SUFFIX
CONTRA COSTA COUNTY	060025	0210	F
RICHMOND, CITY OF	060035	0210	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06013C0210F

EFFECTIVE DATE
JUNE 16, 2009

Federal Emergency Management Agency



Note: This area is shown as being protected from the 1-percent-annual-chance or greater flood hazard by a levee system that has been provisionally accredited. Overtopping or failure of any levee system is possible. For additional information, see the "Provisionally Accredited Levee Note" in Notes to Users.

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 2476000mN — 1000-meter Universal Transverse Mercator grid values, zone 10N
- 600000 FT — 5000-foot grid ticks: California State Plane coordinate system, zone III (FIPSZONE 0403), Lambert Conformal Conic projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- ● M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
June 16, 2009

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000
FEET
METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0210F

FIRM

FLOOD INSURANCE RATE MAP

CONTRA COSTA COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 210 OF 602
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

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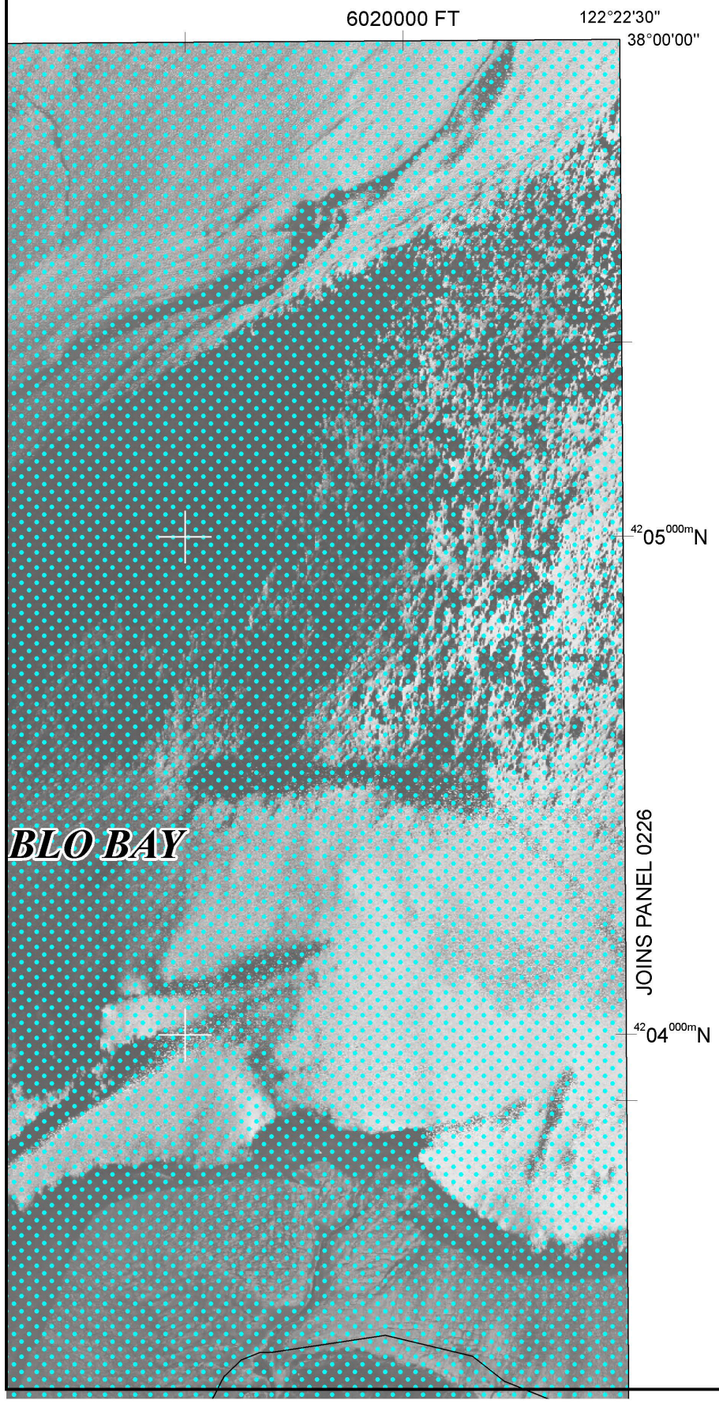
Federal Emergency Management Agency



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*

MAP SCALE 1" = 1000'

500 0 1000 2000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0210F

FIRM

FLOOD INSURANCE RATE MAP

CONTRA COSTA COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 210 OF 602
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

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