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GOVERNOR



MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

California Regional Water Quality Control Board, San Diego Region

June 24, 2014

USPS No. 7011 0470 0002 8952 6093
In reply refer to: SL209294204:Talo

Mr. Rick Siordia
United Technologies Aerospace Systems
850 Lagoon Drive
Chula Vista, CA 91910-2098

Subject: Cleanup and Abatement Order No. R9-2014-0019, Former South Campus Site, Chula Vista, CA (Site ID #2092900)

Mr. Siordia:

Enclosed is Cleanup and Abatement Order No. R9-2014-0019, issued today by the California Regional Water Quality Control Board, San Diego Region (San Diego Water Board) pursuant to Water Code section 13267 and 13304. This Order directs Rohr and Goodrich Corporation to cleanup and abate the effects of the unauthorized discharge of waste to soil and groundwater at the former South Campus Site, and to submit technical reports to the San Diego Water Board.

In the subject line of any response, please include the reference number: **SL209294204:Talo**. For questions or comments, please contact Mr. Tom Alo by telephone at (619) 521-3375 or by email at tom.alo@waterboards.ca.gov.

Respectfully,

DAVID W. GIBSON
Executive Officer

DWG:jpa:tca

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION**

CLEANUP AND ABATEMENT ORDER NO. R9-2014-0019

**AN ORDER DIRECTING ROHR AND GOODRICH CORPORATION TO
CLEANUP AND ABATE THE EFFECTS OF WASTE AND SUBMIT
TECHNICAL AND MONITORING REPORTS PERTAINING
TO CORRECTIVE ACTIONS AT THE FORMER
ROHR/GOODRICH SOUTH CAMPUS FACILITY,
CHULA VISTA, SAN DIEGO COUNTY**

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

1. **Cleanup and Abatement Order No. 98-08.** In 1998, the San Diego Water Board issued to Rohr, Inc., operating as BF Goodrich Aerospace Aerostructures Group, and its parent company, the BF Goodrich Company, Cleanup and Abatement Order (CAO) No. 98-08.¹ CAO No. R9-2014-0019 supplements the provisions of CAO No. 98-08. Except as superseded by the findings and directives set forth in this CAO, all of the previous findings and directives of CAO No. 98-08 remain in full force and effect. CAO No. 98-08 addresses the cleanup and abatement of wastes discharged at the property located at the foot of H Street in Chula Vista, California. The property consists of a North Campus Facility and a South Campus Facility (Figure 1). CAO No. 98-08 includes directives to (1) provide a site-wide environmental site assessment, (2) conduct a comprehensive storm water runoff sampling program, (3) conduct a comprehensive storm water conveyance system investigation, (4) perform a site-wide data compilation and evaluation, and (5) conduct interim remedial actions. The first four directives have been completed, and all subsequent activities have been conducted as interim remedial measures pursuant to the fifth directive (described in Finding 19 below).
2. **Scope of Cleanup and Abatement Order No. R9-2014-0019.** This CAO only addresses the cleanup and abatement of wastes discharged to land and groundwater from the former South Campus Facility.² The South Campus Site encompasses all on-site and off-site areas affected by waste

¹ Pursuant to Cleanup and Abatement Order No. 98-08, the Dischargers conducted site investigations, completed interim remedial actions, and submitted technical and monitoring reports described in the Technical Report.

² The South Campus Facility is comprised of Assessor's Parcel Numbers (APN) 571-330-2100, 760-235-6700, 571-330-1200, 571-330-2600, 760-235-5000, and 760-235-5500 and a portion of San Diego Unified Port District plat numbers 032-004, 032-005, and 031-018 (Figure 1).

discharges from the South Campus Facility. All wastes discharged to soil and groundwater at the South Campus Site must be identified and cleaned up, and the discharge of any wastes to San Diego Bay or other adjacent land or groundwater must be abated.

A subsequent investigative order will be necessary to characterize the types of wastes discharged from landside sources to the marine sediments in San Diego Bay, the extent of those wastes, and whether those wastes have resulted in sediment quality that does not meet the sediment quality objectives in the *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1 Sediment Quality* (Bays and Estuaries Plan). Soil and groundwater must be cleaned up and waste discharges to San Diego Bay abated prior to conducting sediment assessment activities and potential remedial actions in San Diego Bay. This will prevent recontamination of the marine sediments in the bay. This CAO, once fully executed, is expected to prevent waste discharges from the South Campus Facility to San Diego Bay.

3. **Legal and Regulatory Authority.** This CAO conforms to and implements policies and requirements of the Porter-Cologne Water Quality Control Act (Division 7, commencing with Water Code section 13000) including but not limited to (1) sections 13267 and 13304; (2) applicable State and federal regulations; (3) all applicable provisions of statewide Water Quality Control Plans adopted by the State Water Resources Control Board (State Water Board) and the *Water Quality Control Plan for the San Diego Basin* (Basin Plan) adopted by the San Diego Water Board including beneficial uses, water quality objectives, and implementation plans; (4) State Water Board policies and regulations, including State Water Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*; Resolution No. 88-63, *Sources of Drinking Water*; and Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under California Water Code Section 13304*; applicable sections of California Code of Regulations (CCR) Title 23, and (5) relevant standards, criteria, and advisories adopted by other State and federal agencies.
4. **Persons Responsible for the Discharge of Waste.** Beginning in 1941, Rohr Aircraft Corporation manufactured structural and engine components for use in the aviation and aerospace industry at the foot of H Street in Chula Vista, California. The company incorporated in 1969 as Rohr Corporation and subsequently became Rohr Industries in 1971 and Rohr, Inc. in 1992. Following BF Goodrich Company's 1997 acquisition of Rohr, Inc., (see Finding 5, below), Rohr, Inc., continued operating as BF Goodrich Aerospace Aerostructures Group. Rohr, Inc., operating as BF Goodrich Aerospace Aerostructures Group, and Rohr, Inc.'s predecessors, including but not limited to Rohr Aircraft Corporation, Rohr Corporation and Rohr Industries, Inc. are hereinafter collectively referred to as "Rohr."

5. In 1997, BF Goodrich Company acquired Rohr, Inc., as a wholly-owned corporate subsidiary. In 2001, BF Goodrich Company changed its name to Goodrich Corporation. On July 26, 2012, United Technologies Corporation (UTC) acquired the stock of Goodrich Corporation. Goodrich Corporation is now a wholly-owned subsidiary of UTC. Following the transaction, Goodrich Corporation continues to exist as a corporate entity and all current Goodrich operating businesses continue to exist in the name of Goodrich or a Goodrich subsidiary.
6. Rohr and Goodrich Corporation are referred to collectively as “Dischargers” in this CAO.
7. **Unauthorized Discharge of Chemical Waste.** The property consists of a North Campus Facility and a South Campus Facility. The North Campus Facility is approximately 86 acres and is bounded by F & G Street Marsh to the north, Bay Boulevard to the east, Marina Parkway to the west, and the proposed extension of H Street to the south. The South Campus Facility is approximately 59 acres and is bounded by the proposed extension of H Street to the north, Bay Boulevard to the east, and Marina Parkway and a former wetlands drainage ditch (L-Ditch) to the southwest and west, respectively.

In 1999, ownership of the property occupied by the South Campus Facility was transferred from Rohr to the San Diego Unified Port District (Port). In 2002, Rohr vacated the property and moved all manufacturing operations to the North Campus Facility. In 2007, the Port demolished all of the South Campus Facility buildings in preparation for redevelopment activities³ with the exception of building foundations, slabs, pavement, and subsurface utilities.⁴ Port staff is currently preparing plans for the next phase of demolition at the South Campus Facility for consideration and approval by the Board of Port Commissioners. The plans will occur in phases, which will include the removal of building slabs, roadways, pavements, and the entire storm water conveyance system (SWCS) including the 84-inch culvert that traverses the northern portion of the Facility. The SWCS consists of storm drain inlets, box drains, and laterals that drain storm water from the South Campus Facility to San Diego Bay

³ The Chula Vista Bayfront Master Plan (CVBMP) is a joint master planning process of the Port and the City of Chula Vista. It incorporates a Conceptual Plan for the redevelopment of this land that relies on the Polanco Redevelopment Act and the California Land Reuse and Revitalization Act of 2004. The purpose of the project is to develop a master plan that transforms the Chula Vista waterfront into a resort and conference destination. The proposed land uses include mixed use office/commercial, recreation, hotel, residential, and cultural/retail (Figure 3). The California Coastal Commission approved the CVBMP on August 9, 2012.

⁴ No residential uses are proposed on the former South Campus Facility. Residential uses are proposed on Parcels H-13 and H-14 (Figure 1).

through 3 major outfalls (Outfall Nos. 2, 3, and 4; Figure 2). Upon completion of the demolition, the South Campus Facility will be graded to allow storm water sheet flow to (1) discharge into the sand filter drainage trench (former L-Ditch), (2) discharge into the San Diego Gas & Electric power line easement where a future drainage project is being planned by Port staff, or (3) discharge into another conveyance system.

The types and levels of waste constituents found in the soil and groundwater at the South Campus Site are associated with the waste discharges from the historical manufacturing operations at the South Campus Facility. As such, they are wastes as defined in Water Code section 13050(d). These waste constituents consist of chlorinated solvents, metals, petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs).⁵ Over time, wastes discharged from the manufacturing operations into soil and groundwater at the South Campus Site caused violations of applicable water quality standards for groundwater. The discharges of wastes from the manufacturing operations to soil and groundwater, as well as continued migration of wastes in groundwater, have caused the concentrations of waste constituents in the groundwater to exceed applicable water quality objectives and have therefore created a condition of pollution in waters of the State as defined in Water Code section 13050(l). The adverse changes in groundwater quality caused by the waste discharges are a contributing cause of interference with the Municipal and Domestic Supply (MUN)⁶ designated beneficial use, and are potentially injurious to the public health. This water quality condition caused by the discharge constitutes a nuisance condition because it potentially interferes with and complicates the use of groundwater for drinking water purposes, and may be considered an obstruction to the free use of property as provided in Water Code section 13050(m).

Furthermore, pathways exist through which waste constituents from the South Campus Facility could have potentially migrated to San Diego Bay. The SWCS at the South Campus Facility provided and continues to provide a direct pathway for waste constituents in sediments to be discharged into San Diego Bay via storm water flow. The groundwater flow system also provides a pathway for dissolved constituents in groundwater to be discharged into pore water in bay bottom sediments, and into the water column of San Diego Bay. Waste discharges to San

⁵ "Waste" is very broadly defined in Water Code section 13050(d) and includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.

⁶ See Basin Plan, page 2-3. The Basin Plan defines MUN as "uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply."

Diego Bay via these pathways have the potential to cause a condition of pollution and/or nuisance in San Diego Bay pursuant to Water Code section 13050.

8. **Basis for Cleanup and Abatement Order.** Water Code section 13304 contains the authority for the San Diego Water Board to require cleanup and abatement of pollution caused by discharges of wastes. Water Code section 13304 requires a person to clean up waste or abate the effects of the waste discharge if so ordered by a regional water board in the event there has been a discharge in violation of waste discharge requirements, or if a person has caused or permitted waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the State and creates or threatens to create a condition of pollution or nuisance. Therefore, based on the findings in this CAO the San Diego Water Board is authorized to order the Dischargers to cleanup and abate the effects of the waste discharge(s).
9. **Basis for Requiring Technical and Monitoring Reports.** Water Code section 13267 provides that the San Diego Water Board may require dischargers, past dischargers, or suspected past or present dischargers to furnish those technical or monitoring reports as the San Diego Water Board may specify, provided that the burden, including costs, of these reports bears a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring the reports, the San Diego Water Board must provide the person with a written explanation with regard to the need for the reports, and identify the evidence that supports requiring that person to provide the reports.
10. **Need for and Benefit of Technical and Monitoring Reports.** Technical reports and Monitoring reports (in addition to those provided to date, as described in the Technical Report) are needed to provide information to the San Diego Water Board regarding (a) the nature and extent of the waste discharge, (b) the nature and extent of pollution conditions in State waters created by the discharge, (c) the threat to public health posed by the discharge, and (d) identification of appropriate site-specific cleanup and abatement measures. The reports will enable the San Diego Water Board to determine the vertical and lateral extent of the discharge, ascertain if the condition of pollution poses a threat to human health in the vicinity of the South Campus Site, and provide technical information to determine what cleanup and abatement measures are necessary to bring the South Campus Site into compliance with this CAO. Based on the nature and possible consequences of the discharge from the South Campus Facility, the Dischargers burden of providing the required reports, including the costs, bears a reasonable relationship to the need for the reports, and the benefits to be obtained from the reports.
11. **Cleanup Levels.** State Water Board Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges*

*Under California Water Code Section 13304, sets forth the policies and procedures to be used during an investigation or cleanup of a discharge of waste and requires that cleanup levels be consistent with State Water Board Resolution No. 68-16, the *Statement of Policy with Respect to Maintaining High Quality of Waters in California*. Resolution No. 92-49 applies to the cleanup and abatement of the effects of waste discharges at the South Campus Site.*

Resolution No. 92-49 requires that dischargers clean up and abate the effects of discharges in a manner which promotes the attainment of background water quality, or the best water quality which is reasonable if background water quality cannot be restored, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible. Any alternative cleanup level greater than background must (1) be consistent with the maximum benefit to the people of the State; (2) not unreasonably affect present and anticipated beneficial use of waters of the State; and (3) not result in water quality less than that prescribed in the Basin Plan and applicable Water Quality Control Plans and Policies of the State Water Board.

12. **California Environmental Quality Act Compliance.** The issuance of this CAO is an enforcement action taken by a regulatory agency and is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to section 15321 (a) (2), Chapter 3, Title 14 of the CCR. Further, the San Diego Water Board finds with certainty that there is no possibility that adoption of this CAO will have a significant effect on the environment and is not subject to CEQA, pursuant to section 15061(b)(c), Chapter 3, Title 14 of the CCR. If the San Diego Water Board later determines that work proposed in the Remedial Action Plan may have a significant effect on the environment, the San Diego Water Board will evaluate whether additional CEQA compliance is necessary at that time and will require the Dischargers to provide adequate documentation to support compliance with CEQA.
13. **Qualified Professionals.** The Dischargers' reliance on qualified professionals promotes proper planning, implementation, and long-term cost-effectiveness of investigation and cleanup and abatement activities. Professionals shall be qualified, licensed where applicable, and competent and proficient in the fields pertinent to the required activities. California Business and Professions Code sections 6735, 7835, and 7835.1 require that engineering and geologic evaluations and judgments be performed by or under the direction of licensed professionals.
14. **Cost Recovery.** Pursuant to Water Code section 13304, and consistent with other statutory and regulatory requirements, including but not limited to Water Code section 13365, the San Diego Water Board is entitled to, and will seek reimbursement for all reasonable costs actually incurred by

the San Diego Water Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action required by this CAO.

HUMAN HEALTH RISKS

15. **Human Health Risks from Exposure to Wastes Discharged.** There are potential adverse health risks to humans during and after site redevelopment activities due to the wastes discharged to soil and groundwater from the South Campus Facility. Based on the results of the exposure area-specific risk assessment, there are potential cancer and non-cancer risks to the following receptors:⁷

- On-site construction worker during site redevelopment;
- On-site landscaper (including utility worker) after site redevelopment;
- On-site commercial/industrial worker after site redevelopment; and
- On-site hotel guest (including recreational user) after site redevelopment.

16. **Exposure Areas Posing Unacceptable Risk.** The exposure areas at the South Campus Site requiring remedial action to protect the on-site receptors identified in Finding 15 above are shown in Figure 4 and listed below.

| Exposure Area | Location |
|---------------|---|
| EA-1 | Northwest corner of the South Campus Site |
| EA-2 | Salvage Yard |
| EA-3 | Northern portion of Building 45 |
| EA-4 | Northern portion of Building 45 |
| EA-5 | Central portion of Building 45 |
| EA-7 | Central portion of Building 3 |
| EA-8 | Southern portion of Building 3 |
| EA-9 | Pretreatment Area |
| EA-10 | West of Building 30 |
| EA-11 | Northern portion of Building 30 |
| EA-12 | Central portion of Building 30 |
| EA-13 | Southern portion of Building 30 |
| EA-16 | Chemical Storage Area |

⁷ There are no potential adverse health risks to the (1) off-site commercial worker prior to, during, and after site redevelopment, (2) off-site recreator in the Marina, and (3) hypothetical off-site, up-gradient municipal groundwater supply user. Also, there are no potential adverse health risks to future residents on Parcels H-13 and H-14 from inhalation of vapors in buildings due to possible subsurface vapor intrusion.

17. **Human Health Risk Drivers.** The chemicals of concern that are risk drivers in soil, groundwater, and soil gas are summarized below. These risk drivers exceed the cumulative incremental lifetime cancer risk (ILCR) and/or total noncancer hazard index (HI) thresholds at one or more of the exposure areas identified in Finding 16 above.

| Soil | Groundwater | Soil Gas |
|-----------------------------------|----------------------|----------------------|
| 1,1,1-TCA | 1,1-DCE | 1,1-DCA |
| 1,1-DCA | carbon tetrachloride | 1,1-DCE |
| 2-butoanone (methyl ethyl ketone) | Chloroform | bromodichloromethane |
| PCB Aroclor 1248 | cis-1,2-DCE | cis-1,2-DCE |
| PCB Aroclor 1254 | hexavalent chromium | PCE |
| PCB Aroclor 1260 | PCE | TCE |
| benzo(a)pyrene | TCE | vinyl chloride |
| benzo(b)fluoranthene | vinyl chloride | |
| Cadmium | | |
| cis-1,2-DCE | | |
| Copper | | |
| hexavalent chromium | | |
| indeno(1,2,3-cd)pyrene | | |
| Lead | | |
| Nickel | | |
| PCE | | |
| TCE | | |
| vinyl chloride | | |
| Xylenes | | |

ADDITIONAL ASSESSMENT

18. **Soil and Groundwater.** The South Campus Site has not been tested for the potential presence of elevated pesticide concentrations in soil and groundwater. Pesticides can pose potential adverse health risks to the following on-site receptors:

- On-site construction worker during site redevelopment;
- On-site landscaper (including utility worker) after site redevelopment;
- On-site commercial/industrial worker after site redevelopment; and
- On-site hotel guest (including recreational user) after site redevelopment.

Pesticides can also pose potential adverse risks to three target receptors in San Diego Bay: aquatic life – benthic community, aquatic-dependent wildlife, and humans. San Diego Bay beneficial uses applicable to each of these target receptors are shown in the table below.

| Beneficial Uses | Target Receptors |
|---|----------------------------------|
| Estuarine Habitat | Aquatic Life - Benthic Community |
| Marine Habitat | Aquatic Life - Benthic Community |
| Rare, Threatened, or Endangered Species | Aquatic-Dependent Wildlife |
| Wildlife Habitat | Aquatic-Dependent Wildlife |
| Commercial and Sport Fishing | Human Health |
| Shellfish Harvesting | Human Health |

If elevated pesticide concentrations are present in soils beneath the South Campus Site, these impacted soils could have been discharged into San Diego Bay via the SWCS. A subsequent investigative order will be necessary to characterize the types of wastes discharged from landside sources to the marine sediments in San Diego Bay, the extent of those wastes, and whether those wastes have resulted in sediment quality that does not meet the sediment quality objectives in the Bays and Estuaries Plan.

ADDITIONAL REMEDIATION

19. **Soil.** Pursuant to Directive E of CAO No. 98-08, interim remedial actions have been initiated at the South Campus Site. Additional soil remedial actions are needed at the following specific Areas of Concern (AOCs; Figure 5):
 - a. **Historical SWCS Outfalls.** Additional soil characterization and/or remediation is needed for two remaining areas with impacted soils adjacent to the L-Ditch. These areas are:
 - i. Area near the historical SWCS outfall immediately south of former Building 30. This area is within the South Campus Exchange Parcel.⁸
 - ii. Area near the historical SWCS outfall immediately south of former Building 42 where discolored soil and construction debris were observed during the excavations.
 - b. **Source Areas.** Eight source areas were identified based on soil samples collected from borings during the 1999 site-wide investigation and the 2000 supplemental investigation. Two of eight source areas

⁸ The South Campus Exchange Parcel is the portion of the South Campus Site subject to an exchange agreement between the San Diego Unified Port District and Pacifica Companies (Figure 9).

have not been excavated and must be addressed in the near future under the approved work plan: Building 45 - Boring 130 and Pretreatment Area – Boring 164.

- c. **Soil Boring Locations.** Soil characterization and/or remediation is needed at the following historical soil boring locations: Borings 124, 141, DP-13, 159, 028, B58-SSW-05, B164W, B164S, B164E, 151, 076, 078, 080, and 077. These locations exceed the health-based remediation criteria developed for the Site.
20. **Groundwater.** Remedial actions are needed to restore groundwater quality to levels that support the designated beneficial uses of the groundwater underlying the South Campus Site (encompasses all on-site and off-site areas affected by waste discharges from the South Campus Facility) and San Diego Bay. Figures 6, 7, and 8 show TCE contours in Zone A, Upper Zone B, and Lower Zone B groundwater, respectively.

CONCRETE ASSESSMENT

21. **Limited Concrete Assessment.** The Port conducted limited sampling of the concrete surface, expansion joint material, and coating material throughout the former South Campus Facility. Samples were analyzed for metals and PCBs. Based on the analytical results, a number of samples had concentrations at hazardous or potentially hazardous waste levels as shown in the table below. Waste levels exceeding the Total Threshold Limit Concentration (TTLC) are classified as a hazardous waste under CCR Title 26. Waste levels less than the TTLC, but greater than 10 times the Soluble Threshold Limit Concentration (STLC) and/or 20 times the Toxicity Characteristic Leaching Procedure (TCLP) are potentially classified as a hazardous waste under CCR Title 26. Further testing is needed to determine final waste classification (Waste Extraction Test).

| | Total # Samples | Hazardous Waste Samples | Potential Hazardous Waste Samples | Non-Hazardous Waste Samples |
|--------------------------|-----------------|-------------------------|-----------------------------------|-----------------------------|
| Concrete | 86 | 5 | 33 | 48 |
| Expansion Joint Material | 30 | 7 | 20 | 3 |
| Coating Material | 17 | 8 | 2 | 7 |

22. **Additional Concrete Assessment.** The Port and the Dischargers submitted a work plan titled “*Revised In-Situ Concrete Characterization and Waste Profiling Work Plan*” to further characterize the concrete pavement throughout the former South Campus Facility. The sampling density is more focused in the South Campus Exchange Parcel and as

such, additional samples may be required to fully characterize the concrete pavement for the remainder of the South Campus Site. Pursuant to the work plan, the Dischargers will collect surface concrete samples and concrete core samples. All surface and concrete core samples will be (1) analyzed for metals, hexavalent chromium, PCBs, total petroleum hydrocarbons (TPH), and volatile organic compounds (VOCs), and (2) evaluated for waste characterization purposes for potential disposal at a permitted landfill.

- 23. **Waste in Concrete, Asphalt, and Joint Compound Material.** The types and levels of wastes found in the concrete, asphalt, and joint compound are associated with the waste discharges from historical manufacturing operations at the South Campus Facility. As such, they are wastes defined in Water Code section 13050(d). The San Diego Water Board is authorized to order the Dischargers to cleanup and abate the effects of wastes pursuant to Water Code section 13304.

In 2007, the Port demolished all of the South Campus facility buildings in preparation for redevelopment activities with the exception of the building foundations, slabs, pavement, and subsurface utilities. Since then, the wastes in concrete, asphalt, and joint compound material have been exposed to the environment. Pollutants in these media can be eroded and transported into San Diego Bay via the wind and/or storm water runoff. This discharge may adversely affect three target receptors in San Diego Bay: aquatic life- benthic community, aquatic-dependent wildlife, and humans. San Diego Bay beneficial uses applicable to each of these target receptors are shown in the table below.

| Beneficial Uses | Target Receptors |
|---|----------------------------------|
| Estuarine Habitat | Aquatic Life - Benthic Community |
| Marine Habitat | Aquatic Life - Benthic Community |
| Rare, Threatened, or Endangered Species | Aquatic-Dependent Wildlife |
| Wildlife Habitat | Aquatic-Dependent Wildlife |
| Commercial and Sport Fishing | Human Health |
| Shellfish Harvesting | Human Health |

DEMOLITION ENVIRONMENTAL MONITORING

- 24. **Demolition Environmental Monitoring Plan.** The Dischargers submitted a report titled “Demolition Environmental Monitoring Plan” (DEMP) to screen for and respond to potential new environmental concerns (NECs) identified during pavement and foundation demolition and earthwork activities at the former South Campus Facility. The objectives of the Plan are to present the procedures to:

- a. Screen exposed soils, removed concrete pavement, and excavated subsurface structures for potential NECs during demolition and earthwork activities;
- b. Assess potential NECs, if identified, and evaluate whether soil or groundwater remediation may be warranted;
- c. Delineate NECs and either excavate and dispose the soil off-site as a presumptive remedy if localized and small in volume, or document their location and evaluate remedial alternatives for the NECs in the feasibility study;
- d. Evaluate reuse options for soil and demolition debris containing chemicals;
- e. Characterize excavated soil, surface pavements, building foundations, other subsurface structures, and subsurface utilities for off-site disposal or on-site reuse;
- f. Control and track movement and final disposition of excavated soil, surface pavements, building foundations, other subsurface structures, and subsurface utilities that have been exposed to chemicals and are reused on-site;
- g. Protect existing environmental monitoring wells during demolition and initial subsurface utility installation activities;
- h. Protect remaining soil remediation areas during pavement removal; and
- i. Manage storm water at and around NECs

STORM WATER MANAGEMENT RESPONSIBILITIES

25. **Storm Water Management Responsibilities.** The Port is responsible for managing storm water as part of the demolition it undertakes. The Dischargers are also responsible for managing storm water as part of the cleanup until the wastes discharged from the South Campus Site are remediated.

- a. The Port is enrolled in and is responsible for managing storm water in accordance with Order No. 2009-0009-DWQ, *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities*;

- b. The Port is also responsible for managing storm water in accordance with Order No. R9-2013-0001, *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region*;
- c. The Dischargers are also responsible for managing storm water for all known soil remediation areas that are identified in soil Remedial Action Plans (RAPs) for the South Campus Exchange Parcel and the remainder of the South Campus Site until the wastes are remediated; and
- d. The Dischargers are also responsible for managing storm water for all NECs identified during pavement and foundation demolition and earthwork activities at the South Campus Site until the wastes are remediated.

DIRECTIVES

IT IS HEREBY ORDERED that, pursuant to sections 13267 and 13304 of the Water Code, the Dischargers shall comply with the following Directives:

- A. **CLEANUP AND ABATE DISCHARGES.** Continue to take all corrective actions necessary to cleanup and abate the effects of the discharge in soil and groundwater beneath and adjacent to the South Campus Site in a manner that promotes attainment of background water quality unless the Dischargers determine that it is technologically or economically infeasible⁹ to do so in the feasibility analysis required in Directives E, F, G, I, and J. This CAO may be amended if the San Diego Water Board agrees that it is not feasible to cleanup to background water quality conditions and that it is feasible to cleanup to alternative cleanup levels less stringent than background in compliance with State Water Board Resolution No. 92-49.
- B. **SOIL AND GROUNDWATER CLEANUP LEVELS.** Cleanup and abate the effects of the discharge in soil and groundwater to the following background levels:

⁹ Cal. Code Regs., title 23, section 2550.4(c).

| Chemical Group | Chemical Constituents | Soil Cleanup Levels (mg/kg) | Groundwater Cleanup Levels (µg/L) |
|---------------------|-----------------------|-----------------------------|-----------------------------------|
| Organic Chemicals | All | Non-Detect ¹ | Non-Detect ² |
| Inorganic Chemicals | Antimony | 8 | 23 |
| | Arsenic | 8 | 65 |
| | Barium | 152 | 634 |
| | Beryllium | 0.50 | 2 |
| | Cadmium | 5 | 5 |
| | Chromium (hexavalent) | 5.7 | See Directive C |
| | Chromium (total) | 38 | 19 |
| | Cobalt | 47 | 10 |
| | Copper | 20 | 16 |
| | Lead | 15 | 7 |
| | Mercury | 0.25 | 0.41 |
| | Molybdenum | 3 | 114 |
| | Nickel | 83 | 466 |
| | Selenium | 8 | 54 |
| | Silver | 10 | 23 |
| Thallium | 2 | 9 | |
| Vanadium | 74 | 118 | |
| Zinc | 38 | 173 | |

NOTES:

1. The detection limits for all organic chemicals in soil shall not exceed the U.S. EPA Region 9 Regional Screening Levels (RSLs)¹⁰ and the San Francisco Water Board Environmental Screening Levels (ESLs)¹¹.
2. The detection limits for all organic chemicals in groundwater shall not exceed the Maximum Contaminant Levels (MCLs)¹².

C. BACKGROUND CONCENTRATION OF HEXAVALENT CHROMIUM IN GROUNDWATER. Determine the site-specific background concentration of hexavalent chromium in groundwater beneath the South Campus Site.

1. Directive M.1 requires the Dischargers to submit a Groundwater Monitoring Program (GMP) work plan. The GMP work plan must be

¹⁰ <http://www.epa.gov/region9/superfund/prg/>

¹¹ California Regional Water Quality Control Board – San Francisco Region, 2008. Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater. Revised Dec 2013.

¹² Table 64444-A of Section 64444 of Title 22 of the California Code of Regulations.

received by the San Diego Water Board and uploaded into the Geotracker database by **5:00 p.m. on June 30, 2014**. Requirements for uploading data and reports into Geotracker are in Directive T of this CAO. In addition to the information required in Directive M.1, the GMP work plan shall also include the following:

- a. The groundwater monitoring well network to be sampled for hexavalent chromium, the sampling frequency, and the analytical method to be used.
 - b. The methods to be used to monitor, purge, and sample the wells for hexavalent chromium.
 - c. A map showing the location of the groundwater monitoring wells to be sampled for hexavalent chromium.
2. Submit a technical report that, at a minimum, (1) summarizes the groundwater elevation data, analytical results, and laboratory QA/QC issues (if any), (2) discusses the methodology used to determine the background concentration of hexavalent chromium in groundwater, and (3) proposes the site-specific background concentration. The report must be received by the San Diego Water Board and uploaded into the Geotracker database by **5:00 pm on October 30, 2014**. Requirements for uploading data and reports into Geotracker are in Directive T of this CAO.
- D. **PESTICIDES WORK PLAN FOR SOUTH CAMPUS SITE.** Prepare a work plan to screen for the potential presence of pesticides in soil and groundwater beneath the South Campus Site. The work plan must be received by the San Diego Water Board and uploaded into the Geotracker database by **5:00 pm on June 30, 2014**. Requirements for uploading data and reports into Geotracker are in Directive T of this CAO.
1. The work plan shall, at a minimum, contain the following information:
 - a. Rationale for the soil and groundwater sampling locations.
 - b. A map showing the sampling locations.
 - c. Proposed pesticide analyses.
 - d. Field implementation schedule
 2. Submit a technical report that, at a minimum, (1) summarizes the completed field activities, (2) compares the soil analytical results to the U.S. EPA Region 9 RSLs and Effects Range Median

concentrations (ERM),¹³ (3) compares the groundwater analytical results to the MCLs, (4) presents the conclusions and recommendations, and (5) includes figures and analytical laboratory reports. The report must be received by the San Diego Water Board and uploaded into the Geotracker database **within 90 days** after approval of the Technical Work Plan for Pesticides Screening. Requirements for uploading data and reports into Geotracker are in Directive T of this CAO.

E. SOIL REMEDIAL ACTION PLAN FOR SOUTH CAMPUS EXCHANGE PARCEL. Prepare a soil Remedial Action Plan (RAP) for the South Campus Exchange Parcel (Figure 9). The soil RAP must be received by the San Diego Water Board and uploaded into the Geotracker database by **5:00 pm on June 30, 2014**. Requirements for uploading data and reports into Geotracker are in Directive T of this CAO. The soil RAP shall, at a minimum, contain the following information:

1. The latest Conceptual Site Model (CSM) that describes or depicts the characteristics of the South Campus Exchange Parcel and the processes by which wastes discharged to soil may move from sources to human and/or ecological receptors. The latest CSM shall, at a minimum, address the following:
 - a. Chemical identification – what potential contaminants, if any, are present in the soil and soil gas at the South Campus Exchange Parcel?
 - b. Source identification – where did the potential contamination originate?
 - c. Identification of potential contaminant migration pathways – how might potential contamination move from sources to receptors? Are the pathways complete, potentially complete, or incomplete?
 - d. Receptor identification – who or what might the potential contamination affect?
 - e. Boundary – will the CSM be limited to an AOC(s) or the South Campus Exchange Parcel, and will it extend off-site?
2. All AOCs requiring remedial action at the South Campus Exchange Parcel. Currently, the AOCs include those identified in Finding 16 and Finding 19.a.i.

¹³ National Oceanic and Atmospheric Administration. 1999. Sediment Quality Guidelines developed for the National Status and Trends Program. June 12.

3. A summary of the L-Ditch remediation activities provided in the L-Ditch Remediation Completion Report (dated April 2012).
4. A Feasibility Study (FS) to evaluate whether or not it is technologically and economically feasible to clean up the discharges in a manner that promotes attainment of background water quality conditions. If not, the FS shall propose alternative cleanup levels less stringent than background that comply with Resolution No. 92-49.

The FS shall, at a minimum, address all AOCs in Directive E.2. and contain the following information:

- a. An evaluation of a range of remedial alternatives capable of effectively cleaning up the pollutant source(s) in soil and soil gas (unless soil gas is attributed to groundwater impacts in which case it will be addressed in the groundwater RAP), and preventing migration of pollutants to San Diego Bay. The types of remedial alternatives, or combinations thereof, that should be considered are:
 - Source removal and/or isolation;
 - In-place treatment of soil;
 - Excavation of soil or extraction of soil gas for on-site or off-site treatment; and
 - Excavation of soil for appropriate recycling, re-use, or disposal.
- b. An evaluation of the cost and effectiveness of each alternative for the remediation of the waste constituents to attain a level of soil¹⁴ cleanup that results in either attainment of background water quality, or alternative cleanup levels approved by the San Diego Water Board.
- c. A recommended remedial alternative(s) for the cleanup and/or abatement of wastes discharged. The recommended alternative(s) must be capable of achieving the respective cleanup levels for all waste constituents at all monitoring points and throughout the zone affected by the waste constituents, including any portions thereof that extend beyond the property boundary.

¹⁴ Pursuant to the Basin Plan (p. 4-105), alternative cleanup levels in soil shall be established to ensure that residual leachable/mobile pollutants will not cause, or threaten to cause, exceedances of background water quality or alternative cleanup levels approved by the San Diego Water Board, or be a threat to human health or the environment.

5. A detailed description of all activities planned to implement the recommended alternative(s) in the RAP and a schedule for their completion ("RAP Implementation Schedule").

F. INDIVIDUAL SOIL REMEDIAL ACTION PLANS FOR SOUTH CAMPUS EXCHANGE PARCEL. Prepare individual soil RAPs for all NECs identified during pavement and foundation demolition, and earthwork activities at the South Campus Exchange Parcel. Each individual soil RAP must be received by the San Diego Water Board and uploaded into the Geotracker database **within 90 days** after the NEC has been identified. Requirements for uploading data and reports into Geotracker are in Directive T of this CAO. The individual soil RAPs shall, at a minimum, contain the following information:

1. An updated CSM if the NEC has altered the latest CSM in Directive E.1.
2. A summary of the field activities pertaining to the identification and delineation of the NEC.
3. An FS to evaluate whether or not it is technologically and economically feasible to clean up the discharges in a manner that promotes attainment of background water quality conditions.¹⁵ If not, the FS shall propose alternative cleanup levels less stringent than background that comply with Resolution No. 92-49.

The FS shall, at a minimum, address the NEC in Directive F.2 and contain the following information:

- a. An evaluation of a range of remedial alternatives capable of effectively cleaning up the pollutant source(s) in all soil and soil gas (unless soil gas is attributed to groundwater impacts in which case it will be addressed in the groundwater RAP) and preventing migration of pollutants to San Diego Bay. The types of remedial alternatives, or combinations thereof, that should be considered are:
 - Source removal and/or isolation;
 - In-place treatment of soil;
 - Excavation of soil or extraction of soil gas for on-site or off-site treatment; and
 - Excavation of soil for appropriate recycling, re-use, or disposal.

¹⁵ An FS is not required if the Discharger determines that (1) cleanup to background is technologically and economically feasible, and (2) the NEC is less than 10 cubic yards.

- b. An evaluation of the cost and effectiveness of each alternative for the remediation of the waste constituents to attain a level of soil¹⁶ cleanup that results in either attainment of background water quality, or alternative cleanup levels approved by the San Diego Water Board.
 - c. A recommended remedial alternative(s) for the cleanup and/or abatement of wastes discharged. The recommended alternative(s) must be capable of achieving the respective cleanup levels for all waste constituents at all monitoring points and throughout the zone affected by the waste constituents, including any portions thereof that extend beyond the property boundary.
4. A detailed description of all activities planned to implement the recommended alternative(s) in the individual soil RAP and a schedule for their completion (“RAP Implementation Schedule”).

G. GROUNDWATER REMEDIAL ACTION PLAN FOR SOUTH CAMPUS SITE. Prepare a RAP that addresses the groundwater impacts for the entire South Campus Site including any areas where the plume(s) extend beyond the property boundary. The RAP must be received by the San Diego Water Board and uploaded into the Geotracker database by **5:00 p.m. on April 18, 2015**. Requirements for uploading data and reports into Geotracker are in Directive S of this CAO. The RAP shall, at a minimum, contain the following information:

1. The latest CSM that describes or depicts the characteristics of the South Campus Site and the processes by which wastes discharged to groundwater may move from sources to human and/or ecological receptors. The latest CSM shall, at a minimum, address the following:
 - a. Chemical identification – what potential contaminants, if any, are present in the groundwater at the South Campus Site?
 - b. Source identification – where did the potential contamination originate?
 - c. Identification of potential contaminant migration pathways – how might potential contamination move from sources to receptors? Are the pathways complete, potentially complete, or incomplete?

¹⁶ Pursuant to the Basin Plan (p. 4-105), alternative cleanup levels in soil shall be established to ensure that residual leachable/mobile pollutants will not cause, or threaten to cause, exceedances of background water quality or alternative cleanup levels approved by the San Diego Water Board, or be a threat to human health or the environment.

- d. Receptor identification – who or what might the potential contamination affect?
- e. Boundary – will the CSM be limited to an AOC(s) or the South Campus Site, and will it extend off-site?

The San Diego Water Board shall be notified in writing on the intent to update the CSM resulting from further site and/or remedial investigations. All updated CSMs must be submitted in a technical memorandum to the San Diego Water Board no later than 30 days after notification.

- 2. An assessment of the Site that (1) summarizes the extent of all waste constituents in groundwater beneath and adjacent to the Site, and (2) summarizes the results of the pollutant concentrations above California Toxics Rule (CTR) water quality standards in the point-of-compliance wells located along the Chula Vista Marina’s shoreline.
- 3. A Human Health Risk Assessment (HHRA) that summarizes the groundwater results of the site-wide risk assessment provided in the HHRA Report (revised April 26, 2012).
- 4. All impacted groundwater zones requiring remedial action to restore groundwater quality levels that (1) support the designated beneficial uses of the groundwater underlying the South Campus Site (encompasses all on-site and off-site areas affected by waste discharges from the South Campus Facility) and San Diego Bay, and (2) protect human health.
- 5. An FS to evaluate whether or not it is technologically and economically feasible to clean up the discharges in a manner that promotes attainment of background water quality conditions. If not, the FS shall propose alternative cleanup levels less stringent than background that comply with Resolution No. 92-49.

The FS shall, at a minimum, address all impacted groundwater zones in Directive G.4 and contain the following information:

- a. An evaluation of a range of remedial alternatives capable of effectively cleaning up the pollutant source(s) in groundwater and preventing migration of pollutants to San Diego Bay. The types of remedial alternatives, or combinations thereof, that should be considered are:
 - Source removal and/or isolation;
 - In-place treatment of groundwater; and
 - Extraction of groundwater for on-site or off-site treatment.

- b. An evaluation of the cost and effectiveness of each alternative for the remediation of the waste constituents to attain a level of groundwater cleanup that results in either attainment of background water quality, or alternative cleanup levels approved by the San Diego Water Board.
 - c. A recommended remedial alternative(s) for the cleanup and/or abatement of wastes discharged. The recommended alternative(s) must be capable of achieving the respective cleanup levels for all waste constituents at all monitoring points and throughout the zone affected by the waste constituents, including any portions thereof that extend beyond the property boundary.
 6. Detailed Implementation Description and Schedule. The RAP shall include a detailed description of all activities planned to implement the recommended alternative(s) in the RAP and a schedule for their completion ("RAP Implementation Schedule"). Implementation shall begin **30 days** after RAP approval from the San Diego Water Board and progress reports shall be included in the Groundwater Monitoring Reports required in Directive M.2. All cleanup activities associated with groundwater shall be completed no later than **October 31, 2024**, however, an extension of time may be granted for good cause.
- H. **MANAGEMENT PLAN FOR WASTES IN CONCRETE, ASPHALT, AND JOINT COMPOUND MATERIAL AT SOUTH CAMPUS SITE.** Prepare and implement a management plan to prevent wastes in concrete, asphalt, and joint compound material from being eroded and transported to San Diego Bay via the wind and/or storm water runoff. The management plan shall be implemented until these materials are demolished and/or properly removed or reused. The management plan must be received by the San Diego Water Board and uploaded into the Geotracker database by **5:00 pm on August 1, 2014**. Requirements for uploading data and reports into Geotracker are in Directive S of this CAO.
- I. **SOIL REMEDIAL ACTION PLAN FOR SOUTH CAMPUS SITE.** Prepare a RAP that addresses all the soil AOCs and NECs (Directive H.3) for the remainder of the South Campus Site (excluding the South Campus Exchange Parcel; Figure 10). The RAP must be received by the San Diego Water Board and uploaded into the Geotracker database by **5:00 p.m. on April 21, 2017**. Requirements for uploading data and reports into Geotracker are in Directive T of this CAO. The RAP shall, at a minimum, contain the following information:
 1. The latest CSM that describes or depicts the characteristics of the South Campus Site and the processes by which wastes discharged to soil may move from sources to human and/or ecological receptors. The latest CSM shall, at a minimum, address the following:

- a. Chemical identification – what potential contaminants, if any, are present in the soil and soil gas at the South Campus Site?
- b. Source identification – where did the potential contamination originate?
- c. Identification of potential contaminant migration pathways – how might potential contamination move from sources to receptors? Are the pathways complete, potentially complete, or incomplete?
- d. Receptor identification – who or what might the potential contamination affect?
- e. Boundary – will the CSM be limited to an AOC(s) or the South Campus Site, and will it extend off-site?

The San Diego Water Board shall be notified in writing on the intent to update the CSM resulting from further site and/or remedial investigations. All updated CSMs must be submitted in a technical memorandum to the San Diego Water Board no later than 30 days after notification.

2. An assessment of the Site that summarizes the lateral and vertical extent of all waste constituents in soil beneath and adjacent to the Site.
3. A HHRA that summarizes the soil results of the site-wide risk assessment provided in the HHRA Report (revised April 26, 2012).
4. All soil AOCs requiring remedial action for the South Campus Site (excluding the South Campus Exchange Parcel). Currently, the soil AOCs include those identified in Finding 16 and Finding 19.a.ii.
5. All soil NECs identified during pavement and foundation demolition, and earthwork activities for the remainder of the South Campus Site (excluding the South Campus Exchange Parcel).
6. An FS to evaluate whether or not it is technologically and economically feasible to clean up the discharges in a manner that promotes attainment of background water quality conditions.¹⁷ If not, the FS shall propose alternative cleanup levels less stringent than background that comply with Resolution No. 92-49.

The FS shall, at a minimum, address all AOCs and NECs in Directives

¹⁷ An FS is not required if the Discharger determines that (1) cleanup to background is technologically and economically feasible, and (2) the NEC is less than 10 cubic yards.

I.4 and I.5, respectively, and contain the following information:

- a. An evaluation of a range of remedial alternatives capable of effectively cleaning up the pollutant source(s) in soil and soil gas (unless soil gas is attributed to groundwater impacts in which case it will be addressed in the groundwater RAP), and preventing migration of pollutants to San Diego Bay. The types of remedial alternatives, or combinations thereof, that should be considered are:
 - Source removal and/or isolation;
 - In-place treatment of soil;
 - Excavation of soil or extraction of soil gas for on-site or off-site treatment; and
 - Excavation of soil for appropriate recycling, re-use, or disposal.
 - b. An evaluation of the cost and effectiveness of each alternative for the remediation of the waste constituents to attain a level of soil¹⁸ cleanup that results in either attainment of background water quality, or alternative cleanup levels approved by the San Diego Water Board.
 - c. A recommended remedial alternative(s) for the cleanup and/or abatement of wastes discharged. The recommended alternative(s) must be capable of achieving the respective cleanup levels for all waste constituents at all monitoring points and throughout the zone affected by the waste constituents, including any portions thereof that extend beyond the property boundary.
7. Detailed Implementation Description and Schedule. The RAP shall include a detailed description of all activities planned to implement the recommended alternative(s) in the RAP and a schedule for their completion ("RAP Implementation Schedule"). All cleanup activities shall be completed no later than **April 19, 2019**.

- J. **INDIVIDUAL SOIL REMEDIAL ACTION PLANS FOR SOUTH CAMPUS SITE.** Prepare individual soil RAPs for all NECs identified during pavement and foundation demolition, and earthwork activities for the remainder of the South Campus Site (excluding the South Campus Exchange Parcel; Figure 10). Each individual soil RAP must be received

¹⁸ Pursuant to the Basin Plan (p. 4-105), alternative cleanup levels in soil shall be established to ensure that residual leachable/mobile pollutants will not cause, or threaten to cause, exceedances of background water quality or alternative cleanup levels approved by the San Diego Water Board, or be a threat to human health or the environment.

by the San Diego Water Board and uploaded into the Geotracker database **within 90 days** after the NEC has been identified. Requirements for uploading data and reports into Geotracker are in Directive T of this CAO. The individual soil RAPs shall, at a minimum, contain the following information:

1. An updated CSM if the NEC has altered the latest CSM in Directive I.1.
2. A summary of the field activities pertaining to the identification and delineation of the NEC.
3. An FS to evaluate whether or not it is technologically and economically feasible to clean up the discharges in a manner that promotes attainment of background water quality conditions.¹⁹ If not, the FS shall propose alternative cleanup levels less stringent than background that comply with Resolution No. 92-49.

The FS shall, at a minimum, address the NEC in Directive J.2 and contain the following information:

- a. An evaluation of a range of remedial alternatives capable of effectively cleaning up the pollutant source(s) in all soil and soil gas (unless soil gas is attributed to groundwater impacts in which case it will be addressed in the groundwater RAP) and preventing migration of pollutants to San Diego Bay. The types of remedial alternatives, or combinations thereof, that should be considered are:
 - Source removal and/or isolation;
 - In-place treatment of soil;
 - Excavation of soil or extraction of soil gas for on-site or off-site treatment; and
 - Excavation of soil for appropriate recycling, re-use, or disposal.
- b. An evaluation of the cost and effectiveness of each alternative for the remediation of the waste constituents to attain a level of soil²⁰ cleanup that results in either attainment of background water

¹⁹ An FS is not required if the Discharger determines that (1) cleanup to background is technologically and economically feasible, and (2) the NEC is less than 10 cubic yards.

²⁰ Pursuant to the Basin Plan (p. 4-105), alternative cleanup levels in soil shall be established to ensure that residual leachable/mobile pollutants will not cause, or threaten to cause, exceedances of background water quality or alternative cleanup levels approved by the San Diego Water Board, or be a threat to human health or the environment.

quality, or alternative cleanup levels approved by the San Diego Water Board.

- c. A recommended remedial alternative(s) for the cleanup and/or abatement of wastes discharged. The recommended alternative(s) must be capable of achieving the respective cleanup levels for all waste constituents at all monitoring points and throughout the zone affected by the waste constituents, including any portions thereof that extend beyond the property boundary.
- 4. A detailed description of all activities planned to implement the recommended alternative(s) in the individual soil RAP and a schedule for their completion (“RAP Implementation Schedule”).

K. **REMEDIAL ACTION PLAN IMPLEMENTATION.** Implement the RAPs as specified in the RAP Implementation Schedules required by Directives E.5, F.4, G.6, I.7, and J.4 unless otherwise directed in writing by the San Diego Water Board. The San Diego Water Board shall be notified in writing on the intent to begin implementing the RAPs and comply with any conditions set by the San Diego Water Board, including mitigation of adverse consequences from cleanup activities. Notification must be provided 10 calendar days prior to implementing the RAPs. RAP implementation activities shall be completed according to the RAP Implementation Schedules.

Upon approval of the RAP(s) prepare and submit RAP Implementation Progress Reports to the San Diego Water Board on a quarterly schedule as shown below. The first progress report shall be submitted after the first full quarter of RAP implementation by the due date for that quarterly monitoring period. The Progress Reports shall describe the remedial actions conducted, results, and conclusions. Supporting documentation such as the analytical laboratory reports and waste manifests shall also be included in the Progress Reports.

| Monitoring Period | Due Date for Report (no later than 5:00 pm on) |
|---------------------------|---|
| First Quarter (Jan-Mar) | April 30 |
| Second Quarter (Apr-Jun) | July 30 |
| Third Quarter (July-Sept) | October 30 |
| Fourth Quarter (Oct-Dec) | January 30 |

- L. **MODIFY OR SUSPEND CLEANUP ACTIVITIES.** Modify or suspend cleanup activities only when directed to do so by the San Diego Water Board.
- M. **GROUNDWATER MONITORING PROGRAM.** Continue to implement a Groundwater Monitoring Program (GMP). The purpose of the GMP is to

regularly assess progress toward and document achievement of cleanup levels, and to provide data to answer the following questions:

- Is the groundwater plume of each waste constituent decreasing in size and/or mass?
 - Are the selected remedial action alternatives effectively removing waste constituents from the groundwater and are they capable of achieving background levels or any alternative cleanup levels approved by the San Diego Water Board?
 - Have the beneficial uses of the groundwater been restored and have the cleanup levels approved by the San Diego Water Board been attained?
 - Are human health and the environment protected from the wastes discharged from the South Campus Facility?
1. GMP Work Plan. Prepare a GMP work plan that describes the GMP and its implementation. The GMP work plan must be received by the San Diego Water Board and uploaded into the Geotracker database by **5:00 p.m. on June 30, 2014**. Requirements for uploading data and reports into Geotracker are in Directive T of this CAO. The GMP work plan shall, at a minimum, contain the following information:
 - a. The groundwater monitoring well network to be sampled, the sampling event frequency (e.g., semi-annual, annual), and the analytical methods to be used.
 - b. The methods to be used to monitor, purge, and sample the wells.
 - c. A map showing the location of the groundwater monitoring wells.
 - d. A schedule for submittal of groundwater monitoring reports to the San Diego Water Board (required in Directive M.2).
 2. GMP Monitoring Reports. Prepare and submit GMP monitoring reports. The reports must be received by the San Diego Water Board by the dates specified in Directive M.1.d and uploaded into the Geotracker database. Requirements for uploading data and reports into Geotracker are in Directive T of this CAO. The reports shall, at a minimum, contain the following information:
 - a. **Groundwater Elevations.** Groundwater data must be presented in tabular format with depth to groundwater (in feet below ground surface), top of casing elevations, groundwater level elevations, depths to the top of well screens, length of well screens and total depth for each well included in the monitoring program. A groundwater elevation map must be prepared for each monitored water-bearing zone with the groundwater flow direction and

calculated hydrologic gradients clearly indicated in the figures. A complete tabulation of historical groundwater level elevations must be included in each monitoring report.

- b. **Reporting Analytical Groundwater Results.** All GMP monitoring reports must:
- i. Present all groundwater sampling data in tabular format and compare the results to the MCLs. Isoconcentration maps must be prepared for constituents of concern for each monitored water-bearing zone, as appropriate. Plots must also be prepared for all constituents of concern at appropriate wells: (1) Time versus concentration plots that show groundwater elevations, and (2) Distance versus concentration plots. These plots must also indicate whether the data was collected during a low tide or high tide event.
 - ii. Provide a South Campus Site plot plan which clearly illustrates the locations of the monitoring wells, the former locations of industrial processes and equipment, former locations of liquid storage and conveyance systems, and buildings located on the property and immediately adjacent to the property lines of the South Campus Site.
 - iii. Provide a South Campus Site plot plan with the most recent concentrations of chemicals of concern.
 - iv. Provide a discussion and technical interpretations of the groundwater data, and describe any significant increases in pollutant concentrations since the last report, any measures proposed to address the increases, any changes to the CSM, and any conclusions and recommendations for future action with each report.
 - v. Describe analytical methods used, detection limits obtained for each reported constituent, and a summary of quality assurance/quality control (QA/QC) data.
 - vi. Describe sample collection protocol(s), describe how all wastes are managed at the South Campus Site, and include documentation of proper disposal of contaminated well purge water and/or soil cuttings removed from the South Campus Site.
 - vii. List historical groundwater sampling results in tabular form and include them in the last monitoring report each year.

- c. **Remediation.** The report must include an estimate of the mass of contaminant(s) removed and/or volume of soil and groundwater treated. This estimate must be reported in a tabular format for each area of concern and for the South Campus Site as a whole. A tabulation of historical annual contaminant mass removal results and/or volume treated must be included in the last monitoring report each year.
3. **Record Keeping.** The Dischargers or their agent must retain data generated for the above reports, including laboratory results and QA/QC data, for a minimum of six years after origination and must make them available to the San Diego Water Board upon request.
4. **Groundwater Monitoring Program Revisions.** The Dischargers may request revisions to the GMP; however, the revisions may not be implemented until approved by the San Diego Water Board. Prior to making GMP revisions, the San Diego Water Board will consider the burden, including costs, of the groundwater monitoring reports relative to the benefits to be obtained from these reports.

N. **REVISED IN-SITU CONCRETE CHARACTERIZATION AND WASTE PROFILING WORK PLAN.**

1. Implement the work plan within 60 days after receiving approval by the San Diego Water Board.
2. Submit a technical report that, at a minimum, (1) summarizes the completed field activities, (2) identifies all concrete grids classified as a hazardous waste and non-hazardous waste for disposal at a permitted landfill, (3) identifies all concrete grids exceeding the soil background cleanup levels in Directive B, (4) presents the conclusions and disposal recommendations, and (5) includes figures and analytical laboratory reports.

The technical report shall be received by the San Diego Water Board and uploaded into the Geotracker database by **5:00 p.m. on October 17, 2014**. Requirements for uploading data and reports into Geotracker are in Directive T of this CAO.

O. **DEMOLITION ENVIRONMENTAL MONITORING PLAN AND IMPLEMENTATION.**

1. Notify the San Diego Water Board in writing on the intent to begin implementing the Demolition Environmental Monitoring Plan (DEMP). Notification must be provided 10 calendar days prior to implementing the DEMP.

2. Notify the San Diego Water Board immediately via phone and email when NECs are identified during demolition.
3. Prepare and submit technical memoranda that, at a minimum, (1) summarizes the identification, delineation, and remediation of each NEC, (2) displays the analytical data in tabular form, and (3) includes figures and the analytical laboratory reports. The technical memoranda for the South Campus Exchange Parcel shall be received by the San Diego Water Board and uploaded into the Geotracker database by **5:00 p.m. on October 31, 2014**. The technical memoranda for the South Campus Site (excludes the South Campus Exchange Parcel) shall be received by the San Diego Water Board and uploaded into the Geotracker database **within 90 days** after receiving the final analytical laboratory reports. The San Diego Water Board shall be notified in writing upon receipt of the final analytical laboratory reports.
4. Prepare and submit progress reports detailing the DEMP investigations and/or DEMP remedial actions. The progress reports shall be submitted on a quarterly schedule as shown below. The first progress report shall be submitted after the first full quarter of DEMP implementation by the due date for that quarterly monitoring period. The DEMP progress reports shall discuss the work performed, results, and conclusions. Supporting documentation such as the analytical laboratory reports and waste manifests shall also be included in the DEMP progress reports.

| Monitoring Period | Due Date for Report (no later than 5:00 pm on) |
|---------------------------|---|
| First Quarter (Jan-Mar) | April 30 |
| Second Quarter (Apr-Jun) | July 30 |
| Third Quarter (July-Sept) | October 30 |
| Fourth Quarter (Oct-Dec) | January 30 |

P. **FINAL CLEANUP AND ABATEMENT COMPLETION REPORT FOR SOUTH CAMPUS EXCHANGE PARCEL.** Submit a final Cleanup and Abatement Completion Report verifying completion of the soil RAPs (Directives E and F) and any remedial actions conducted during demolition within the South Campus Exchange Parcel. The final Cleanup and Abatement Completion Report shall be received by the San Diego Water Board and uploaded into the Geotracker database **by 5:00 p.m. on November 14, 2014**. Requirements for uploading data and reports into Geotracker are in Directive T of this CAO. The report shall provide a demonstration that:

1. All corrective actions necessary to cleanup and abate the effects of the discharge in soil beneath and adjacent to the South Campus

Exchange Parcel boundary have met the soil cleanup levels in Directive B; and

2. All soil gas concentrations remaining in soil (unless soil gas is attributed to groundwater impacts in which case it will be addressed in Directive Q) beneath and adjacent to the South Campus Exchange Parcel boundary are protective of human health .

Q. FINAL CLEANUP AND ABATEMENT COMPLETION REPORT FOR SOUTH CAMPUS SITE. Submit a final Cleanup and Abatement Completion Report verifying (1) completion of the groundwater RAP (Directive G), (2) completion of the soil RAPs (Directives I and J) and any remedial actions conducted during demolition of the South Campus Site, and (3) removal of any or all portions of the SWCS including the 84-inch reinforced concrete pipe culvert that traverses the northern portion of the South Campus Site. The final Cleanup and Abatement Completion Report shall be received by the San Diego Water Board and uploaded into the Geotracker database by **5:00 p.m. on December 31, 2024**. Requirements for uploading data and reports into Geotracker are in Directive T of this CAO. The report shall provide a demonstration that:

1. All corrective actions necessary to cleanup and abate the effects of the discharge in soil beneath and adjacent to the remainder of the South Campus Site (excluding the South Campus Exchange Parcel) have met the soil cleanup levels in Directive B;
2. All soil gas concentrations remaining in soil beneath and adjacent to the remainder of the South Campus Site (excluding the South Campus Exchange Parcel) are protective of human health;
3. All corrective actions necessary to cleanup and abate the effects of the discharge in groundwater beneath and adjacent to the entire South Campus Site have met the groundwater cleanup levels in Directive B; and
4. The residual pollutant concentrations in groundwater at the point-of-compliance wells located along the Chula Vista Marina’s shoreline are protective of the three target receptors in San Diego Bay: aquatic life – benthic community, aquatic-dependent wildlife, and humans. San Diego Bay beneficial uses applicable to each of these target receptors are shown in the table below.

| Beneficial Uses | Target Receptors |
|---|----------------------------------|
| Estuarine Habitat | Aquatic Life - Benthic Community |
| Marine Habitat | Aquatic Life - Benthic Community |
| Rare, Threatened, or Endangered Species | Aquatic-Dependent Wildlife |
| Wildlife Habitat | Aquatic-Dependent Wildlife |
| Commercial and Sport Fishing | Human Health |
| Shellfish Harvesting | Human Health |

Protection of the three target receptors shall be demonstrated by (1) comparing the residual pollutant concentrations to the CTR water quality standards, and (2) conducting a final groundwater chemical fate and transport model using the residual pollutant concentrations in groundwater after remediation.

- R. **PENALTY OF PERJURY STATEMENT.** All reports must be signed by the Discharger's responsible corporate officer or its duly authorized representative, and must include the following statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.

"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 fine and imprisonment for knowing violations."

- S. **DOCUMENT SUBMITTALS.** Unless otherwise notified by the San Diego Water Board, the Dischargers shall submit one electronic, searchable PDF copy of all documents required under this CAO to:

Executive Officer
 California Regional Water Quality Control Board, San Diego Region
 2375 Northside Drive, Suite 100 San Diego, California 92108-2700
 Attn: Southern Cleanup Unit

Larger documents shall be divided into separate files at logical places in the report to keep the file sizes under 150 megabytes. The Discharger shall continue to provide a paper transmittal letter, a paper copy of all figures larger than 8.5 inches by 14 inches (legal size), and an electronic

copy (on a CD or other appropriate media) of all reports to the San Diego Water Board. All correspondence and documents submitted to the San Diego Water Board shall include the following Geotracker Site ID in the header or subject line:

SL209294204

- T. **ELECTRONIC DATA SUBMITTALS.** The Electronic Reporting Regulations (Chapter 30, Division 3 of Title 23 and Division 3 of Title 27, CCR) require electronic submission of any report or data required by a regulatory agency from a cleanup site after July 1, 2005. All information submitted to the San Diego Water Board in compliance with this CAO is required to be submitted electronically via the Internet into the Geotracker database <http://geotracker.waterboards.ca.gov/> (Geotracker Site ID **SL209294204**). The electronic data shall be uploaded on or prior to the regulatory due dates set forth in the CAO or addenda thereto. To comply with these requirements, the Dischargers shall upload to the Geotracker database the following minimum information.
1. **Laboratory Analytical Data.** Analytical data (including geochemical data) for all soil, sediment, vapor, and water samples in Electronic Data File (EDF) format. Water, soil, and vapor data include analytical results of samples collected from: monitoring wells, boreholes, gas and vapor wells or other collection devices, surface water, groundwater, piezometers, stockpiles, and drinking water wells.
 2. **Locational Data.** The latitude and longitude of any permanent monitoring well or soil vapor probe for which data is reported in EDF format, accurate to within 1 meter and referenced to a minimum of two reference points from the California Spatial Reference System (CSRS-H), if available.
 3. **Monitoring Well Elevation Data.** The surveyed elevation relative to a geodetic datum of any permanent monitoring well. Elevation measurements to the top of groundwater well casings for all groundwater monitoring wells.
 4. **Depth-to-Water Data.** Monitoring wells need to have the depth-to-water information reported whenever water data is collected, even if water samples are not actually collected during the sampling event.
 5. **Monitoring Well Screen Intervals.** The depth to the top of the screened interval and the length of screened interval for any permanent monitoring well.

6. **Site Map.** Site map or maps which display discharge locations,²¹ streets bordering the facility, and sampling locations for all soil, water, and vapor samples. The site map is a stand-alone document that may be submitted in various electronic formats.²² A site map must also be uploaded to show the extent of Site-related chemical impacts in groundwater. An update to the site map may be uploaded at any time.
 7. **Boring Logs.** Boring logs (in searchable PDF format) prepared by an appropriately licensed professional.
 8. **Electronic Report.** A complete copy (in searchable PDF format) of all work plans, assessment, cleanup, and monitoring reports including the signed transmittal letters, professional certifications, and all data presented in the reports.
- U. **VIOLATION REPORTS.** If the Dischargers violate any requirement of this CAO, then the Dischargers must notify the San Diego Water Board office by telephone and electronic mail as soon as practicable once the Dischargers have knowledge of the violation. The San Diego Water Board may, depending on violation severity, require the Dischargers to submit a separate technical report on the violation within five working days of telephone notification.
- V. **OTHER REPORTS.** The Dischargers must notify the San Diego Water Board in writing prior to implementing any site activities that have the potential to cause further migration of contaminants or that would provide new opportunities for Site investigation.
- W. **PROVISIONS**
1. **Waste Management.** The storage, handling, treatment, or disposal of soil containing waste or polluted groundwater must not create conditions of nuisance, as defined in Water Code section 13050(m). The Dischargers must properly manage, treat and dispose of wastes and polluted groundwater in accordance with applicable federal, State and local regulations.
 2. **Good Operation and Maintenance.** The Dischargers must maintain in good working order and operate as efficiently as possible any monitoring system, Site or control system installed to achieve compliance with the requirements of this CAO.

²¹ Areas related to discharge from former location(s) of: industrial processes and equipment, liquid storage and conveyance systems, and buildings located on the property and immediately adjacent to the property lines of the facility.

²² Formats include .gif, .jpeg, .jpg, tiff, .tif, .pdf

3. **Contractor/Consultant Qualifications.** All reports, plans and documents required under this CAO shall be prepared under the direction of appropriately qualified professionals. A statement of qualifications and license numbers, if applicable, of the responsible lead professional and all professionals making significant and/or substantive contributions shall be included in the report submitted by the Dischargers. The lead professional performing engineering and geologic evaluations and judgments shall sign and affix their professional geologist or civil engineering registration stamp to all technical reports, plans or documents submitted the San Diego Water Board.
4. **Laboratory Qualifications.** All samples must be analyzed by California State certified laboratories using methods approved by the USEPA for the type of analysis to be performed. All laboratories must maintain QA/QC records for San Diego Water Board review.
5. **Laboratory Analytical Reports.** Any report presenting new analytical data is required to include the complete Laboratory Analytical Report(s). The Laboratory Analytical Report(s) must be signed by the laboratory director and contain:
 - a. A complete sample analytical report,
 - b. A complete laboratory QA/QC report,
 - c. A discussion of the sample and QA/QC data, and
 - d. A transmittal letter indicating whether or not all the analytical work was supervised by the director of the laboratory, and contain the following statement, "All analyses were conducted at a laboratory certified for such analyses by the California Department of Health Services in accordance with current USEPA procedures."
6. **Reporting of Changed Owner or Operator.** Notify the San Diego Water Board of any changes in the Responsible Parties' facilities' occupancy or ownership associated with the property described in this Order. Regulations.

X. NOTIFICATIONS

1. **Cost Recovery.** Upon receipt of invoices, and in accordance with instructions therein, the Dischargers must reimburse the San Diego Water Board for all reasonable costs incurred by the San Diego Water Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this CAO.

2. **All Applicable Permits.** This CAO does not relieve the Dischargers of the responsibility of obtaining permits or other entitlements to perform necessary corrective action. This includes, but is not limited to, actions that are subject to local, State, and/or federal discretionary review and permitting.

3. **Enforcement Notification.** Failure to comply with requirements of this CAO may subject the Dischargers to further enforcement action, including but not limited to administrative enforcement orders requiring you to cease and desist from violations, imposition of administrative civil liability pursuant to Water Code sections 13268 and 13350 in an amount not to exceed \$5,000 for each day in which the violation occurs. Failure to comply may also result in referral to the State Attorney General for injunctive relief and/or referral to the District Attorney for criminal prosecution.

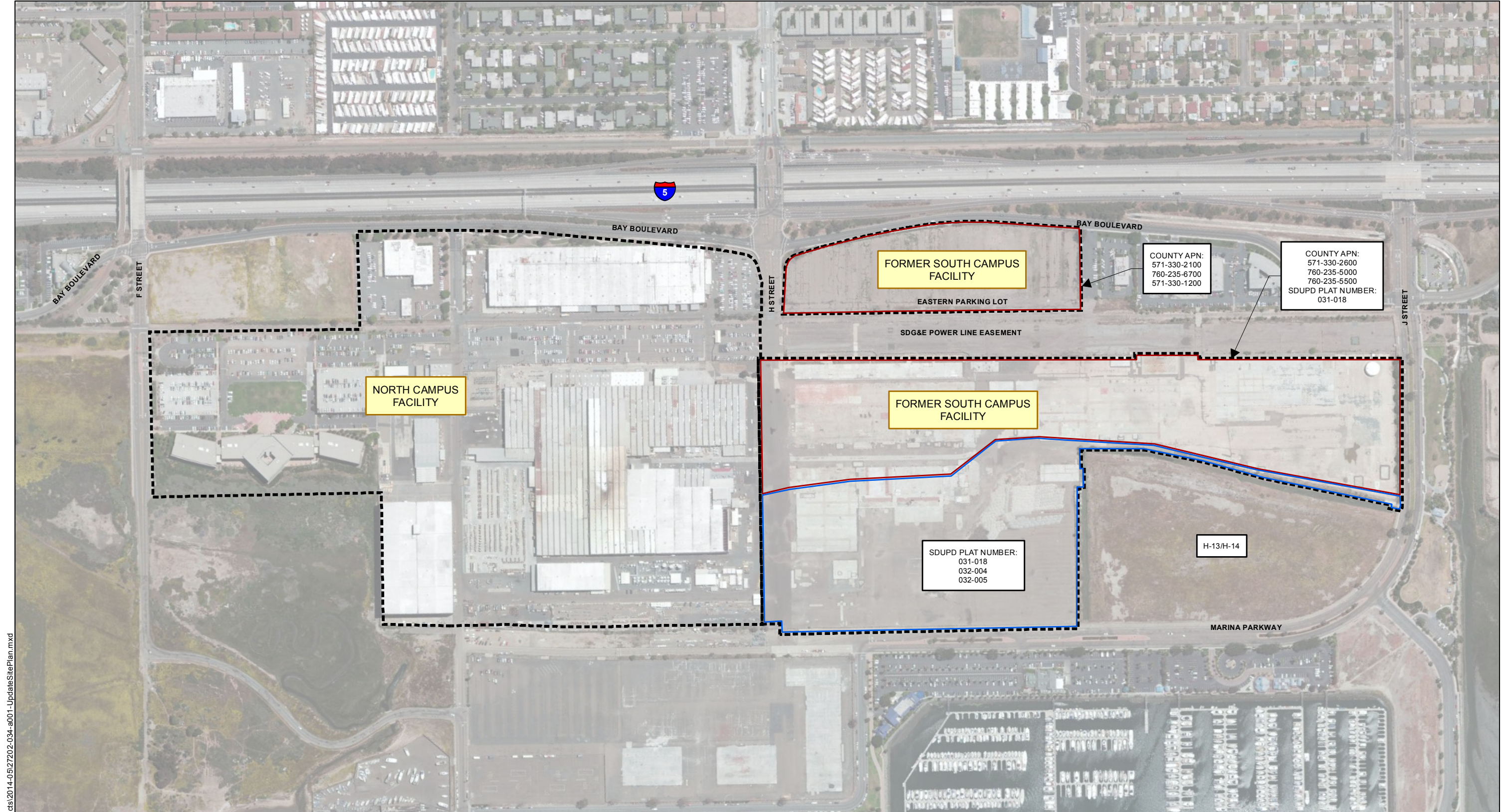
4. **Requesting Administrative Review by the State Water Board.** Any person affected by this action of the San Diego Water Board may petition the State Water Board to review the action in accordance with section 13320 of the Water Code and CCR Title 23 section 2050. The petition must be received by the State Water Board (Office of Chief Counsel, P.O. Box 100, Sacramento, California 95812) within 30 calendar days of the date of this CAO. Copies of the law and regulations applicable to filing petitions will be provided upon request.

Ordered By David W. Gibson 24 June 2014
 David W. Gibson Date
 Executive Officer




SUMMARY OF REQUIREMENTS AND DUE DATES

| Directive | Requirement | Due Date |
|-----------|---|---|
| C.2 | Technical Report for Site-Specific Background Concentration of Hexavalent Chromium in Groundwater | October 30, 2014 |
| D.1 | Technical Work Plan for Pesticides Screening | June 30, 2014 |
| D.2 | Pesticides Technical Report for South Campus Site | Within 90 days after approval of the Technical Work Plan for Pesticides Screening |
| E | Soil RAP for South Campus Exchange Parcel | June 30, 2014 |
| F | Individual Soil RAPs for South Campus Exchange Parcel | Within 90 days after the NEC is identified |
| G | Groundwater RAP for South Campus Site | April 18, 2015 |
| G.6 | All Groundwater Cleanup Activities in the RAP Completed for South Campus Site | October 31, 2024 |
| H | Management Plan for Wastes in Concrete, Asphalt, and Joint Compound Material at South Campus Site | August 1, 2014 |
| I | Soil RAP for South Campus Site (excluding South Campus Exchange Parcel) | April 21, 2017 |
| I.7 | All Soil Cleanup Activities in the RAP Completed for South Campus Site (excluding South Campus Exchange Parcel) | April 19, 2019 |
| J | Individual Soil RAPs for South Campus Site | Within 90 days after the NEC is identified |
| K | RAP Implementation Progress Reports | First Quarter – April 30 Second Quarter – July 30 Third Quarter – October 30 Fourth Quarter – January 30 |
| M.1 | GMP Work Plan | June 30, 2014 |
| M.2 | Groundwater Monitoring Reports | As specified in the Groundwater Monitoring |

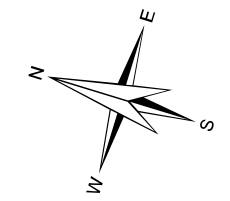
| Directive | Requirement | Due Date |
|-----------|--|---|
| | | Program Work Plan |
| N.2 | Technical Report for Revised In-Situ Concrete Characterization and Waste Profiling | October 17, 2014 |
| O.3 | DEMP Technical Memoranda for South Campus Site | Within 90 days after receiving the final analytical laboratory reports. The San Diego Water Board shall be notified in writing upon receipt of the final analytical laboratory reports. |
| O.3 | DEMP Technical Memoranda for South Campus Exchange Parcel | October 31, 2014 |
| O.4 | DEMP Technical Reports | First Quarter – April 30 Second Quarter – July 30 Third Quarter – October 30 Fourth Quarter – January 30 |
| P | Final Cleanup and Abatement Completion Report for South Campus Exchange Parcel | November 14, 2014 |
| Q | Final Cleanup and Abatement Completion Report for South Campus Site | December 31, 2024 |



LEGEND

-  FACILITY BOUNDARY
-  SDUPD PLAT BOUNDARY
-  APN BOUNDARY

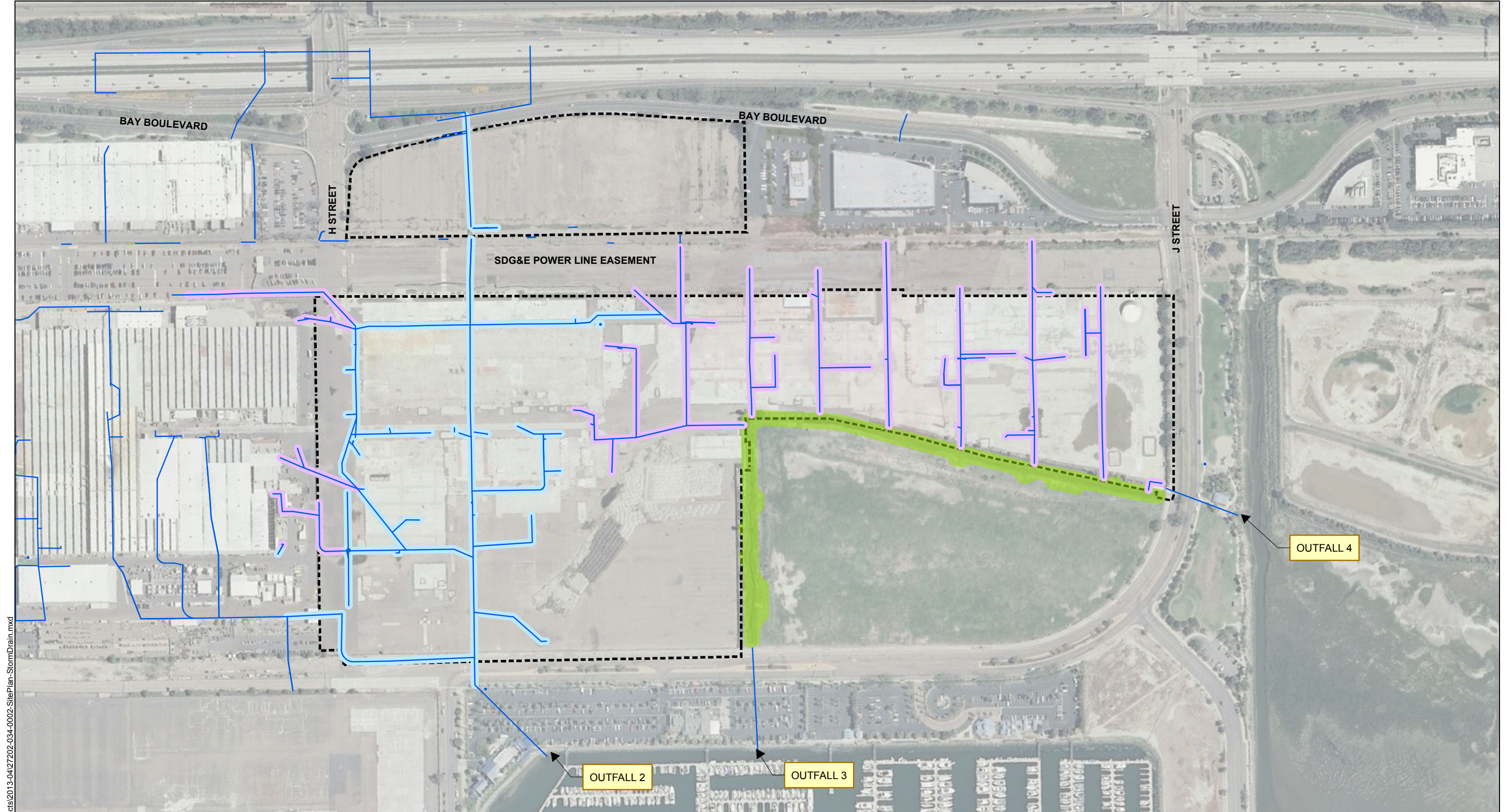
NOTES:
 1. LOCATIONS AND DIMENSIONS OF SITE FEATURES ARE APPROXIMATE.
 2. SDUPD PROPERTY NUMBER SHOWN WHEN APN IS NOT ASSIGNED.
 3. APN : ASSESSORS PARCEL NUMBER
 4. SDUPD: SAN DIEGO UNIFIED PORT DISTRICT



NORTH CAMPUS FACILITY AND FORMER SOUTH CAMPUS FACILITY

SCALE: AS SHOWN
 MAY 2014

FIGURE 1

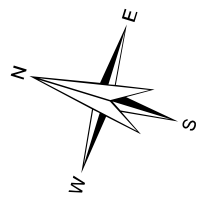


G:\27202_Goodrich\Global\GIS\Map\Projects\2013-04\27202-034-0002-SitePlan-StormDrain.mxd

LEGEND

- SWCS
- ACTIVE SWCS
- ABANDONED IN PLACE SWCS
- LOCATION OF SAND FILTER DRAINAGE TRENCH (FORMER L-DITCH) (CONSTRUCTED BY PORT OF SAN DIEGO)
- FORMER SOUTH CAMPUS FACILITY BOUNDARY

NOTES:
 1. LOCATIONS AND DIMENSIONS OF SITE FEATURES ARE APPROXIMATE.
 2. SWCS = STORM WATER CONVEYANCE SYSTEM



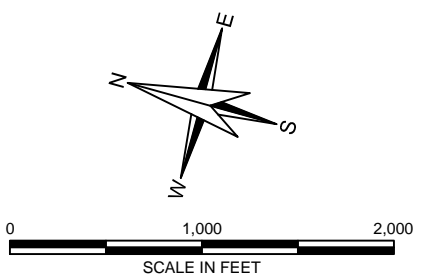
FORMER SOUTH CAMPUS FACILITY SWCS MAP

SCALE: AS SHOWN
 AUGUST 2013

FIGURE 2



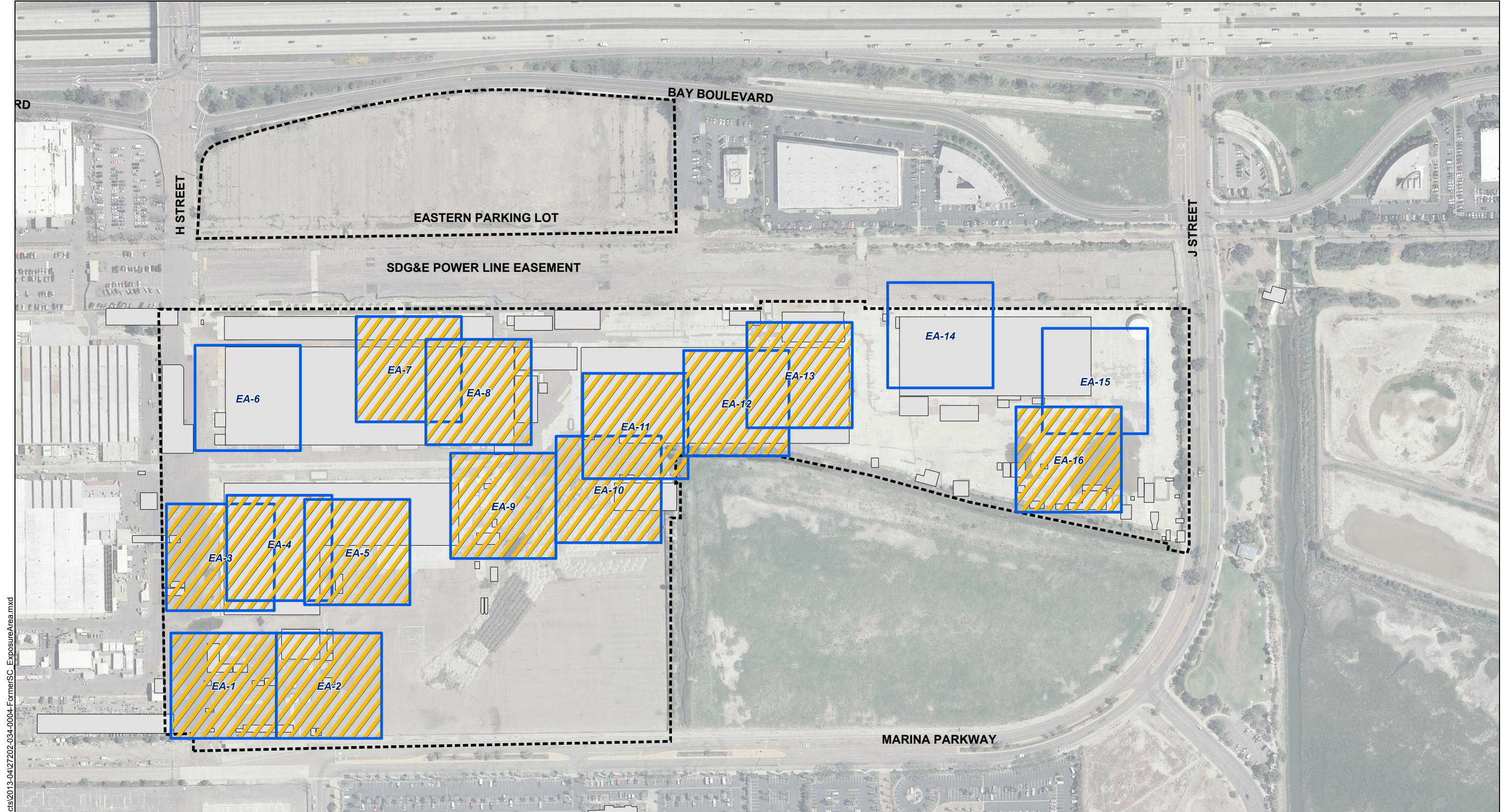
SOURCE:
 PORT OF SAN DIEGO WEBSITE
<http://www.portofsandiego.org/chula-vista-bayfront-master-plan.html>



**CHULA VISTA
 BAYFRONT MASTER PLAN**

SCALE: AS SHOWN
 AUGUST 2013

FIGURE 3

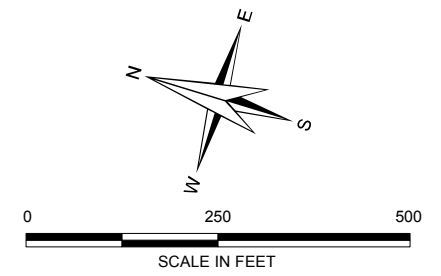


G:\27202_Goodrich\Global\GIS\Map\Projects\2013-04\27202-034-0004-FormerSC_ExposureArea.mxd

LEGEND

- TYPICAL LOT EXPOSURE AREA
- EXPOSURE AREA REQUIRING REMEDIAL ACTION
- FORMER SOUTH CAMPUS FACILITY BOUNDARY
- FORMER BUILDING FOOTPRINT

NOTES:
1. LOCATIONS AND DIMENSIONS OF SITE FEATURES ARE APPROXIMATE.



EXPOSURE AREAS

SCALE: AS SHOWN
AUGUST 2013

FIGURE 4

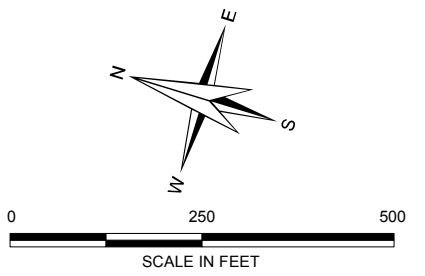


G:\27202_Goodrich\Global\GIS\Map\Projects\2013-04\27202-034-0005-FormerSC_ReqChrt\Ditch.mxd

LEGEND

- BORING LOCATION AND ID
- AREA REQUIRING ADDITIONAL CHARACTERIZATION AND/OR REMEDIATION
- FORMER SOUTH CAMPUS FACILITY BOUNDARY

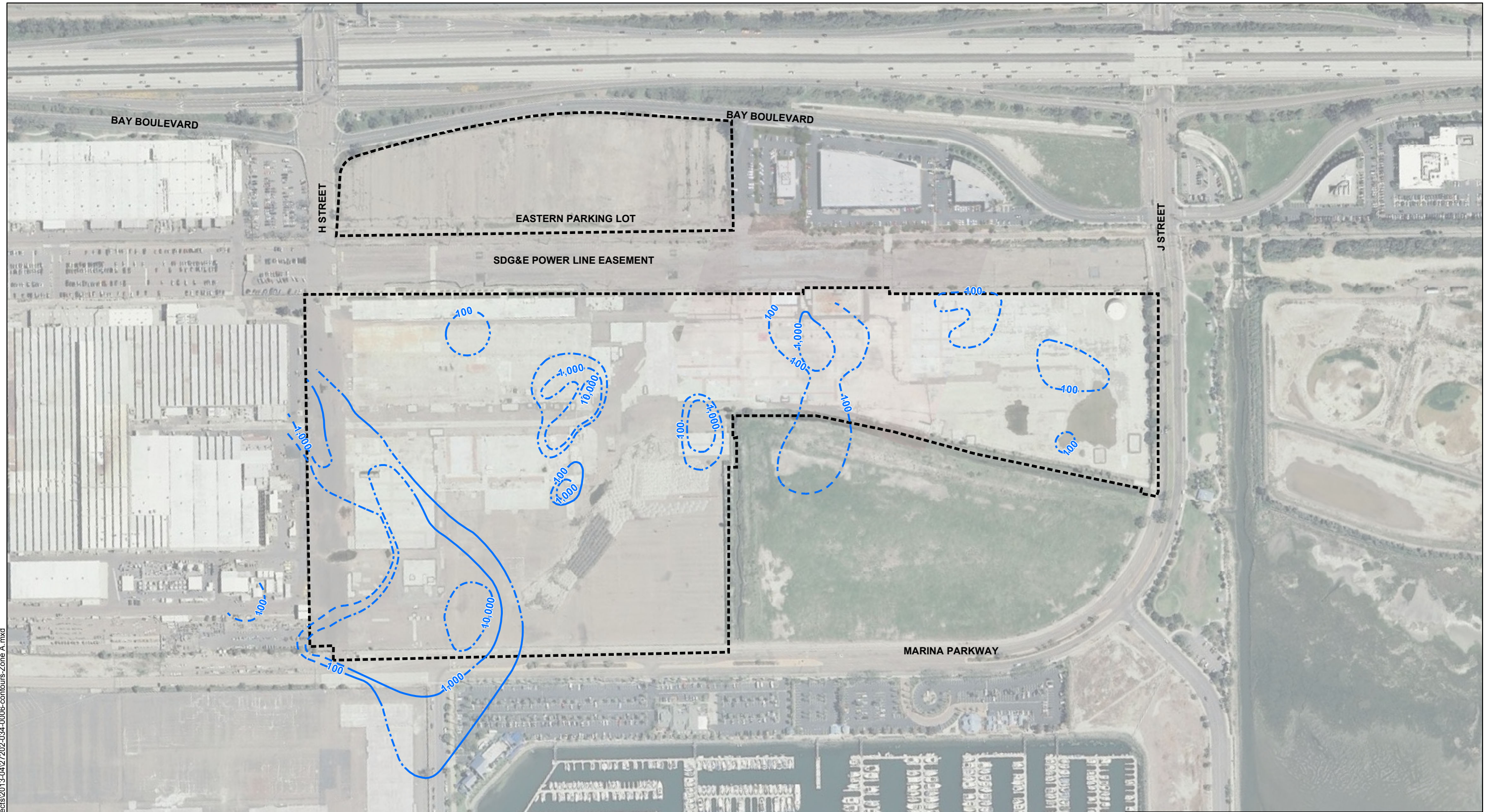
NOTES:
1. LOCATIONS AND DIMENSIONS OF SITE FEATURES ARE APPROXIMATE.



AREAS OF CONCERN REQUIRING ADDITIONAL SOIL CHARACTERIZATION, AND/OR REMEDIATION





SCALE: AS SHOWN
AUGUST 2013

FIGURE 5

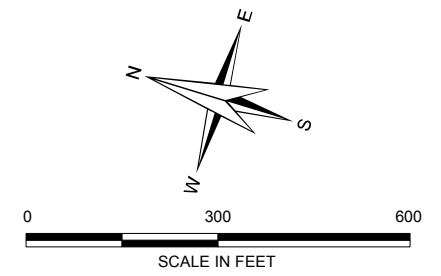


G:\27202_Goodrich\Global\GIS\Map\Projects\2013-04\27202-034-0006-contours-Zone A.mxd

LEGEND

-  TCE CONTOUR IN µg/L BASED ON MONITORING WELL DATA
-  INFERRED TCE CONTOUR IN µg/L ON CPT/DROPUNCH DATA AND/OR HISTORICAL MONITORING WELL DATA
-  INFERRED TCE CONTOUR IN µg/L BASED ON HISTORICAL SITE OPERATION
-  FORMER SOUTH CAMPUS FACILITY BOUNDARY

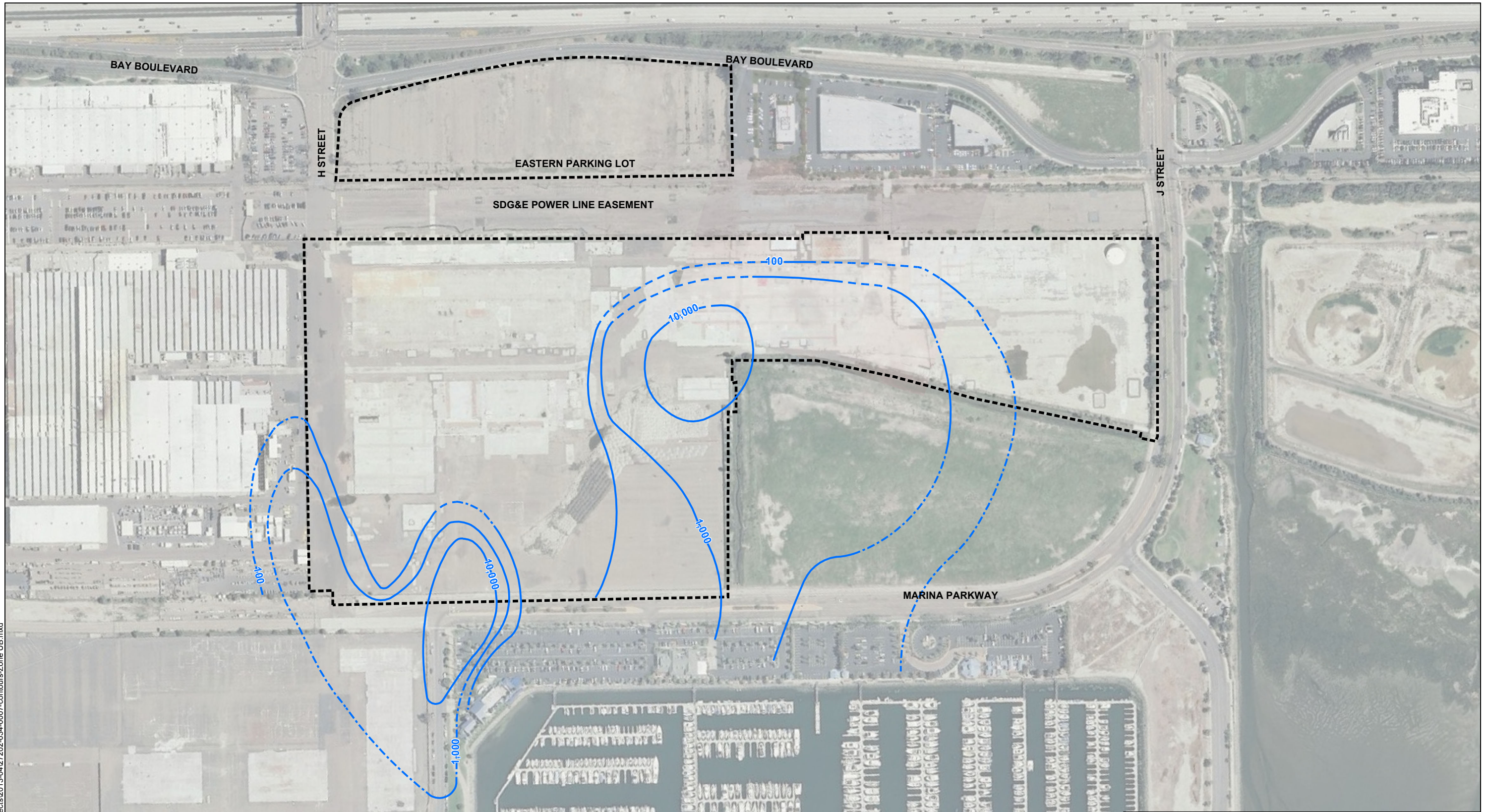
- NOTES:
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
 2. CONCENTRATIONS ARE IN MICROGRAMS PER LITER (µg/L).
 3. TRICHLOROETHYLENE (TCE) CONTOURS SHOWN AS AN EXAMPLE. OTHER CHEMICALS ARE PRESENT IN GROUNDWATER.
 4. CONTOURS SHOWN PUBLISHED IN 2009 REPORT TITLED "SITE CONCEPTUAL MODEL, SOUTH CAMPUS PROPERTY" (HALEY & ALDRICH).
 5. CONTOURS DERIVED USING COMPOSITE DATA FROM MONITORING WELL DATA AND CPT/HYDROPUNCH DATA (1999, 2000, 2006, AND 2008).
 6. HISTORICAL MAXIMUM CONCENTRATIONS USED AT THE MONITORING WELLS.



TCE CONTOURS IN ZONE A GROUNDWATER

SCALE: AS SHOWN
AUGUST 2013

FIGURE 6



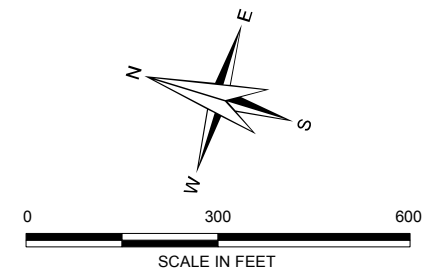
G:\27202_Goodrich\Global\GIS\Map\Projects\2013-04\27202-034-0007-contours-Zone UB.mxd

LEGEND

- TCE CONTOUR IN µg/L BASED ON MONITORING WELL DATA
- INFERRED TCE CONTOUR IN µg/L ON CPT/DROP PUNCH DATA AND/OR HISTORICAL MONITORING WELL DATA
- INFERRED TCE CONTOUR IN µg/L BASED ON HISTORICAL SITE OPERATION

FORMER SOUTH CAMPUS FACILITY BOUNDARY

- NOTES:**
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
 2. CONCENTRATIONS ARE IN MICROGRAMS PER LITER (µg/L).
 3. TRICHLOROETHYLENE (TCE) CONTOURS SHOWN AS AN EXAMPLE. OTHER CHEMICALS ARE PRESENT IN GROUNDWATER.
 4. CONTOURS SHOWN PUBLISHED IN 2009 REPORT TITLED "SITE CONCEPTUAL MODEL, SOUTH CAMPUS PROPERTY" (HALEY & ALDRICH).
 5. CONTOURS DERIVED USING COMPOSITE DATA FROM MONITORING WELL DATA AND CPT/HYDROPUNCH DATA (1999, 2000, 2006, AND 2008).
 6. HISTORICAL MAXIMUM CONCENTRATIONS USED AT THE MONITORING WELLS.



TCE CONTOURS IN UPPER ZONE B GROUNDWATER

SCALE: AS SHOWN
AUGUST 2013

FIGURE 7



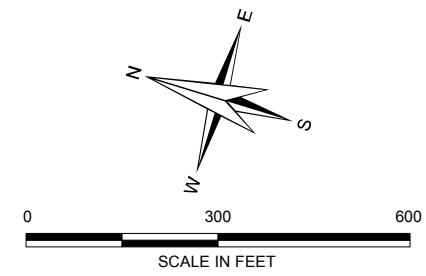
G:\27202_Goodrich\Global\GIS\Map\Projects\2013-04\27202-034-0008-contours-Zone LB.mxd

LEGEND

- TCE CONTOUR IN µg/L BASED ON MONITORING WELL DATA
- INFERRED TCE CONTOUR IN µg/L ON CPT/DROPUNCH DATA AND/OR HISTORICAL MONITORING WELL DATA
- INFERRED TCE CONTOUR IN µg/L BASED ON HISTORICAL SITE OPERATION

FORMER SOUTH CAMPUS FACILITY BOUNDARY

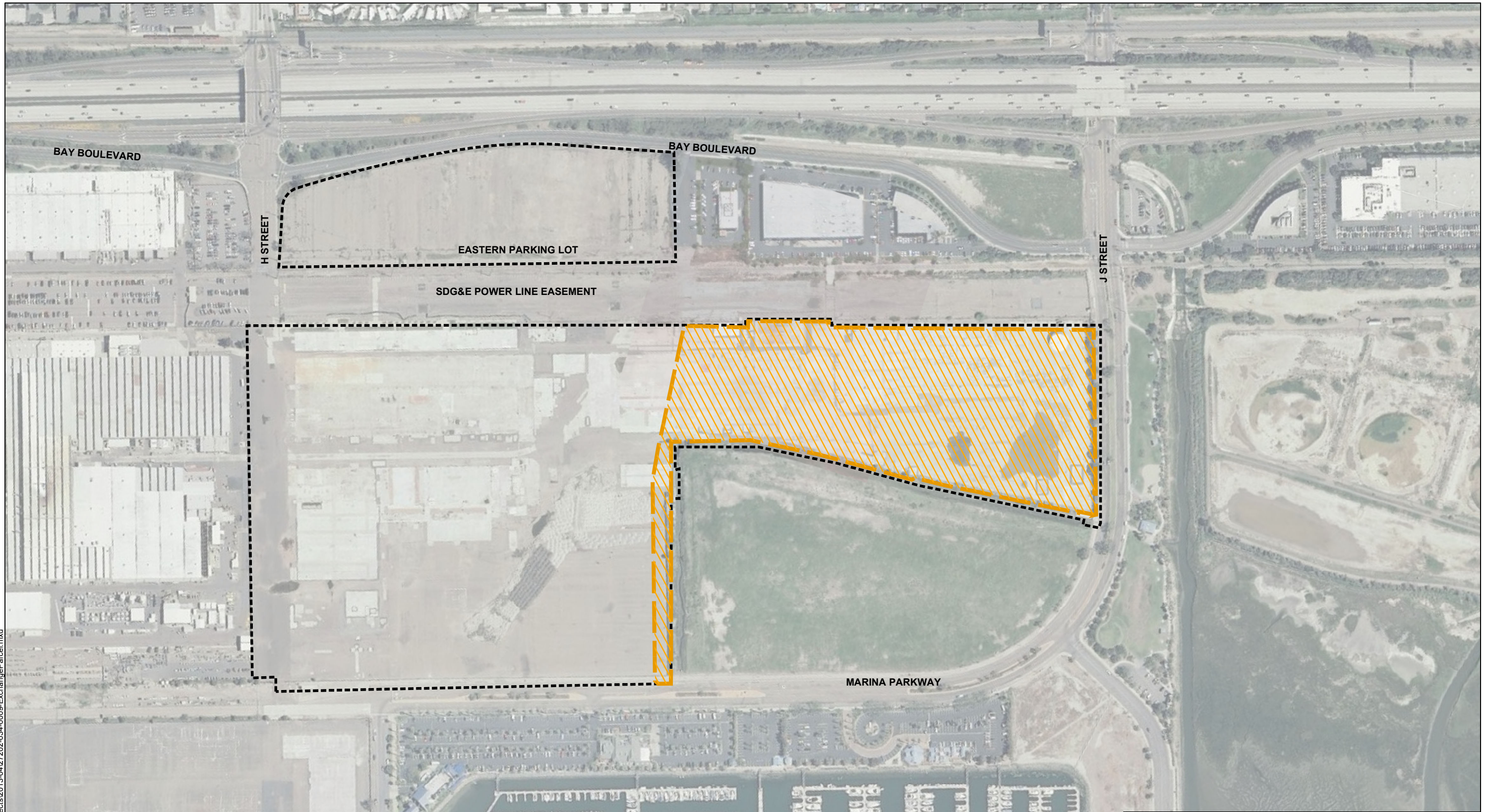
- NOTES:
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
 2. CONCENTRATIONS ARE IN MICROGRAMS PER LITER (µg/L).
 3. TRICHLOROETHYLENE (TCE) CONTOURS SHOWN AS AN EXAMPLE. OTHER CHEMICALS ARE PRESENT IN GROUNDWATER.
 4. CONTOURS SHOWN PUBLISHED IN 2009 REPORT TITLED "SITE CONCEPTUAL MODEL, SOUTH CAMPUS PROPERTY" (HALEY & ALDRICH).
 5. CONTOURS DERIVED USING COMPOSITE DATA FROM MONITORING WELL DATA AND CPT/HYDROPUNCH DATA (1999, 2000, 2006, AND 2008).
 6. HISTORICAL MAXIMUM CONCENTRATIONS USED AT THE MONITORING WELLS.



TCE CONTOURS IN LOWER ZONE B GROUNDWATER



SCALE: AS SHOWN
AUGUST 2013

FIGURE 8

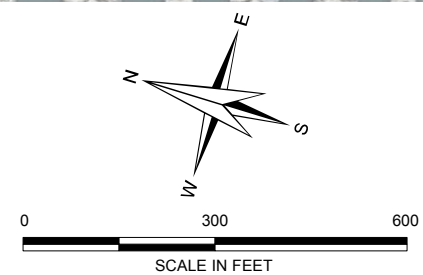


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LEGEND

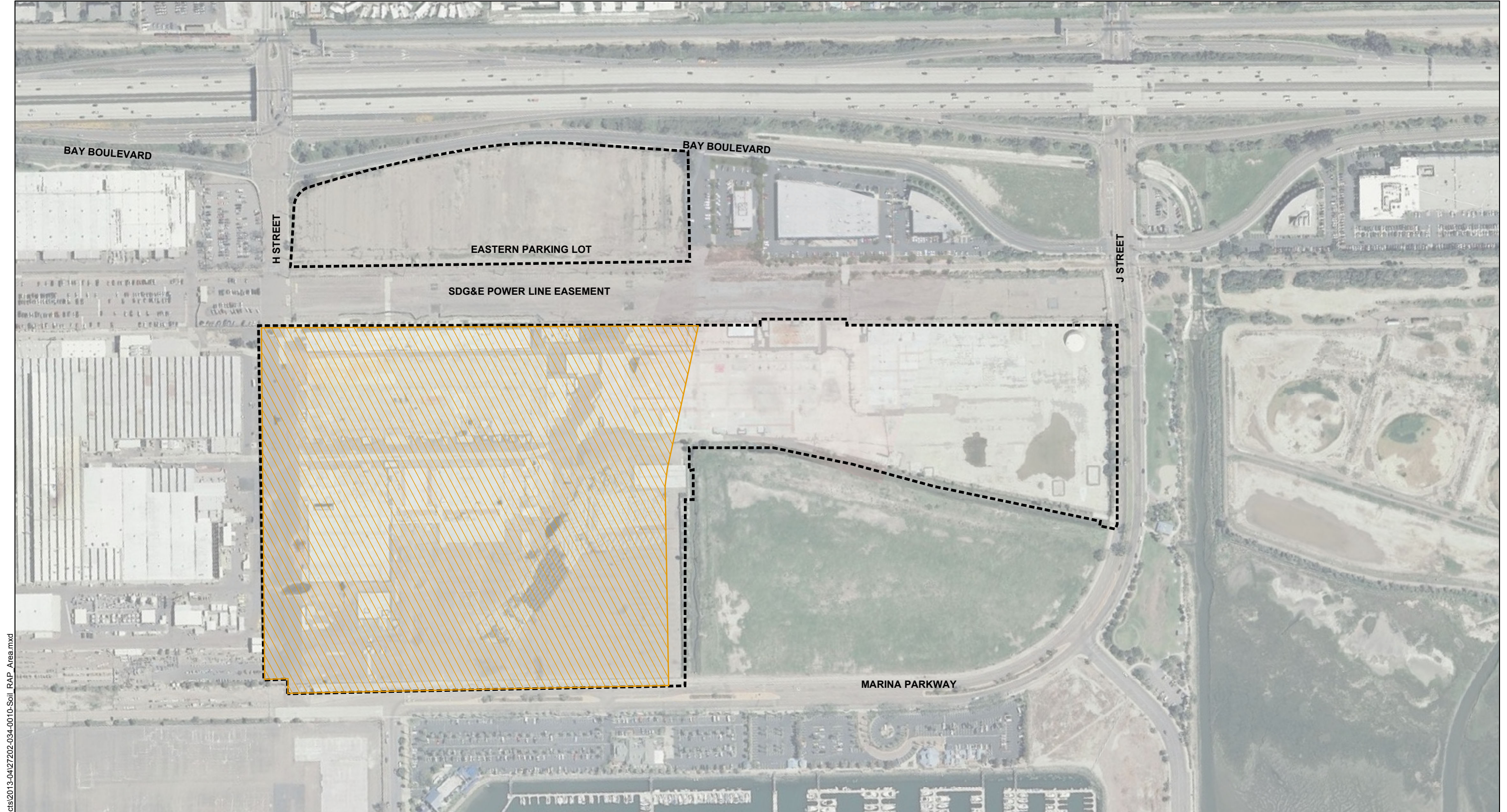
-  SOUTH CAMPUS EXCHANGE PARCEL SOIL RAP AREA
-  FORMER SOUTH CAMPUS FACILITY BOUNDARY

NOTES:
1. LOCATIONS AND DIMENSIONS OF SITE FEATURES ARE APPROXIMATE.





FORMER SOUTH CAMPUS FACILITY EXCHANGE PARCEL

SCALE: AS SHOWN
AUGUST 2013

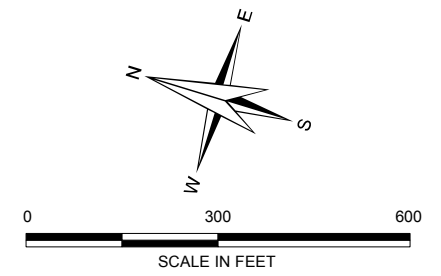


G:\27202_Goodrich\Global\GIS\MapProjects\2013-04\27202-034-0010-Soil_RAP_Area.mxd

LEGEND

-  SOIL AREA FOR REMAINDER OF SITE (EXCLUDES SOUTH CAMPUS EXCHANGE PARCEL; SEE FIGURE 8)
-  FORMER SOUTH CAMPUS FACILITY BOUNDARY

NOTES:
1. LOCATIONS AND DIMENSIONS OF SITE FEATURES ARE APPROXIMATE.



SOIL RAP AREA FOR REMAINDER OF FORMER SOUTH CAMPUS FACILITY

SCALE: AS SHOWN
AUGUST 2013

FIGURE 10

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION**

TECHNICAL REPORT

FOR

**CLEANUP AND ABATEMENT ORDER
NO. R9-2014-0019**

**AN ORDER DIRECTING ROHR AND GOODRICH CORPORATION TO
CLEANUP AND ABATE THE EFFECTS OF WASTE AND SUBMIT
TECHNICAL AND MONITORING REPORTS PERTAINING
TO CORRECTIVE ACTIONS AT FORMER
ROHR/GOODRICH SOUTH CAMPUS FACILITY,
CHULA VISTA, SAN DIEGO COUNTY**

This technical report provides the rationale and technical information supporting Findings 1, 7, 15, and 19 of Cleanup and Abatement Order (CAO) No. R9-2014-0019. The text of the CAO finding is presented first, followed by a summary of the rationale and factual evidence supporting the finding.

FINDING 1 OF CAO NO. R9-2014-0019 STATES:

Cleanup and Abatement Order No. 98-08. In 1998, the San Diego Water Board issued to Rohr, Inc., operating as BF Goodrich Aerospace Aerostructures Group, and its parent company, the BF Goodrich Company, Cleanup and Abatement Order (CAO) No. 98-08.¹ CAO No. R9-2014-0019 supplements the provisions of CAO No. 98-08. Except as superseded by the findings and directives set forth in this CAO, all of the previous findings and directives of CAO No. 98-08 remain in full force and effect. CAO No. 98-08 addresses the cleanup and abatement of wastes discharged at the property located at the foot of H Street in Chula Vista, California. The property consists of a North Campus Facility and a South Campus Facility (Figure 1). CAO No. 98-08 includes directives to (1) provide a site-wide environmental site assessment, (2) conduct a comprehensive storm water runoff sampling program, (3) conduct a comprehensive storm water conveyance system investigation, (4) perform a site-wide data compilation and evaluation, and (5) conduct interim remedial actions. The first four directives have been completed, and all subsequent activities have been conducted as interim remedial measures pursuant to the fifth directive (described in Finding 19 below).

¹ Pursuant to Cleanup and Abatement Order No. 98-08, the Dischargers conducted site investigations, completed interim remedial actions, and submitted technical and monitoring reports described in the Technical Report.

RATIONALE AND TECHNICAL INFORMATION SUPPORTING FINDING 1:

The Dischargers submitted the following reports in accordance with the Directives in CAO No. 98-08:

| DIRECTIVE | DUE DATE | DATE SUBMITTED |
|---|---------------|----------------------------|
| Directive A – Provide Sitewide Environmental Site Assessment | June 4, 1998 | June 4, 1998 ² |
| Directive B – Conduct Comprehensive Storm Water Runoff Sampling | May 11, 1998 | May 11, 1998 ³ |
| Directive C – Conduct a Comprehensive Storm Water Conveyance System Investigation | July 13, 1998 | July 13, 1998 ⁴ |
| Directive D – Perform Sitewide Data Compilation and Evaluation | May 27, 1998 | May 27, 1998 ⁵ |
| Directive E - Interim Remedial Action(s) | As Needed | Ongoing |

The Dischargers also conducted the following site assessment, site investigations, and additional activities:

I. Phase I Assessment

On behalf of the Dischargers, Adrian Brown Consultants conducted a Phase I Environmental Site Assessment in 1998 in accordance with Directive A of CAO No. 98-08. Adrian Brown Consultants concluded the following:

- a. Potential environmental conditions associated with the majority of the site’s surface area are limited. The property is, in general, unlikely to be broadly impacted by the industrial activities which have taken place since 1941, due to the presence of paving over much of the site since the inception of manufacturing activities.

² Adrian Brown Consultants. 1998. ASTM Phase I Site Assessment, BF Goodrich Aerospace, Foot of “H” Street. June 4.

³ Woodward-Clyde Consultants. 1998. Report of Comprehensive Storm Water Runoff Sampling, March – April 1998, Rohr, Inc., Chula Vista, California. May 11.

⁴ Woodward-Clyde Consultants. 1998. Storm Water Conveyance System Investigation Report, Rohr, Inc., Chula Vista, California. July 13.

⁵ Woodward-Clyde Consultants. 1998. Data Compilation and Evaluation Report, Rohr, Inc., Chula Vista, California. May 27.

- b. Nine specific locations on the property appear to have been impacted by the release of hydrocarbons, solvents, metals, acids, and salts. At each of these locations remediation is complete, ongoing, or planned.
- c. Several locations on the property contain or have contained activities that have a potential to cause impact to the environment. While no evidence of past releases was observed, these locations have been identified as areas where a potential for a release exists.

II. Phase I/II Site Investigation

On behalf of the Dischargers, URS Greiner Woodward-Clyde (URS) and SECOR conducted a site-wide Phase I/II site investigation in 1999 consisting of the following:⁶

- a. Drilled 174 direct-push soil borings and collecting over 200 soil samples and 146 drop-punch groundwater samples;
- b. Sampled three existing monitoring wells;
- c. Advanced 21 Cone Penetrometer Test (CPT) soil borings to depths of approximately 100 feet and collected groundwater samples at multiple depths; and
- d. Collected two polychlorinated biphenyl (PCB) wipe samples. One from the concrete floor beneath the coils of a transformer located in Building 5 and one from the bottom of a vault beneath hydraulic equipment located in Building 36.

III. Supplemental Phase II Investigation

On behalf of the Dischargers, Ogden Environmental and Energy Services Co., Inc. (Ogden) conducted a supplemental Phase II investigation in 2000 consisting of the following:⁷

- a. Conducted a site-wide soil gas survey;
- b. Advanced 56 direct-push soil borings across the site and collected soil and groundwater samples;
- c. Drilled one hand-auger soil boring in Zone A;
- d. Installed nine nested monitoring wells screened in both the Upper and Lower Zone B groundwater;

⁶ URS Greiner Woodward-Clyde. 1999. Phase II Subsurface Investigation Report, South Campus, BF Goodrich Aerostructures Facility, Chula Vista, California. October 20.

⁷ Haley & Aldrich, Inc. 2001. Supplemental Phase II Investigation, Goodrich South Campus Facility, Chula Vista, California. June.

- e. Installed 10 monitoring wells screened in the Upper Zone B groundwater;
- f. Conducted slug tests at six nested monitoring wells;
- g. Conducted a tidal study at selected monitoring wells; and
- h. Collected six sediment and surface water samples in the L-Ditch.

IV. Additional Activities and Reports

The Dischargers have conducted various additional activities as documented in the following technical and monitoring reports submitted to the San Diego Water Board. The activities conducted include, but are not limited to: (1) removed and closed underground storage tanks (USTs), vaults, and sumps in accordance with County of San Diego Department of Environmental Health (DEH) oversight, (2) conducted a pilot test at Boring 58, (3) installed 33 additional on-site and off-site monitoring wells, and (4) conducted an off-site CPT investigation.

| REPORT TITLE | REPORT DATE |
|--|-------------|
| Work Plan Additional Monitoring Well Installations | 9/01/01 |
| Shallow Soil Interim Remedial Action Evaluation | 11/30/01 |
| Work Plan, Boring 58 Shallow Soil Excavation Pilot Test | 2/15/02 |
| Boring 58 Shallow Soil Excavation Pilot Test Results | 7/15/02 |
| Fourth Round Groundwater Monitoring and Supplemental Monitoring Well Installation Report | 4/15/02 |
| Work Plan for 40,000 Gallon Sump Pre-Removal Delineation | 7/01/03 |
| Report on Source Area Soil Delineation Activities | 4/24/03 |
| Workplan Submittal for South Campus Facility Equipment Vault/Sump Abandonment | 06/01/03 |
| Workplan Submittal for South Campus Facility Sump Closure | 7/01/03 |
| Report on Vault/Sump Abandonment T016, T017, T028, T030, T031 & T032 (submitted to County of San Diego Department of Environmental Health) | 10/01/03 |
| Workplan for Sump Closure | 6/23/03 |
| Report on Decommissioning of Sumps T013, T037, T038, and T039 | 1/29/04 |
| Work Plan for Groundwater Monitoring Well Installation | 03/01/04 |
| Monitoring Well Installation and Annual Round 2004 Groundwater Monitoring Report | 10/01/04 |
| Hydrogeologic and Ground Water Quality Evaluation Report | 11/01/04 |
| Work Plan for Sediment Sampling, L-Ditch and Storm | 10/01/05 |

| REPORT TITLE | REPORT DATE |
|--|------------------------------|
| Water Conveyance System | |
| L-Ditch Surface Water Sampling, L-ditch Sediment Sampling Work Plan Addendum | 1/04/06 |
| Sediment Sampling Workplan for L-Ditch, dated 10/21/2005, and addenda | 1/04/06 |
| Sediment Sampling Report for L-Ditch | 5/23/06 |
| Soil Gas Survey Work Plan | 2/01/06 |
| 2006 Soil Gas Survey Results | 10/01/06 |
| Human Health Risk Assessment Work Plan | 3/01/06 |
| Additional Information for UST Removal Activities Nos. 15 & 16 | 12/10/06 |
| Report on Off-Site Groundwater Investigation Report | 1/08/07 |
| Off-site Groundwater Monitoring Well Installation Workplan | 10/2/07 |
| Off-Site Monitoring Well Installation Report and Groundwater Monitoring report | 5/21/09 |
| Data Gap Assessment Report | 12/12/07 |
| Site Conceptual Model Report | 8/17/09 |
| Workplan for Groundwater Assessment Adjacent to Storm Drain | 10/29/10 revised 11/24/10 |
| L-Ditch Remedial Action Plan | 3/18/11 |
| L-Ditch Remediation Completion Report | 4/27/12 |
| Soil Excavation Workplan | 7/30/09 addenda 3/10/11 |
| Soil Excavation Report | 4/30/12 |
| Revised Supplemental Site Assessment Workplan | 12/04/12 |
| Revised Bioremediation Pilot Test Workplan | 3/13/13 |
| Background Metals Concentrations in Groundwater Evaluation | 12/19/12 |
| Groundwater Monitoring Reports | 8/01/01 - ongoing |
| Revised H Street Construction Environmental Monitoring Plan | 2/15/13 |
| Monitoring Well Construction and Replacement Work Plan | 4/12/13 |
| Hexavalent Chromium Soil Background Evaluation | 6/17/13 |
| Groundwater Monitoring Program and 2013 Groundwater Monitoring Plan | 7/19/13 |
| Bioremediation Quarterly Monitoring Report | 7/31/13 |
| Demolition Environmental Monitoring Plan | 8/1/13 |

FINDING 7 OF CAO NO. R9-2014-0019 STATES:

Unauthorized Discharge of Chemical Waste. The property consists of a North Campus Facility and a South Campus Facility. The North Campus Facility is approximately 86 acres and is bounded by F & G Street Marsh to the north, Bay Boulevard to the east, Marina Parkway to the west, and the proposed extension of H

Street to the south. The South Campus Facility is approximately 59 acres and is bounded by the proposed extension of H Street to the north, Bay Boulevard to the east, and Marina Parkway and a former wetlands drainage ditch (L-Ditch) to the southwest and west, respectively.

In 1999, ownership of the property occupied by the South Campus Facility was transferred from Rohr to the San Diego Unified Port District (Port). In 2002, Rohr vacated the property and moved all manufacturing operations to the North Campus Facility. In 2007, the Port demolished all of the South Campus Facility buildings in preparation for redevelopment activities⁸ with the exception of building foundations, slabs, pavement, and subsurface utilities.⁹ Port staff is currently preparing plans for the next phase of demolition at the South Campus Facility for consideration and approval by the Board of Port Commissioners. The plans will occur in phases, which will include the removal of building slabs, roadways, pavements, and the entire storm water conveyance system (SWCS) including the 84-inch culvert that traverses the northern portion of the Facility. The SWCS consists of storm drain inlets, box drains, and laterals that drain storm water from the South Campus Facility to San Diego Bay through 3 major outfalls (Outfall Nos. 2, 3, and 4; Figure 2). Upon completion of the demolition, the South Campus Facility will be graded to allow storm water sheet flow to (1) discharge into the sand filter drainage trench (former L-Ditch), (2) discharge into the San Diego Gas & Electric power line easement where a future drainage project is being planned by Port staff, or (3) discharge into another conveyance system.

The types and levels of waste constituents found in the soil and groundwater at the South Campus Site are associated with the waste discharges from the historical manufacturing operations at the South Campus Facility. As such, they are wastes as defined in Water Code section 13050(d). These waste constituents consist of chlorinated solvents, metals, petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs).¹⁰ Over time, wastes discharged from the manufacturing operations into soil and groundwater at the South Campus Site caused violations of applicable water quality standards for groundwater. The discharges of wastes from the manufacturing operations to soil and groundwater, as well as continued migration of wastes in groundwater, have caused the concentrations of waste constituents in the groundwater to exceed applicable water

⁸ The Chula Vista Bayfront Master Plan (CVBMP) is a joint master planning process of the Port and the City of Chula Vista. It incorporates a Conceptual Plan for the redevelopment of this land that relies on the Polanco Redevelopment Act and the California Land Reuse and Revitalization Act of 2004. The purpose of the project is to develop a master plan that transforms the Chula Vista waterfront into a resort and conference destination. The proposed land uses include mixed use office/commercial, recreation, hotel, residential, and cultural/retail (Figure 3). The California Coastal Commission approved the CVBMP on August 9, 2012.

⁹ No residential uses are proposed on the former South Campus Facility. Residential uses are proposed on Parcels H-13 and H-14 (Figure 1).

¹⁰ "Waste" is very broadly defined in Water Code section 13050(d) and includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.

quality objectives and have therefore created a condition of pollution in waters of the State as defined in Water Code section 13050(l). The adverse changes in groundwater quality caused by the waste discharges are a contributing cause of interference with the Municipal and Domestic Supply (MUN)¹¹ designated beneficial use, and are potentially injurious to the public health. This water quality condition caused by the discharge constitutes a nuisance condition because it potentially interferes with and complicates the use of groundwater for drinking water purposes, and may be considered an obstruction to the free use of property as provided in Water Code section 13050(m).

Furthermore, pathways exist through which waste constituents from the South Campus Facility could have potentially migrated to San Diego Bay. The SWCS at the South Campus Facility provided and continues to provide a direct pathway for waste constituents in sediments to be discharged into San Diego Bay via storm water flow. The groundwater flow system also provides a pathway for dissolved constituents in groundwater to be discharged into pore water in bay bottom sediments, and into the water column of San Diego Bay. Waste discharges to San Diego Bay via these pathways have the potential to cause a condition of pollution and/or nuisance in San Diego Bay pursuant to Water Code section 13050.

RATIONALE AND TECHNICAL INFORMATION SUPPORTING FINDING 7:

I. Groundwater Beneficial Uses Impairment

Pursuant to the Basin Plan, the South Campus Site is situated at the west end of the Lower Sweetwater Hydrologic Area within the Sweetwater Hydrologic Unit (9.00). This area is designated with the following existing and potential beneficial uses of groundwater: Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), and Industrial Service Supply (IND).

The Basin Plan contains numeric water quality objectives¹² for chemical constituents to protect groundwater designated for MUN. The numeric objectives are derived from primary maximum contaminant levels (MCLs)¹³ established by the California Department of Public Health in Title 22 of the California Code of Regulations.¹⁴ Groundwater concentrations of organic and inorganic chemicals

¹¹ See Basin Plan, page 2-3. The Basin Plan defines MUN as “uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.”

¹² “Water quality objectives” are defined in Water Code section 13050(h) as “the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.”

¹³ Maximum contaminant levels from California Department of Public Health, <http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Chemicalcontaminants.aspx>.

¹⁴ Basin Plan, footnote 2, supra. Page 3-24 and Table 3-5 at page 3-25. The Basin Plan provides that “Water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels specified in California Code of Regulations, Title 22, Table 64444-A of section 64444 (Organic Chemicals) which is incorporated by reference into this plan. This incorporation by reference is prospective including future changes to the incorporated provisions as the changes take effect. (See Table 3-5.)”

beneath and adjacent to the South Campus Site are greater than the water quality objectives needed to support MUN uses of the groundwater, creating a condition of pollution and nuisance in waters of the State. Table 1 lists the maximum detected concentrations in groundwater that exceed the MCLs.

Table 1 – Maximum Detected Concentrations in Groundwater Exceeding Maximum Contaminant Levels

| Chemical Group | Chemical Constituents | Well | Max Detected Concentration (ug/L) | MCL (ug/L) |
|---------------------|--|---------------------------|-----------------------------------|------------|
| Inorganic Chemicals | Antimony | PMW-115(A) | 11.9 | 6 |
| | Arsenic | PMW-122(A) | 98.4 | 50 |
| | Cadmium | PMW-101(A) | 167 | 5 |
| | Chromium (total) | PMW-108(UB) | 1,100 | 50 |
| | Lead | PMW-104(LB) | 51.3 | 15 |
| | Nickel | PMW-110(UB) | 3,810 | 10 |
| | Thallium | PMW-103(A) | 13.5 | 2 |
| | Zinc | PMW-110(UB) | 12,800 | 5,000 |
| Organic Chemicals | Benzene | PMW-113(A) | 6.5 | 1 |
| | Carbon Tetrachloride | PMW-113(A) | 870 | 0.5 |
| | 1,1-Dichloroethane (1,1-DCA) | MW-98-2B | 690 | 5 |
| | 1,2-Dichloroethane (1,2-DCA) | PMW-101(A) | 1.7 | 0.5 |
| | 1,1-Dichloroethylene (1,1-DCE) | PMW-121(UB) | 800 | 6 |
| | cis-1,2-Dichloroethylene (cis-1,2-DCE) | PMW-113(UB) | 5,000 | 6 |
| | trans-1,2-Dichloroethylene (trans-1,2-DCE) | PMW-103(UB) | 500 | 10 |
| | Dichloromethane | PMW-113(A) | 170 | 5 |
| | Tetrachloroethylene (PCE) | PMW-102(UB) | 630 | 5 |
| | Toluene | PMW-113(A) | 330 | 150 |
| | 1,1,1-Trichloroethane (1,1,1-TCA) | MW-98-2B | 770 | 200 |
| | Trichloroethylene (TCE) | MW-103(UB) | 95,000 | 5 |
| | Vinyl Chloride | PMW-101(A) PMW-113(UB) | 320 | 0.5 |

II. San Diego Bay Beneficial Uses Impairment

a. San Diego Bay Beneficial Uses: The beneficial uses designated for San Diego Bay could be impaired from discharges of waste constituents from the South Campus Facility because the SWCS and groundwater pathways from the Facility to San Diego Bay are complete. The beneficial uses that could be impaired by these discharges include:

- Estuarine Habitat (EST);
- Marine Habitat (MAR);
- Wildlife Habitat (WILD);
- Rare, Threatened, or Endangered Species (RARE);
- Shellfish Harvesting (SHELL);
- Commercial and Sport Fishing (COMM);

Wastes discharged in the SWCS and groundwater from the South Campus Facility creates or threatens to create conditions that could adversely impact three target receptors: aquatic life – benthic community, aquatic-dependent wildlife, and humans. San Diego Bay beneficial uses applicable to each of these target receptors are the following:

Table 2 – San Diego Bay Beneficial Uses Associated with Target Receptors

| Beneficial Uses | Target Receptors |
|---|----------------------------------|
| Estuarine Habitat | Aquatic Life- Benthic Community |
| Marine Habitat | Aquatic Life - Benthic Community |
| Rare, Threatened, or Endangered Species | Aquatic Dependent Wildlife |
| Wildlife Habitat | Aquatic Dependent Wildlife |
| Commercial and Sport Fishing | Human Health |
| Shellfish Harvesting | Human Health |

b. Status of Storm Water Conveyance System: The SWCS at the South Campus Facility consists of storm drain inlets and box drains that drain storm water from the 59-acre Facility into San Diego Bay through 3 major outfalls: Outfall Nos. 2, 3, and 4. However, storm water discharge to Outfalls 3 and 4 has been discontinued and discharge pipes have been plugged as part of the L-Ditch remediation. In preparation for redevelopment activities along the bay front, the Port plans on removing the entire SWCS including the 84-inch reinforced concrete pipe (RCP) culvert that traverses the northern portion of the South Campus Facility (discussed below).

1. Outfall No. 2. Outfall No. 2 consists of an 84-inch RCP culvert and is located northwest of the South Campus Facility near Sandpiper Way.

Storm water runoff from approximately 81 acres from the central and northeast portions of the South Campus Facility and North Campus Facility, respectively, discharges into the Chula Vista Marina in San Diego Bay via Outfall No. 2. Approximately 72 inlets and three box drains are located in the Outfall No. 2 catchment area of the North Campus and South Campus Facilities. A large component of flow into Outfall No. 2 also enters the property from the east, which includes runoff from landscape irrigation in the I-5 right-of-way and continuous drainage flow from Interstate 5 freeway.

In preparation for redevelopment activities, the Port has plugged some of the inlets within the Outfall No. 2 catchment area of the South Campus Facility. The remaining inlets are active and will continue to collect storm water runoff until the next phase of the South Campus demolition. This demolition phase will include the removal of all inlets (active and inactive), box drains, and laterals within the Outfall No. 2 catchment area of the South Campus Facility, including the 84-inch RCP culvert beneath the Facility. Upon completion of the demolition, the South Campus Facility will be graded to allow storm water sheet flow to (1) discharge into the sand filter drainage trench (former L-Ditch), (2) discharge into the SDG&E power line easement where a future drainage project is being planned by Port staff, or (3) discharge into another conveyance system. All storm water shall be managed in accordance with Order No. 2009-0009-DWQ, *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities*, and Order No. R9-2013-0001, *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region*.

- 2. Outfall No. 3.** Outfall No. 3 consists of twin 48-inch concrete pipes and is located west of the South Campus Facility. Storm water runoff from approximately 29 acres of the south-central portion of the Facility discharged into the former L-Ditch and then into the Chula Vista Marina in San Diego Bay via Outfall No. 3. Storm water discharge from the South Campus Facility to Outfall 3 has been discontinued and all discharge pipes have been plugged as part of the L-Ditch remediation. Approximately 26 storm drain inlets and four box drains are located in the Outfall No. 3 catchment area of the South Campus Facility. Outfall No. 3 also drains a portion of an off-site, approximately 10-acre, undeveloped lot west of the South Campus Facility that is owned and maintained by the Port.

In preparation for redevelopment activities, the Port has plugged all inlets within the Outfall No. 3 catchment area of the South Campus Facility. Storm water sheet flow will temporarily discharge into the sand filter drainage trench (former L-Ditch) until completion of the South Campus demolition. The next demolition phase will include the removal of all inlets, box drains, and laterals within the Outfall No. 3 catchment area. Upon completion of the demolition, the South Campus Facility will be graded to

allow storm water sheet flow to (1) discharge into the sand filter drainage trench, (2) discharge into the SDG&E power line easement where a future drainage project is being planned by Port staff, or (3) discharge into another conveyance system. All storm water shall be managed in accordance with Order No. 2009-0009-DWQ, *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities*, and Order No. R9-2013-0001, *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region*.

- 3. Outfall No. 4.** Outfall No. 4 consists of twin 36-inch concrete pipes and is located south of the South Campus Facility. Storm water runoff from approximately 14 acres of the southern area of the Facility discharged into the former L-Ditch, into the J Street Channel (Telegraph Creek) via Outfall No. 4, and then into San Diego Bay. Storm water discharge from South Campus to Outfall 4 has been discontinued and all discharge pipes have been plugged as part of the L-Ditch remediation. Approximately 12 storm drain inlets and three box drains are located in the Outfall No. 4 catchment area of the South Campus Facility. Outfall No. 4 also drains a portion of the off-site, undeveloped lot owned and maintained by the Port.

In preparation for redevelopment activities, the Port has plugged all inlets within the Outfall No. 4 catchment area of the South Campus Facility. Storm water sheet flow will temporarily discharge into the sand filter drainage trench (former L-Ditch) until completion of the South Campus demolition. The next demolition phase will include the removal of all inlets, box drains, and laterals within the Outfall No. 4 catchment area. Upon completion of the demolition, the South Campus Facility will be graded to allow storm water sheet flow to (1) discharge into the sand filter drainage trench, (2) discharge into the SDG&E power line easement where a future drainage project is being planned by Port staff, or (3) discharge into another conveyance system. All storm water shall be managed in accordance with Order No. 2009-0009-DWQ, *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities*, and Order No. R9-2013-0001, *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region*.

- 4. Sand Filter Drainage Trench.** The drainage trench is located southwest of the South Campus Facility between the Facility and an undeveloped property. The drainage trench was formerly known as the "L-Ditch." From July to December 2011, the L-Ditch was excavated to remove impacted sediments that posed a risk to human health and was backfilled with clean imported soil. The drainage trench is constructed with a sand filter and will

convey sheet flow runoff from the former South Campus Facility to Outfall Nos. 3 and 4 upon completion of demolition activities. All storm water shall be managed in accordance with Order No. 2009-0009-DWQ, *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities*, and Order No. R9-2013-0001, *National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds within the San Diego Region*.

- c. Impairment from Storm Water Conveyance System Pathway:** The beneficial uses designated for San Diego Bay may be impaired due to the discharge of impacted sediments from the SWCS and L-Ditch to San Diego Bay. These impacted sediments may have been discharged into San Diego Bay via storm water flow. A subsequent investigative order issued to the Dischargers is needed to assess the (1) sediments in all remaining SWCS components following demolition activities (e.g., inlets, box drains, laterals, outfalls, and the 84-inch RCP culvert beneath the Facility), and (2) quality of the marine sediments in San Diego Bay and J Street Channel potentially impacted by the discharge of wastes from the Facility via the SWCS and L-Ditch. Soil and groundwater onsite must be cleaned up and waste discharges to San Diego Bay abated prior to conducting assessment activities and potential remedial actions in San Diego Bay and J Street Channel to prevent potential recontamination of the marine sediments. This CAO, once fully executed, will prevent waste discharges from the former South Campus Facility to San Diego Bay.

In April and June 1998, the Dischargers collected sediment samples from the drain inlets associated with the SWCS to comply with the requirements of Section C of CAO No. 98-08. Additionally, in January 2006, the Dischargers collected sediment samples within the L-Ditch and immediately upstream of the SWCS concrete weirs. Based on the analytical results, contaminated sediments were present in the drains, L-Ditch, and weirs connected to Outfall Nos. 2, 3, and 4 at concentrations that exceed effects range median concentrations (ERM)¹⁵ and/or wildlife risk screening levels.¹⁶ Sediments at these concentrations in San Diego Bay pose a potential risk to aquatic life and aquatic-dependent wildlife beneficial uses (Tables 3 through 7).

¹⁵ National Oceanic and Atmospheric Administration. 1999. Sediment Quality Guidelines developed for the National Status and Trends Program. June 12.

¹⁶ Zeeman, Catherine. 2004. Technical Memorandum – Ecological Risk-Based Screening Levels for Contaminants in Sediments of San Diego Bay. U.S. Fish and Wildlife Service. December 8.

Table 3 – Maximum Sediment Concentrations in Outfall Drains Potentially Impairing Aquatic Life Beneficial Uses

| Outfall No. | Chemical Group | Chemical Constituents | Station/Drain No. | Max Sediment Concentration | ERM |
|-------------|--------------------|-----------------------|-------------------|----------------------------|-------|
| 2 | Organics (ug/kg) | Chrysene | R1 | 3,160 | 2,800 |
| | | Fluoranthene | R1 | 15,400 | 5,100 |
| | | Phenanthrene | R1 | 25,700 | 1,500 |
| | | Pyrene | R1 | 13,800 | 2,600 |
| | Inorganics (mg/kg) | Cadmium | R67 | 40 | 9.6 |
| | | Chromium | R118 | 24,300 | 370 |
| | | Copper | R1 | 1,550 | 270 |
| | | Lead | R2 | 24,100 | 218 |
| | | Mercury | R36 | 12 | 0.71 |
| | | Nickel | R49 | 605 | 51.6 |
| | | Silver | R80 | 39 | 3.7 |
| Zinc | R1 | 25,900 | 410 | | |
| 3 | Organics (ug/kg) | Acenaphthene | 3-WC-8 | 2,020 | 500 |
| | | Anthracene | 3-WC-8 | 1,920 | 1,100 |
| | | Benzo(a)anthracene | 3-WC-8 | 2,640 | 1,600 |
| | | Benzo(a)pyrene | 3-WC-8 | 2,500 | 1,600 |
| | | Chrysene | 3-WC-8 | 3,280 | 2,800 |
| | | Fluoranthene | 3-WC-8 | 10,400 | 5,100 |
| | | Phenanthrene | 3-WC-8 | 1,800 | 1,500 |
| | | Pyrene | 3-WC-8 | 9,190 | 2,600 |
| | Inorganics (mg/kg) | Cadmium | 3-WC-8 | 45 | 9.6 |
| | | Chromium | 3-WC-12 | 2,280 | 370 |
| | | Copper | 3-WC-8 | 1,430 | 270 |
| | | Lead | 3-WC-8 | 960 | 218 |
| | | Mercury | 3-WC-10A | 23.3 | 0.71 |
| | | Nickel | 3-WC-8 | 3,060 | 51.6 |
| | | Silver | 3-WC-8 | 15 | 3.7 |
| Zinc | 3-WC-8 | 5,800 | 410 | | |
| 4 | Inorganics (ug/kg) | Lead | R138 | 473 | 218 |
| | | Zinc | R138 | 1,550 | 410 |

Table 4 – Maximum Sediment Concentrations in Outfall Drains Potentially Impairing Aquatic-Dependent Wildlife Beneficial Uses

| Outfall No. | Chemical | Station/Drain No. | Max Sediment Concentration (mg/kg) | Wildlife Screening Levels (mg/kg) | Receptor |
|-------------|----------|-------------------|------------------------------------|-----------------------------------|-------------------|
| 2 | Arsenic | R36 | 22 | 14 | Fish |
| | Cadmium | R67 | 40 | 0.43 | Fish |
| | Copper | R1 | 1,550 | 73 | Wigeon |
| | Lead | R2 | 24,100 | 1.03 | Wigeon |
| | Mercury | R36 | 12 | 0.05 | Tern |
| | Nickel | R49 | 605 | 34 | Tern and Sea Lion |
| | Zinc | R1 | 25,900 | 157 | Tern |
| 3 | Cadmium | 3-WC-8 | 45 | 0.43 | Fish |
| | Copper | 3-WC-8 | 1,430 | 73 | Wigeon |
| | Lead | | 960 | 1.03 | Wigeon |
| | Mercury | 3-WC-10A | 23.3 | 0.05 | Tern |
| | Nickel | 3-WC-8 | 3,060 | 34 | Tern and Sea Lion |
| | Zinc | 3-WC-8 | 5,800 | 157 | Tern |
| 4 | Lead | R138 | 473 | 1.03 | Wigeon |
| | Mercury | R138 | 0.09 | 0.05 | Tern |
| | Zinc | R138 | 1,550 | 157 | Tern |

Table 5 – Maximum Sediment Concentrations in L-Ditch Potentially Impairing Aquatic Life Beneficial Uses

| Chemical Group | Chemical Constituents | Max Sediment Concentration | ERM |
|--------------------|-----------------------|----------------------------|-------|
| Organics (ug/kg) | Benzo(a)anthracene | 4,300 | 1,600 |
| | Benzo(a)pyrene | 5,100 | 1,600 |
| | Fluoranthene | 7,900 | 5,100 |
| | Phenanthrene | 5,900 | 1,500 |
| | PCBs | 1,200 | 180 |
| | Pyrene | 22,000 | 2,600 |
| Inorganics (mg/kg) | Cadmium | 16.8 | 9.6 |
| | Chromium | 3,090 | 370 |
| | Copper | 535 | 270 |
| | Lead | 433 | 218 |
| | Mercury | 1.87 | 0.71 |
| | Nickel | 143 | 51.6 |
| | Silver | 8.95 | 3.7 |
| | Zinc | 7,170 | 410 |

Table 6 – Maximum Sediment Concentrations in L-Ditch Potentially Impairing Aquatic-Dependent Wildlife Beneficial Uses

| | Chemical | Max Sediment Concentration | Wildlife Screening Levels | Receptor |
|--------------------|----------|----------------------------|---------------------------|-------------------|
| Organics (ug/kg) | PCBs | 1,200 | 1.3 | Tern |
| Inorganics (mg/kg) | Arsenic | 18.5 | 14 | Fish |
| | Cadmium | 16.8 | 0.43 | Fish |
| | Copper | 535 | 73 | Wigeon |
| | Lead | 433 | 1.03 | Wigeon |
| | Mercury | 1.87 | 0.05 | Tern |
| | Nickel | 143 | 34 | Tern and Sea Lion |
| | Zinc | 7,170 | 157 | Tern |

Table 7 – Maximum Sediment Concentrations in Concrete Weirs Potentially Impairing Aquatic Life Beneficial Uses

| Chemical Group | Chemical Constituents | Max Sediment Concentration | ERM |
|--------------------|-----------------------|----------------------------|------|
| Organics (ug/kg) | PCBs | 470 | 180 |
| Inorganics (mg/kg) | Cadmium | 10.6 | 9.6 |
| | Lead | 398 | 218 |
| | Nickel | 86 | 51.6 |
| | Silver | 14.5 | 3.7 |
| | Zinc | 3,910 | 410 |

d. Potential Impairment from Groundwater Pathway: The following monitoring wells are located along the Chula Vista Marina’s shoreline: PMW-121, PMW-122, PMW-124, PMW-125, and PMW-126. These monitoring wells are the points-of-compliance and the San Diego Water Board believes these to represent the pollutant concentrations that could be present in the pore water and/or water column if discharged into the Chula Vista Marina in San Diego Bay.

The point-of-compliance wells contain concentrations of pollutants in excess of the California Toxics Rule (CTR) water quality standards for aquatic life and human health.¹⁷ Table 8 lists the maximum concentrations detected in several point-of-compliance wells exceeding CTR water quality criteria. These COCs are expected to be discharged directly into the water column or through the

¹⁷ Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; Rule. 40 CFR Part 131. U.S. EPA, Region IX, Water Division, San Francisco, CA. May 18, 2000.

Bay's bottom sediments and into the pore water where benthic organisms reside. The model assumes continued VOC plume migration toward the Marina with no attenuation. Based on this assumption, the results indicate that VOCs discharged from groundwater to the marina will result in concentrations that are below the CTR values as a result of the hydraulic flushing of the Marina.

As part of the final Cleanup and Abatement Completion Report (Directive Q), the Dischargers, however, shall conduct a final groundwater chemical fate and transport model to verify that the residual pollutant concentrations in groundwater after remediation are protective of the beneficial uses designated for San Diego Bay.

Table 8 – Maximum Groundwater Concentrations in Point-of-Compliance Wells Exceeding California Toxics Rule Water Quality Criteria

| Chemical Group | Chemical Constituents | Well | Max Groundwater Concentration (ug/L) | California Toxics Rule (ug/L) | | |
|---------------------|-----------------------|-------------|--------------------------------------|-------------------------------|-----|-------|
| | | | | CMC | CCC | HH |
| Inorganic Chemicals | Arsenic | PMW-122(A) | 98.4 J | 69 | 36 | -- |
| | Copper | PMW-122(A) | 102 | 3.8 | 3.1 | -- |
| | Lead | PMW-121(UB) | 15 | 210 | 8.1 | -- |
| | Nickel | PMW-121(UB) | 466 | 74 | 8.2 | 4,600 |
| | Zinc | PMW-122(UB) | 6,980 | 90 | 81 | -- |
| Organic Chemicals | 1,1-DCE | PMW-121(UB) | 800 | -- | -- | 3.2 |
| | PCE | PMW-121(UB) | 230 | -- | -- | 8.85 |
| | TCE | PMW-121(UB) | 6,700 | -- | -- | 81 |

J = reported value is between the analytical method detection limit and the reporting limit.

CMC = Criteria Maximum Concentration. CMC equals the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time without deleterious effects.

CCC = Criteria Continuous Concentration. CCC equals the highest concentration of a pollutant to which aquatic life can be exposed to an extended period of time (4 days) without deleterious effects.

HH = Human Health (10⁻⁶ risk for carcinogens) for consumption of organisms only.

FINDING 15 OF CAO NO. R9-2014-0019 STATES:

Human Health Risks from Exposure to Wastes Discharged. There are potential adverse health risks to humans during and after site redevelopment activities due to the wastes discharged to soil and groundwater from the South Campus Facility. Based on

the results of the exposure area-specific risk assessment, there are potential cancer and non-cancer risks to the following receptors:¹⁸

- On-site construction worker during site redevelopment;
- On-site landscaper (including utility worker) after site redevelopment;
- On-site commercial/industrial worker after site redevelopment; and
- On-site hotel guest (including recreational user) after site redevelopment.

RATIONALE AND TECHNICAL INFORMATION SUPPORTING FINDING 15:

I. Exposure Area-Specific Human Health Risk Assessment

An exposure area-specific risk assessment was conducted to evaluate the potential health risks to future on-site and off-site human receptors from wastes discharged to soil and groundwater. Exposure Areas (EAs) were identified in the areas where sample results exceeded the human health screening levels. The EAs represent the smallest reasonable building and lot sizes that would be developed at the Site. Based on the results of the exposure area-specific risk assessment, the cumulative incremental lifetime cancer risk (ILCR) and/or total Hazard Index (HI) exceeded the acceptable thresholds for 4 of 5 receptors.

Table 9 – Exposure Areas Posing Unacceptable Risk to Receptors

| Human Receptor | ILCR and/or HI Exceeded | Exposure Areas Posing Unacceptable Risk |
|--|--------------------------------|--|
| On-site construction worker during site redevelopment | Yes | EA-1 to EA-5 EA-7 to EA-11 EA-16 |
| On-site landscaper (including utility worker) after site redevelopment | Yes | EA-1 to EA-5 EA-8 to EA-11 |
| On-site commercial/industrial worker after site redevelopment | Yes | EA-3 to EA-5 EA-7 to EA-13 EA-16 |
| On-site hotel guest (including recreational user) after site redevelopment | Yes | EA-3 EA-4 EA-8 to EA-11 EA-16 |
| Off-site commercial worker prior to, during, after site redevelopment | No | None |

¹⁸ There are no potential adverse health risks to the (1) off-site commercial worker prior to, during, and after site redevelopment, (2) off-site recreator in the Marina, and (3) hypothetical off-site, up-gradient municipal groundwater supply user. Also, there are no potential adverse health risks to future residents on Parcels H-13 and H-14 from inhalation of vapors in buildings due to possible subsurface vapor intrusion.

NOTES:

1. The cumulative ILCR threshold of 1×10^{-5} was used for the construction worker, landscaper, and commercial/industrial worker.
2. The cumulative ILCR threshold of 1×10^{-6} was used for the hotel guest (including recreational user).
3. The total noncancer HI threshold of 1.0 was used for all receptors.
4. The exposure areas are shown in Figure 4 of CAO No. R9-2014-0019.

II. Groundwater Chemical Fate and Transport Modeling

A flow model was developed to evaluate the potential health risks to the following off-site human receptors from wastes discharged to groundwater:

- Off-site recreator in the Marina located west of the South Campus Site
- Hypothetical off-site, up-gradient municipal groundwater supply user

An off-site recreator can potentially be exposed to impacted surface water within the Marina due to the movement of contaminants in the groundwater. An off-site municipal groundwater supply user can potentially be exposed to contaminants in the groundwater due to pumping water from the San Diego Formation. Based on the results of the model, there are no adverse human health risks to these receptors.

III. L-Ditch Post Remediation Human Health Risk Assessment

A risk assessment was conducted using the analytical results of the sediment samples remaining in-place after excavation of the L-Ditch. Based on the results of the risk assessment, the cumulative ILCR and total HI are less than or equal to the acceptable thresholds for the receptors evaluated:

- On-site construction worker during site redevelopment
- On-site landscaper after site redevelopment
- Off-site resident after site redevelopment

Therefore, there are no adverse human health risks from the L-Ditch. The cumulative ILCR threshold of 1×10^{-5} was used for the construction worker and landscaper. The cumulative ILCR threshold of 1×10^{-6} was used for the resident. A total noncancer HI threshold of 1.0 was used for all receptors.

FINDING 19 OF CAO NO. R9-2014-0019 STATES:

Soil. Pursuant to Directive E of CAO No. 98-08, interim remedial actions have been initiated at the South Campus Site. Additional soil remedial actions are needed at the following specific Areas of Concern (AOCs; Figure 5):

- a. **Historical SWCS Outfalls.** Additional soil characterization and/or remediation is needed for two remaining areas with impacted soils adjacent to the L-Ditch. These areas are:
 - i. Area near the historical SWCS outfall immediately south of former Building 30. This area is within the South Campus Exchange Parcel.¹⁹
 - ii. Area near the historical SWCS outfall immediately south of former Building 42 where discolored soil and construction debris were observed during the excavations.
- b. **Source Areas.** Eight source areas were identified based on soil samples collected from borings during the 1999 site-wide investigation and the 2000 supplemental investigation. Two of eight source areas have not been excavated and must be addressed in the near future under the approved work plan: Building 45 - Boring 130 and Pretreatment Area – Boring 164.
- c. **Soil Boring Locations.** Soil characterization and/or remediation is needed at the following historical soil boring locations: Borings 124, 141, DP-13, 159, 028, B58-SSW-05, B164W, B164S, B164E, 151, 076, 078, 080, and 077. These locations exceed the health-based remediation criteria developed for the Site.

RATIONALE AND TECHNICAL INFORMATION SUPPORTING FINDING 19:

I. L-Ditch Remediation

Step-out excavations were conducted in some areas of the L-Ditch based on discolored soils and/or soil confirmation samples exceeding the human health risk-based cleanup levels. These excavations were widened until the impacted soils left in place were sufficiently away from the construction zone of the sand filter to allow further evaluation and/or remediation at a later time, if necessary. The sand filter is constructed within the L-Ditch and will temporarily convey sheet flow runoff from the former South Campus Facility to Outfall No. 3 and No. 4 until redevelopment is completed. Additional soil characterization and/or remediation is needed for three remaining areas with impacted soils adjacent to the L-Ditch. These areas are:

- a. Area near the historical SWCS outfall immediately south of former Building 30. This area is within the South Campus Exchange Parcel.²⁰

¹⁹ The South Campus Exchange Parcel is the portion of the South Campus Site subject to an exchange agreement between the San Diego Unified Port District and Pacifica Companies (Figure 9).

²⁰ The South Campus Exchange Parcel is the portion of the South Campus Site subject to an exchange agreement between the San Diego Unified Port District and Pacifica Companies (Figure 9).

- b. Area near the historical SWCS outfall immediately south of former Building 42 where discolored soil and construction debris were observed during the excavations.

II. Source Areas

Eight source areas were identified based on soil samples collected from borings during the 1999 site-wide investigation and the 2000 supplemental investigation. On July 30, 2009, a Soil Excavation Work Plan for the eight source areas was submitted to and subsequently approved by the San Diego Water Board. Six of the source areas were excavated. Soil confirmation samples collected from the excavations showed that impacted soil was cleaned up to the health-based remediation criteria developed for the Site. Two source areas have not been excavated and must be addressed in the near future under the approved work plan.

- a. **Building 45, Boring 130.** 1,1,1-trichloroethane (1,1,1-TCA) and cis-1,2-dichloroethene (DCE) were detected at concentrations of 10,200 mg/kg and 226 mg/kg, respectively, at a depth of 7 feet below ground surface (bgs).
- b. **Pretreatment Area, Boring 164.** TCE and cis-1,2-DCE were detected at concentrations of 60.6 mg/kg and 24.4 mg/kg, respectively, at a depth of 4 feet bgs.

III. Soil Boring Locations. Soil characterization and/or remediation is needed at the following historical soil boring locations. These locations exceed the health-based remediation criteria developed for the Site.

- a. **Boring 124.** PCB Aroclor 1254 was detected at a concentration of 7.67 mg/kg at a depth of 6 feet bgs.
- b. **Boring 141.** Cadmium and nickel were detected at concentrations of 43 mg/kg and 2,680 mg/kg, respectively, at a depth of 4 feet bgs.
- c. **Boring DP-13.** Hexavalent chromium was detected at a concentration of 114 mg/kg at a depth of 2 feet bgs.
- d. **Boring 159.** PCB Aroclor 1254 was detected at a concentration of 6.92 mg/kg at a depth of 2 feet bgs. PCB Aroclor 1254, xylenes, and total recoverable petroleum hydrocarbons (TRPH) were detected at concentrations of 2.06 mg/kg, 3.7 mg/kg, and 31,600 mg/kg, respectively, at a depth of 4 feet bgs.

- e. **Boring 028.** PCB Aroclors 1248 and 1254 were detected at concentrations of 4.56 mg/kg and 2.01 mg/kg, respectively, at a depth of 7 feet bgs.
- f. **Boring B58-SSW-05.** Vinyl chloride was detected at a concentration of 0.15 mg/kg at a depth of 5 feet bgs.
- g. **Boring B164W.** 1,1-DCA, PCE, and TCE were detected at concentrations of 1.8 mg/kg, 0.3 mg/kg, 0.53 mg/kg, respectively, at a depth of 5 feet bgs.
- h. **Boring B164S.** 1,1-DCA, cis-1,2-DCE, PCE, and vinyl chloride were detected at concentrations of 7.6 mg/kg, 0.18 mg/kg, 0.12 mg/kg, and 3.2 mg/kg, respectively, at a depth of 5 feet bgs.
- i. **Boring B164E.** 1,1-DCA, cis-1,2-DCE, and vinyl chloride were detected at concentrations of 0.74 mg/kg, 0.35 mg/kg, and 0.094 mg/kg, respectively, at a depth of 5 feet bgs.
- j. **Boring 151.** TRPH was detected at a concentration of 1,410 mg/kg at a depth of 6 feet bgs.
- k. **Boring 076.** Benzo(b)fluoranthene, indeno(1,2,3-c,d)pyrene, PCB Aroclor 1254, and TRPH were detected at concentrations of 0.63 mg/kg, 0.98 mg/kg, 0.84 mg/kg, and 24,200 mg/kg, respectively, at a depth of 6 feet bgs.
- l. **Boring 078.** PCB Aroclor 1254 was detected at a concentration of 1.84 mg/kg at a depth of 4 feet bgs. PCB Aroclor 1254, copper, and nickel were detected at concentrations of 2.26 mg/kg, 773 mg/kg, and 672 mg/kg, respectively, at a depth of 6 feet bgs.
- m. **Boring 080.** PCB Aroclor 1254 and TRPH were detected at concentrations of 0.47 mg/kg and 18,500 mg/kg, respectively, at a depth of 5 feet bgs.
- n. **Boring 077.** PCB Aroclor 1254 was detected at concentrations of 1.43, 0.582, and 0.846 mg/kg at depths of 2, 4, and 8 feet bgs, respectively.

This concludes the Technical Report.