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California Energy Commission
DOCKETED
12-AFC-03
TN 71502
JUL. 02 2013

July 2, 2013

Ms. Patricia Kelly
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Redondo Beach Energy Project (12-AFC-03)
Staff Query 1 – Geotechnical Reference Reports

Dear Ms. Kelly:

As requested via email by Gabriel Roark on June 6, 2013, attached please the following four items requested as Staff Query 1 – Geotechnical Reference Reports:

1. Hydrogeologic Assessment Report, Redondo Generating Station. January 27, 1986.
   - Appendices B through F (technical appendices) are not being provided.
2. Soil Investigation Report, Wastewater Retention Basins, Redondo Beach Generating Station. August 23, 1999.
   - Bar Charts from Appendices 1 and 2 are not being provided.
   - Appendices 3 through 5 (technical appendices) are not being provided.
3. Ground Water Investigation Report, Redondo Generating Station. September 13, 1999.
   - Appendices 2 through 4 (technical appendices) are not being provided.
4. Redondo Generating Station Phase II Environmental Site Assessment. June 1997.
   - Appendices B and C (technical appendices) are not being provided.

In addition, the following two reports are still pending:

1. Additional Phase II Field Investigation Report, Redondo Beach Generating Station, Redondo Beach, California. March 2000.
   - AES is obtaining permission from SCE to release this report.
2. Site Investigation Report for Soil and Groundwater, Redondo Beach Generating Station, Redondo Beach, California. April 1998.
   - AES is locating the final version of this report.

Due to size, copies of the documents have been provided electronically on CD. Additional copies of the reports can be provided upon request.

If you have any questions about this matter, please contact me at (916) 286-0249 or Mr. Jerry Salamy at (916) 286-0207.

Sincerely,

CH2M HILL

Sarah Madams
AFC Project Manager

Attachment
cc: S. O'Kane, AES
G. Wheatland, ESH
J. Salamy, CH2M HILL

# Hydrogeologic Assessment Report, 1986

**Staff Query 1**

HYDROGEOLOGIC ASSESSMENT REPORT
REDONDO GENERATING STATION

JANUARY 27, 1986
PREPARED FOR SOUTHERN CALIFORNIA EDISON

Dames & Moore

41.8S/1-COVER

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# EXECUTIVE SUMMARY

The Toxic Pits Cleanup Act of 1984 prohibits the discharge of liquid hazardous wastes to surface impoundments after January 1, 1989, unless the surface impoundment is double lined, equipped with a leachate collection system, and ground water monitoring is conducted. An exemption may be granted to this prohibition by a California Regional Water Quality Control Board. This hydrogeologic assessment report was prepared for the Southern California Edison Redondo Generating Station in accordance with the Act.

This Act was amended by AB 2246. This bill allows certain impoundments at fossil-fueled power plants to be exempted from the prohibition against discharge of restricted hazardous wastes. The bill also states that the double liner requirement in the Act may be satisfied by double liners made of synthetic or other materials with a permeability of less than $10^{-7}$ cm/s.

The Redondo Generating Station utilizes a surface impoundment (hereinafter referred to as the "chemical cleaning basin") to handle on a short-term basis waste water resulting from boiler cleanings. The basin has a surface area of approximately one-third acre and a maximum depth of 7 feet. The basin is lined with 4-inch thick hydraulic asphaltic concrete designed to have a permeability of $10^{-7}$ cm/s or less.

Typically, four boilers at the generating station are cleaned every other year; therefore, two boilers are cleaned every year. After cleaning, the waste water is discharged into the chemical cleaning basin where it remains for about two weeks until the waste water is treated and then discharged in compliance with the NPDES permit for the station. Prior to treatment, this waste water may be hazardous due to low pH and high nickel and copper concentrations.

The vadose zone beneath the chemical cleaning basin consists of approximately 10 feet of fine to medium sand and gravel fill. Soil pH values in the vadose zone range from 5.1 to 8.3 and are within the typical range (5 to 9) for these types of soil.

The uppermost aquifer beneath the chemical cleaning basin comprises the Old Dune Sand aquifer and saturated fill. Ground water in this aquifer is unconfined, occurs at a depth of approximately 10 feet beneath the basin, and consists of a mixture of fresh and saline water. Ground water flow beneath the chemical cleaning basin is to the southeast towards dewatering well DW-1 at an average linear flow velocity estimated to be $2.4 \times 10^{-5}$ to $2.5 \times 10^{-6}$ cm/s (0.07 to 0.08 ft/day).

This hydrogeologic assessment principally consisted of: 1) an initial literature review; 2) a field investigation program; and 3) laboratory testing of soil, waste water, and ground water. The literature review was conducted to obtain an overview of the hydrogeologic conditions at the site. It also consisted of data gathering (e.g. location of water wells near the site, basin construction data, etc.) and contact with various county, state and federal agencies.

The purpose of the field investigation was to further assess the hydrogeologic conditions near the basin and evaluate if there has been leakage from the basin. The field investigation included sampling and chemical analysis of boiler cleaning waste water, ground water and subsurface soils.

Six borings were drilled at the site, five near the basin and one upgradient of the basin. Soil samples were collected from the borings at 5-foot intervals. These samples were collected to provide information concerning subsurface stratigraphic conditions and for laboratory analysis. Each boring was logged according to the Uniform Soil Classification System. Ground water observation wells were installed in three borings. Ground water was sampled from these wells and two existing wells located near the chemical cleaning basin.

No definitive evidence of leakage from the basin was detected. The basin liner is intact. Currently, there is no existing monitoring program that would detect leakage in the vadose zone. Ground water observation wells are present at the site which could be used to detect ground water contamination.

Modifications to the existing basin are possible which would significantly reduce the possiblity of future leakage (e.g. double liner system of synthetic or other materials). In addition, a monitoring system could be installed to detect leakage from the primary liner of the chemical cleaning basin.

# 1.0 SUMMARY AND CONCLUSIONS

Chemical analyses of samples of chemical cleaning wastes from both drum and once-through type boilers indicate that concentrations of copper and nickel in drum-type boiler cleaning wastes may exceed Article 11 Soluble Threshold Limit Concentration (STLC) values for these constituents. In addition, chemical cleaning wastes from both boiler types typically have a pH of 1.5 to 2.5. These wastes are stored in the chemical cleaning basin for approximately two weeks prior to treatment and disposal.

The vadose zone beneath the chemical cleaning basin is approximately 10 feet thick. It consists of fine to medium sand, and sand and gravel fill. Concentrations of Article 11 inorganics detected in composites of selected vadose zone soil samples were below hazardous levels specified in Article 11. Trichloroethylene (TCE) and pentachlorophenol (PCP) were not detected. Field measurements of soil pH in the borings near the chemical cleaning basin ranged from 5.1 to 8.3. These values are within the typical pH range (5 to 9) for these types of soils. The slightly higher concentrations of various chemical parameters in some of the soil samples, relative to background, are interpreted to be the result of natural variations in the chemistry of soil and fill material beneath the basin.

The uppermost aquifer beneath the chemical cleaning basin is the Old Dune Sand aquifer. This aquifer consists of fine to medium sand with minor gravel. Beneath the western portion of the site, the Old Dune Sand aquifer is underlain by a peaty silt and clay aquitard. This aquitard is discontinuous and where absent, the Old Dune Sand aquifer overlies the Gardena-Silverado aquifer. Ground water flow beneath the chemical cleaning basin is to the southeast towards dewatering well DW-1. Gradient of the ground water surface between observation wells RBW-3 and RBW-2 is approximately 0.003. The average linear flow velocity beneath the chemical cleaning basin is estimated at $2.4 \times 10^{-5}$ to $2.6 \times 10^{-5}$ cm/s (0.07 to 0.08 ft/day). The ground water gradient and average flow velocity increase to the southeast near dewatering well DW-1.

Ground water quality is variable in the uppermost aquifer beneath the site. The primary cause of this variation is interpreted to be sea water intrusion and mixing of ground water with sea water. The background and downgradient ground water samples analyzed do not meet drinking water standards due to high total dissolved solids (TDS) in all samples. In addition, concentrations of fluoride and chloride in downgradient samples from wells RBW-1 and RBW-2, sulfate in sample RBW-2, chloride in sample P-15, and nitrate in background sample P-1 exceed the drinking water standards. Old Dune Sand aquifer ground water quality data plotted on a trilinear diagram do not indicate a dominant ground water type. Ground water in this aquifer near the chemical cleaning basin ranges from fresh (<1,000 mg/l TDS, Hem, 1970) to slightly saline (1,000 to 3,000 mg/l TDS, Hem, 1970). The chemical composition of the water samples analyzed was generally similar except in downgradient sample RBW-2. Concentrations of the major cations and anions, except nitrate and calcium, detected in ground water from well RBW-2 were greater than the concentrations detected in samples from the other wells. Ground water in the Gardena-Silverado aquifer typically contains greater than 10,000 mg/l chloride and 18,000 mg/l TDS in the site vicinity and is classified as very saline (10,000 to 35,000 mg/l TDS, Hem, 1970). The available ground water quality data for the site region indicate the chemical cleaning basin is not located within one-half mile upgradient of a known potential drinking water source.

Concentrations of Article 11 inorganics detected in the ground water samples analyzed were below STLC values. PCP was not detected in any of the samples analyzed. The concentration of TCE detected in sample P-1 was below the STLC value.

Elevated concentrations of chemical parameters detected in ground water from downgradient well RBW-2 may be a result of leakage from the chemical cleaning basin or north retention basin. However, the presently available data base contains no definitive evidence that waste or waste constituents have migrated into the vadose zone or water-bearing strata beneath the chemical cleaning basin.

It is impossible to state with certainty whether migration of leachate into the vadose zone or water-bearing strata will occur within the next five years. However, if the present liner material continues to be the primary means of containing wastes in the basin for the next five years, then the likelihood of migration of leachate will increase during that period.

## 2.0 INTRODUCTION

This hydrogeologic assessment report is for the Southern California Edison (SCE) Redondo Generating Station located at the southwest margin of the Los Angeles coastal plain near the western base of the El Segundo sand hills (Plate 1). The generating station is located at 1100 Harbor Boulevard, Redondo Beach, California, approximately 250 feet east of King Harbor (Plate 2).

The Toxic Pits Cleanup Act (TPCA) was passed into law in September 1984. The law regulates the discharge of hazardous waste into surface impoundments. The law prohibits the discharge of liquid hazardous wastes to a surface impoundment after January 1, 1989, unless the surface impoundment is double lined, equippped with a leachate collection system, and ground water monitoring is conducted. An exemption may be granted by a California Regional Water Quality Control Board (CRWQCB).

This Act was amended by AB 2246. This bill allows certain impoundments at fossil-fueled power plants to be exempted from the prohibition against discharge of restricted hazardous wastes. The bill also states that the double liner requirement in the Act may be satisfied by double liners made of synthetic or other materials with a permeability of less than $10^{-7}$ cm/s.

As specified in Section 25208.5(c) of the TPCA, an application for exemption shall include a hydrogeologic assessment. The assessment must include:

- Physical characteristics of the surface impoundment and the volume and concentration of hazardous constituents impounded;
- Locations, water quality, and flow rate or water levels of surface water bodies and springs located within one mile of the site;

- Locations, use, and characteristics of wells located within one mile of the site;
- Characteristics of the site hydrogeology including the occurrence, flow direction, and quality of ground water that could be affected by leachate from the impoundment;
- Climatological data including the mean annual, maximum 24-hour, and maximum and minimum annual precipitation at the site;
- Flood potential for streams that could affect the site in a 100-year interval;
- Hydrogeologic and chemical characteristics of the vadose zone soils beneath the surface impoundment;
- Chemical characteristics of soil upgradient from the impoundment which has not been affected by impoundment leakage;
- Characteristics of existing vadose zone and ground water monitoring being conducted to detect leachate.

The hydrogeologic assessment report was prepared in accordance with the requirements specified in Section 25208.8 of the TPCA. The sections of this report which address information items specified in the TPCA are outlined below:

| Hydrogeologic Assessment Report | | | | Toxic Pits Cleanup Act Section 25208.8 | |
|---|---|---|---|---|---|
| Section | Subsection | Appendix | Plate | Paragraph | Subsection |
| 1.0 | | | | 1 | 10,11 |
| 4.0 | 4.1 | | | a | |
| | 4.2 | | 5 | b | |
| | 4.3 | | | a | |
| 6.0 | | | 2 | c,d | |
| 7.0 | | G | 2,3 | e | |
| 8.0 | | | | h | 2,3 |
| | | | 6 | h | 1 |
| 9.0 | 9.1 | A,E | 7 | i,j | |
| | 9.2 | F | | j | |

| Hydrogeologic Assessment Report | | | | Toxic Pits Cleanup Act Section 25208.8 | |
|---|---|---|---|---|---|
| Section | Subsection | Appendix | Plate | Paragraph | Subsection |
| 10.0 | 10.2 | | 8,9,10 | f,g | |
| | | | 11,12 | f | 1 |
| | 10.3 | | | f | 3 |
| | 10.4 | | | f | 2,4 |
| | | | | g | |
| | 10.5 | F | 13 | f | 5 |
| 11.0 | | A | 4 | k | |
| | | A | 4 | 1 | 1-9 |

## 3.0 PURPOSE AND SCOPE

The purpose of this investigation was to obtain the climatologic and hydrogeologic data needed to prepare a hydrogeologic assessment report as defined by the TPCA for the chemical cleaning basin.

The scope of the investigation comprised data collection and review, a field investigation, laboratory analyses, data interpretation, and report preparation. Available data on the geology, climatology, surface and ground water hydrology, existing ground water wells within one mile of the site, and specifications of the surface impoundment were collected and reviewed. Based on these data, a field investigation and laboratory testing program was conducted to further evaluate the vadose zone soils beneath the chemical cleaning basin, the hydrogeologic setting of the site, and the chemical characteristics of subsurface soils and ground water in the vicinity of the chemical cleaning basin. The field investigation consisted of: (1) drilling, (2) soil sampling, (3) observation well installation, (4) ground water sampling, and, (5) measuring ground water levels in onsite observation wells. Laboratory analyses consisted of physical testing of selected soil samples and chemical testing of boiler cleaning wastes, ground water, and soil samples.

# 4.0 CHEMICAL CLEANING BASIN

## 4.1 PHYSICAL CHARACTERISTICS

Three surface impoundments are present at the station, two retention basins and one chemical cleaning basin (Plate 3). The chemical cleaning basin is used to temporarily store boiler cleaning wastes from the generating units prior to treatment and disposal. A schematic of waste stream flow to the chemical cleaning basin is shown on Plate 5. Physical characteristics of the chemical cleaning basin are summarized in Table 4.1-1 and discussed below.

The chemical cleaning basin was constructed in 1977 coincident with construction of the north retention basin. The chemical cleaning basin was constructed by excavating embankments on the north and west and constructing berms of fill material on the south and east. The sides have a 5:1 (horizontal to vertical) slope. The east berm separates the chemical cleaning basin and north retention basin. A subgrade aggregate base was placed in an approximately 6-inch thick layer and compacted to 95% of maximum density. The interior slopes and bottom were lined with a 4-inch layer of hydraulic asphaltic concrete. The liner was applied in two 2-inch lifts with joint overlap of at least 48 inches between the two layers. The asphaltic concrete was placed at a temperature of at least 250°F and compacted to 97% of the maximum density. The first layer was tack coated with SS-1H anionic asphaltic emulsion prior to placement of the second layer. A light asphalt emulsion seal coat was applied to minimize weathering.

## 4.2 CHEMICAL CONSTITUENTS

The chemical cleaning processes used at various SCE generating stations are standardized for the two types of boilers (drum and once-through) used with the only variable being the total volume produced from the operation. The chemical cleaning wastes typically exhibit low pH (1.5 to 2.5) and wastes from drum-type boilers may contain high concentrations of copper and nickel. Due to the similarity of equipment and cleaning process, the type of deposits removed from the boiler surfaces do not exhibit significant variations in composition

TABLE 4.1-1

PHYSICAL CHARACTERISTICS OF THE CHEMICAL CLEANING BASIN

| | |
|---|---|
| Date Constructed | 1977 |
| Area (acres) | 1/3 |
| Width (feet) | 100 |
| Length (feet) | 135 |
| Depth (feet) | 6-7 |
| Capacity (gallons) | 256,000 |
| Freeboard capacity (gallons) | 87,000 |
| Liner Type | Hydraulic Asphaltic Concrete |
| Liner Thickness (inches) | 4 |

among the generating stations with the exception of nickel. The nickel concentration will vary in response to the metallurgy of the feedwater heaters. Nickel alloy feedwater heaters were used when the older units were constructed; however, this practice is no longer used and moreover most of the older feedwater heaters have already been replaced with steel alloy components.

In SCE's opinion, it is possible to characterize these wastes through a complete chemical analysis of representative waste samples. Two distinct batches of chemical cleaning wastes were sampled and analyzed for each type of boiler cleaning. These samples were selected to include the worst case which could be encountered within the system (i.e., high nickel concentrations). A complete analysis for the inorganic and organic Persistent and Bioaccumulative Toxic Substances specified in Article 11, Chapter 30, Division 4, of Title 22 of the California Administrative Code (Article 11 inorganics/organics) was conducted for each selected sample of chemical cleaning waste. In addition, acute aquatic toxicity tests were conducted. These results are summarized in Tables 4.2-1 and 4.2-2, respectively.

Steam generating units 5 and 6 have drum-type boilers. The chemical cleaning of drum boilers is accomplished through a series of fill and drain operations. The various chemicals used in this process are: ammonium hydroxide, sodium bromate, hydrochloric acid and citric acid. All of the drains are routed to the chemical cleaning basin where they are stored for a period of approximately two weeks. The boiler volume of drum-type boilers is variable, however, the most common size is approximately 30,000 gallons.

Steam generating units 7 and 8 have once-through-type boilers. The chemical cleaning of once-through boilers is carried out through a series of circulation and displacement steps. The various chemicals used for this process are hydroxyacetic acid, formic acid, citric acid, ammonium hydroxide, and hydrazine hydrate. All of the displacements are routed to the chemical cleaning basin and are stored there for a period of approximately two weeks. The approximate volume of each displacement is 1.5 times the boiler volume which ranges from 30,000 to 50,000 gallons depending on the unit.

TABLE 4.2-1

RESULTS[a] OF CHEMICAL ANALYSES OF BOILER CLEANING WASTES

| Sample I.D. | STLC[b] | L-DCS-85-9F[c] | L-DCS-85-9FF[c] | L-DCS-85-9S[d] | L-DCS-85-9V[d] |
|---|---|---|---|---|---|
| Date Sampled: | -- | 5/15-16/85 | 7/20-21/85 | 6/3/85 | 7/5/85 |
| Sb | 15 | 0.002 | <0.002 | 0.005 | <0.002 |
| As | 5.0 | 0.008 | <0.001 | <0.001 | <0.001 |
| Ba | 100 | 0.091 | 0.16 | <0.012 | 0.023 |
| Be | 0.75 | <0.004 | <0.004 | <0.004 | <0.004 |
| Cd | 1.0 | 0.003 | <0.003 | <0.003 | <0.003 |
| Cr VI | 5 | <0.015 | 0.019 | <0.015 | 0.017 |
| Cr | 560 | 0.25 | 1.3 | 0.65 | 3.3 |
| Co | 80 | 0.34 | 0.20 | <0.026 | 0.12 |
| Cu | 25 | 114 (34)[e] | 52 (37)[e] | 0.008 | <0.007 |
| F | 180 | 127 | 110 | 50 | 100 |
| Pb | 5.0 | 1.4 | <0.002 | <0.05 | <0.002 |
| Hg | 0.2 | 0.0004 | <0.0003 | <0.0003 | <0.0003 |
| Mo | 350 | 0.054 | 0.082 | 0.54 | 2.2 |
| Ni | 20 | 29 (29)[e] | 1.5 | 0.13 | 0.93 |
| Se | 1.0 | <0.001 | <0.001 | <0.001 | <0.001 |
| Ag | 5 | 0.012 | <0.005 | <0.005 | <0.005 |
| Ti | 7.0 | <0.005 | <0.005 | <0.005 | <0.005 |
| V | 24 | 0.047 | 0.35 | <0.015 | 0.19 |
| Zn | 250 | 17 | 16 | 0.066 | 0.38 |
| Aldrin | 0.14 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Alpha-BHC | -- | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Beta-BHC | -- | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Delta-BHC | -- | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Gamma-BHC (Lindane) | 0.4 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Chlordane | 0.25 | ND (<0.04) | ND (<0.01) | ND (<0.002) | ND (<0.01) |
| p,p' DDD | 0.1 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| p,p' DDE | 0.1 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| p,p' DDT | 0.1 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| 2,4 - D | 10 | ND (<1.0) | ND (<0.1) | ND (<0.02) | ND (<0.01) |
| Dieldrin | 0.8 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Dioxin | 0.001 | ND (<0.002) | ND (<0.001) | ND (<0.001) | ND (<0.0005) |
| Endosulfan I(alpha) | -- | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Endosulfan II(beta) | -- | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Endosulfan sulfate | -- | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Endrin | 0.02 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Endrin Aldehyde | -- | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Heptachlor | 0.47 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Heptachlor Epoxide | -- | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Kepone | 2.1 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Pentachlorophenol | 1.7 | ND (<0.25) | ND (<0.02) | ND (<0.025) | ND (<0.2) |
| Toxaphene | 0.5 | ND (<0.1) | ND (<0.025) | ND (<0.005) | ND (<0.025) |
| Trichloroethylene | 204 | 0.0005 | NA | 0.0021 | ND (<0.0005) |
| 2,4,5 - TP(Silvex) | 1.0 | ND (<0.2) | ND (<0.02) | ND (<0.004) | ND (<0.02) |
| 2,4,5 - T(Acetic Acid) | -- | ND (<0.2) | ND (<0.02) | ND (<0.004) | ND (<0.02) |
| Arochlor 1016 | 5.0 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Arochlor 1221 | 5.0 | ND (<0.04) | ND (<0.01) | ND (<0.002) | ND (<0.01) |
| Arochlor 1232 | 5.0 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Arochlor 1242 | 5.0 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Arochlor 1248 | 5.0 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Arochlor 1254 | 5.0 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |
| Arochlor 1260 | 5.0 | ND (<0.02) | ND (<0.005) | ND (<0.001) | ND (<0.005) |

NA Not analyzed. Sample could not be analyzed due to emulsion.
ND Not detected, detection limit in ( ).
a Results in milligrams/liter (mg/l).
b Soluble Threshold Limit Concentration (mg/l) from California Administrative Code Title 22, Division 4, Chapter 30, Article 11.
c Sample of boiler cleaning waste for drum-type boiler.
d Sample of boiler cleaning waste for once-through boiler.
e Results in ( ) are from WET analysis.

TABLE 4.2-2

RESULTS OF ACUTE AQUATIC TOXICITY OF BOILER CLEANING WASTES

| Sample I.D. | % Mortality | Pass/Fail |
|---|---|---|
| L-DCS-85-9F | 0 | Pass |
| L-DCS-85-9FF | 0 | Pass |
| L-DCS-85-9S | 0 | Pass |
| L-DCS-85-9V | 0 | Pass |

Note: Tests conducted by MBC Applied Environmental Sciences, Costa Mesa, California. Tests consisted of 96-hour static acute toxicity of fathead minnows following the methodology of the California State Department of Health Services.

Plant 1 (units 1, 2, 3, and 4) is currently on cold standby status. Due to the low operating pressure of these units, the boilers would not require cleaning.

### 4.3 LINER COMPATIBILITY

The hydraulic asphaltic concrete liner prepared and compacted as outlined in Section 4.1 is designed to have a permeability of $10^{-7}$ cm/s ($2.8 \times 10^{-4}$ ft/day) or less (Dunning and Blaufuss, 1974). This permeability value meets the State Water Resources Control Board requirements for liners for hazardous waste management units. SCE (1977a) tested the compatibility of 10 samples of the hydraulic asphaltic concrete with a boiler wash acid consisting of a 10% solution of hydroxyacetic/formic acid. The tests were conducted for six weeks. The results of this relatively short term test indicate the asphalt is not dissolved by the boiler wash acid tested provided that non-carbonate aggregate materials are used in preparing the asphalt. Long-term compatibility has not been tested. However, the chemical cleaning wastes are impounded for short time periods (typically two weeks) prior to treatment and disposal. Subsequent to treatment and disposal, the basin is washed and does not contain liquids except for precipitation. Based on these data, the hydraulic asphaltic concrete liner should be compatible with the chemical cleaning wastes provided that organic solvents or petroleum products incompatible with asphalt are not present in the wastes in significant amounts.

Visual inspection of the liner indicated minor surface cracking, but no major open cracks or areas of substantial degradation/erosion of the liner surface were observed.

## 5.0 METHODS OF INVESTIGATION

### 5.1 DATA COLLECTION AND REVIEW

Available data were collected and reviewed to develop a preliminary climatologic and hydrogeologic assessment of the site and a description of the surface impoundments. The principal sources of data included SCE files, discussions with plant engineers, data from previous Dames & Moore investigations near the site, and reports and unpublished information from local, state, and federal agencies. Following is a list of government agencies contacted:

- Los Angeles County Flood Control District (LACFCD)
- California Department of Water Resources (CDWR)
- U.S. Geological Survey (USGS)
- California Division of Mines and Geology (CDMG)
- California Regional Water Quality Control Board, Los Angeles Region (CRWQCB)
- California Department of Health Services (DOHS)
- Federal Emergency Management Agency (FEMA)
- U.S. Department of Commerce

Data were acquired from a literature research of published technical reports, professional journals, and governmental agency reports on the geology and ground water hydrology of the site region. The literature research included a computer search using GEOREF, COMPENDEX, SELECTED WATER RESOURCES ABSTRACTS, and NTIS programs. Pertinent Dames & Moore data were identified using the Computerized Uniterm Search System (CUSS) of the Dames & Moore master files. SCE in-house data were provided by the SCE Geotechnical Group and were also obtained through discussions with plant engineers and a review of generating station files. Unpublished climatologic and hydrogeologic data were obtained from LACFCD.

## 5.2 FIELD INVESTIGATION

### 5.2.1 Drilling and Soil Sampling

Six vertical borings were completed at the site (Plate 5). Five borings (RB-1, RB-2, RBW-1, RBW-2, and RBW-3) were drilled to observe the shallow subsurface soil profile and collect soil samples in the vicinity of the chemical cleaning basin. One boring (RB-3) was drilled to obtain a soil sample upgradient from the impoundment in an area not affected by seepage from the impoundment.

With the exception of RBW-3, drilling was completed using a Mobile B-80-14 drill rig and 3 3/4-inch inner diameter (ID) hollow stem augers. Boring RBW-3 was completed using a B-24 skid-rig and 3 3/4-inch ID hollow stem augers. Borings RB-1 and RB-2 were completed to the base of the vadose zone.

Boring RB-3 was completed to a depth of appoximately 5 feet below ground surface (BGS) to obtain a background soil sample. RBW-1, RBW-2 and RBW-3 were completed approximately 20 feet below the top of the saturated zone for installation of observation wells. Borings RB-1 and RB-2 were backfilled with a cement/bentonite slurry.

A continuous log of the soils encountered in each boring was maintained by a Dames & Moore geologist. The presence of odors or discoloration of soil samples was noted. Soils were classified in accordance with the Unified Soils Classification System (see Appendix A for boring logs and soil classification).

Soil samples were obtained using a Dames & Moore u-type sampler (Appendix A) lowered through the hollow stem of the auger and driven 18-inches into the soil with a 30-inch drop of a 140 lb hammer. Blow counts were recorded at 6-inch intervals for each sample driven. The sampler was fitted with 2.5-inch diameter, 3-inch long stainless steel sleeves. Samples were collected at 2 1/2-foot intervals from approximately 2 1/2-feet BGS to the base of the vadose zone in borings RB-1, RB-2, RBW-1, RBW-2, and RBW-3. One soil sample was collected at 5 feet BGS in boring RB-3.

Soil samples were screened in the field for organic vapor emissions with an HNU photoionization detector (PID). The PID was also used to evaluate the presence of organic vapors inside the hollow stem of the auger during drilling. Soil pH was monitored using a Markson Model 88 pH meter equipped with a soil probe.

Exposed ends of each soil sample were covered with 2 mil teflon sheets and fitted with plastic end caps and sealed with electrical tape. Labels which included the following information were attached to each sample: (1) boring number; (2) sample number; (3) date and time; (4) collector name; (5) owner; and, (6) location. These samples were stored in the field in ice-chests cooled with dry ice and transported frozen to the analytical laboratory. Chain of custody records were maintained and transferrred with the samples to the analytical laboratory (Appendix B).

The augers were steam cleaned between borings to minimize the potential for cross-contamination. In addition, soil sampling equipment was washed in a dilute trisodium phosphate solution, rinsed in fresh water, rinsed in distilled water, and dried prior to each use.

### 5.2.2 Observation Well Installation

Observation wells were installed in borings RBW-1, RBW-2, and RBW-3 (see Appendix A for well construction diagrams). Observation wells RBW-1 and RBW-2 were located downgradient of the chemical cleaning basin and RBW-3 was located upgradient of the basin. The purpose of these wells was to obtain ground water samples for chemical analysis and ground water level information near the chemical cleaning basin. The three observation wells are similarly cased as follows: blank casing from ground surface to approximately five feet above the saturated zone followed by 20 feet of slotted casing. The wells are constructed of 2-inch diameter, Schedule 40 PVC casing and slotted casing with 0.020-inch wide horizontal slots. Pre-washed #3 Monterey filter sand was placed in the well annulus adjacent to the slotted casing. The well annulus above the filter sand was sealed with bentonite pellets. A cement/bentonite slurry was placed above the bentonite seal to the ground surface. The wells were developed by bailing until relatively free of sediment. Each well was completed below the ground surface inside a locking hasp and protective cover. Observation well elevations were surveyed after completion of the wells (Appendix A).

### 5.2.3 Ground Water Sampling

Ground water samples were collected from observation wells RBW-1, RBW-2, RBW-3, and existing piezometers P-1 and P-15. The following samples were collected for analytical quality control:

- Travel blank - a clean water sample accompanying sample bottles in the shipping containers to and from the site and returned unopened;
- Field blank - a clean water sample taken to the site, opened in the field, sealed and placed with the other samples; and,
- Field duplicate - two water samples collected from well RBW-1 in separate sample containers.

Each ground water sample was collected in a set of five separate bottles labeled cations, anions, TCE, PCP, and THC. The analytical laboratory supplied the sample bottles (with preservatives if necessary). The sample bottles were prepared in accordance with standard U.S. EPA laboratory protocol. The samples were assigned sample identification numbers corresponding to the well identification numbers.

The observation wells were sampled at least one week after well installation. Before well purging, the depth to ground water was measured with an electronic water level indicator. Prior to sampling, a minimum of five well volumes were purged from each well and piezometer using a clean teflon bailer. Well purging continued until three consecutive measurements of conductivity, salinity and temperature of produced water yielded values within 10% of the first of the three consecutive measurements and pH stabilized to $\pm 0.5$ pH units. Salinity, conductivity, and temperature were measured with a Y.S.I. Model 33 S-C-T meter and pH of the water was measured with a Cole Parmer Model 5994-10 pH meter. Samples for anion and cation analyses were filtered in the field to remove suspended sediment using a Geotech water filter and 9 cm ashless paper filters with 0.40 micron openings. Water samples were collected with a clean teflon bailer, using care to minimize aeration of water samples.

Labels which were attached to each sample included the following information: (1) well number; (2) sample number; (3) date; (4) collector name; (5) owner; and, (6) location. Samples were stored in the field and transported to the analytical laboratory in ice chests cooled with blue ice. Chain of custody records (Appendix B) were completed for each sample and transferred with the samples to the laboratory.

Prior to sampling each well, the teflon bailer was washed with a dilute TSP solution and rinsed with distilled water. The Geotech filter was cleaned by removing the filter paper, rinsing and backflushing with ground water from the well, and installing a clean filter paper prior to sampling.

### 5.2.4 Health and Safety Plan

A site specific Health and Safety Plan (Appendix C) was developed for the field investigation. Basically, the plan: 1) identified and described the potentially hazardous substances that may have been encountered during the field investigation; 2) specified protective equipment utilized during onsite activities; and, 3) outlined emergency measures to be implemented in the event unanticipated and/or potentially hazardous conditions were encountered during field activities. All Dames & Moore personnel and subcontractors reviewed the Health and Safety Plan prior to commencement of field activities.

## 5.3 LABORATORY ANALYSES

Selected soil samples collected during the drilling of borings and observation wells were submitted for chemical and physical testing. Ground water samples were collected and submitted for chemical analysis. Physical testing was conducted by Petroleum Testing Service (PTS), Santa Fe, California, and Dames & Moore. The ground water and soil samples selected by Dames & Moore for chemical analysis were analyzed for chemical parameters selected by SCE to be representative of the chemical cleaning wastes (Table 5.3-1). Chemical analyses were conducted by Montgomery Laboratories, Pasadena, California under contract to SCE (see Appendix D for analytical methods and QA/QC protocol).

### 5.3.1 Physical Testing

Physical testing of soil samples was conducted to further characterize the hydrogeologic parameters of the vadose zone soils beneath the chemical cleaning basin. Two samples were selected and submitted to PTS to be analyzed for porosity, air permeability, percent water saturation, apparent grain density, and grain size distribution (Table 9.1-1 and Appendix E). These samples were selected to be representative of the types of vadose zone soils present beneath the chemical cleaning basin based on the soils encountered during drilling. In addition, Dames & Moore tested selected samples from each boring near the basin for moisture content using method ASTM D2216.

TABLE 5.3-1

PARAMETERS OF CHEMICAL ANALYSES
OF SOIL AND GROUND WATER SAMPLES

| | |
|---|---|
| * pH | Aluminum (Al) |
| * Alkalinity | Antimony (Sb) |
| * Hardness | Arsenic (As) |
| * Sodium (Na) | Barium (Ba) |
| * Potassium (K) | Beryllium (Be) |
| * Calcium (Ca) | Cadmium (Cd) |
| * Magnesium (Mg) | Chromium-Total (Cr) |
| * Bicarbonate ($HCO_3$) | Cobalt (Co) |
| * Carbonate ($CO_3$) | Copper (Cu) |
| * Chloride (Cl) | Lead (Pb) |
| * Sulfate ($SO_4$) | Mercury (Hg) |
| * Nitrate ($NO_3$) | Molybdenum (Mo) |
| * Fluoride (F) | Nickel (Ni) |
| * Hydroxide (OH) | Selenium (Se) |
| Trichloroethylene (TCE) | Silver (Ag) |
| Pentachlorophenol (PCP) | Thallium (Tl) |
| Hydrocarbons-Total (THC) | Vanadium (V) |
| | Zinc (Zn) |

* = ground water only

### 5.3.2 Chemical Analysis of Soil Samples

A soil sample collected near the base of the chemical cleaning basin and and a soil sample from near the base of the vadose zone in borings RBW-1, RBW-2, RBW-3, RB-1, and RB-2 were submitted for chemical analysis to evaluate the chemical characteristics of the vadose zone soils near the chemical cleaning basin (see Appendix F and Table 9.2-1 for analytical results). Horizontal composites (depth discrete composite samples) were analyzed if two borings were located on the same side of the basin and subsurface conditions were relatively uniform. Vertical composite samples were analyzed only if one boring was located along a side of the basin and/or subsurface conditions were variable. Soil samples collected from borings RB-1 and RB-2, located west of the basin, were horizontally composited. Samples from borings RBW-1 and RBW-2, located south (downgradient) of the basin were similarly composited. Three samples (the two samples previously noted and a sample from a depth where organic vapors were detected) from RBW-3 were vertically composited to characterize the vadose zone soils north (upgradient) of the basin. Equal volumes of the soil samples were composited by the laboratory. In addition, a soil sample collected from boring RB-3 was analyzed to provide chemical characteristics of soil upgradient from the basin which has not been affected by possible seepage from the chemical cleaning basin or north retention basin.

### 5.3.3 Chemical Analysis of Ground Water Samples

Ground water samples collected from the three observation wells installed during the field investigation and two existing piezometers (P-1 and P-15) were submitted for chemical analysis. Samples collected from RBW-1 and RBW-2 were analyzed to obtain ground water quality data downgradient of the chemical cleaning basin and the sample from RBW-3 provided upgradient ground water quality data. The sample from P-15 was analyzed to provide data on the water quality of perched ground water. The sample from P-1 provided background water quality data for shallow unconfined ground water migrating onsite in the vicinity of the basin (see Appendix F and Table 10.5-2 for analytical results).

## 5.4 DATA INTERPRETATION AND REPORT PREPARATION

Data generated during this investigation were interpreted and integrated into this report. Well logs and boring logs were correlated and cross-sections were constructed to depict the subsurface hydrogeologic conditions in the site vicinity. An isohyetal map showing the 85-year mean annual rainfall in the site vicinity was constructed. Measured ground water levels were plotted, lines of equal elevation were contoured, and the ground water flow direction was estimated. Estimates of the hydraulic properties of the aquifers beneath the site and ground water flow rates were calculated. The ground water quality data were analyzed and plotted on a trilinear diagram. Locations of wells within one mile of the site were plotted and well descriptions were tabulated.

# 6.0 SURFACE WATER HYDROLOGY

The only surface water body within one mile of the site is the Pacific Ocean which is located approximately 250 feet west of the site. King Harbor and a rip-rap jetty are situated between the site and the surf zone. Tidal fluctuations typically range from 4 to 4.5 feet between high and low tides. Extreme tidal ranges in excess of 8 feet occur annually. In 1982 the high and low predicted tides for Los Angeles Harbor (located about 16 miles southeast of the site) ranged from a high of 7.2 feet above MLLW to a low of -1.6 feet below MLLW (U.S. Department of Commerce, 1982). The ocean is also susceptible to excess tide and wave action associated with prevailing westerly storm fronts. There have been no known flooding incidents at the site due to high storm waves and the harbor jetty should prevent any flooding in the future.

# 7.0 EXISTING GROUND WATER WELLS

The existing ground water wells at the site consist of twenty-eight SCE piezometers (P-1 through P-19, P-21 through P-28, and TW), two deep ground water dewatering wells (DW-1, DW-2), four shallow dewatering wells (SW-1 through SW-4), a well point dewatering system, and a LACFCD observation well (705B) (Plate 3 and Appendix G). An additional SCE piezometer (P-20) is located east of the site and four abandoned SCE ground water extraction wells were located along the eastern boundary of the site (Plate 2 and Appendix G).

The dewatering system was installed to prevent ground water from flooding the fuel oil storage tanks and fuel oil pump station. The previous flooding in these areas was a result of high ground water levels caused by fresh water injection along the LACFCD's West Coast Basin Barrier Project (WCBBP). Ground water from the dewatering system is discharged with cooling water via an ocean outfall. The onsite piezometers were installed to evaluate ground water flow beneath the site so that an effective dewatering system could be designed (SCE, 1982). The piezometers are gauged periodically to monitor the effects of the dewatering system.

The WCBBP is located along Prospect Avenue, approximately 2500 feet east of the eastern site boundary, and north of the site along Valley Drive (Plate 2). The WCBBP consists of numerous injection wells and internodal observation wells (see Appendix G for locations and construction details). The WCBBP was installed in 1965 to provide a barrier to prevent further sea water intrusion into fresh water aquifers in the West Coast ground water basin and provide ground water recharge to the basin.

In addition to the wells along the WCBBP, there are numerous other LACFCD observation wells and abandoned wells within one mile of the site (see Appendix G for locations and construction details). With the exception of onsite dewatering wells, ground water extraction wells are not known to be present within one mile of the site.

## 8.0 CLIMATE

The site is located at the southwestern margin of the coastal plain within Los Angeles County and has a Mediterranean type climate, with warm, dry summers and cool, wet winters. Precipitation occurs mainly during the period from November through April. Plate 6 is an isohyetal map (lines of equal precipitation) for the region prepared by the LACFCD. LACFCD precipitation records for Redondo Beach (Station 42, Plate 6) indicate the average annual

precipitation, normalized to 100 years, is 11.4 inches. The minimum annual precipitation recorded at Redondo Beach was 4.1 inches in 1960-61 and the maximum annual precipitation recorded was 26.5 inches in 1940-41. These values are considered to be representative for the site due to the close proximity of the station to the site.

LACFCD has prepared precipitation depth-duration-frequency tables for selected stations throughout Los Angeles County. The tables were prepared using the general equation for hydraulic frequency analysis from Chow (1964) and the Pearson Type III frequency distribution. The station closest to Redondo Beach for which the tables were prepared is located at Los Angeles International Airport (Station 734, Plate 6). The airport is climatologically similar to Redondo Beach. The predicted 100 year 24-hour rainfall for the site is 6.40 inches based on the data from the airport station.

The Redondo Generating Station is not located within one mile of a surface water drainage. Consequently, a flood hazard from stream runoff is not considered to be present at the site.

## 9.0 VADOSE ZONE

### 9.1 PHYSICAL CHARACTERISTICS

The vadose zone beneath the chemical cleaning basin is approximately 10 feet thick. Vadose zone soils consist of fine sand and gravel fill material underlain by fine to medium sand with a trace of gravel. Interbeds of slightly silty sand and gravelly sand were encountered in the upper 10 feet of Boring RB-2. Grain size analyses of two vadose zone soil samples are presented in Appendix E.

Physical testing of two vadose zone soil samples (Table 9.1-1) yielded porosities of 39.9 and 40.4 percent. Hydraulic conductivity values of $3.2 \times 10^{-3}$ and $3.5 \times 10^{-3}$ cm/s were calculated from laboratory-derived air permeability values. These values are near the low end of the range of hydraulic conductivity values presented in Freeze and Cherry (1979) for this type of soil.

TABLE 9.1-1

RESULTS OF PHYSICAL TESTING[a] OF VADOSE ZONE SOILS

| | Sample I.D. | |
|---|---|---|
| | RB2-5C | RBW1-3C |
| Lithology | SM | SP |
| Porosity (%) | 32.9 | 40.4 |
| Air Permeability (millidarcy) | 3,320 | 3,630 |
| Hydraulic Conductivity[b] | | |
| 1. (cm/s) | $3.2 \times 10^{-3}$ | $3.5 \times 10^{-3}$ |
| 2. (gpd/ft$^2$) | 67.7 | 74.0 |
| Moisture Content (% volume) | 11.8 | 7.8 |
| Apparent Grain Density (gram/cubic centimeter) | 2.63 | 2.59 |

[a] Tests conducted by Petroleum Testing Services, Santa Fe Springs, CA.
[b] Empirical hydraulic conductivity calculated from air permeability.

Volumetric water content (% volume of water in the total volume of soil) was calculated from the moisture content (% dry weight) determined for several vadose zone soil samples from each of the borings located near the chemical cleaning basin. Water contents within the vadose zone samples tested are 12% or less. These data were plotted versus depth (Plate 7).

## 9.2 CHEMICAL CHARACTERISTICS

Five composite soil samples from the vadose zone near the chemical cleaning basin were analyzed for the chemical parameters outlined in Table 5.3-1. In addition, soil pH of the samples was measured in the field. The soil pH values ranged from 5.1 to 8.3. These values are within the typical range (5 to 9) for these types of soils.

The results of the chemical analyses (Table 9.2-1) indicated that the concentrations of most of the chemical parameters in soil samples collected near the chemical cleaning basin were equal to or less than the background sample (RB3-1A). Downgradient sample RBW1-5A + RBW2-5A had slightly higher concentrations of nickel, selenium, zinc, and vanadium than background sample RB3-1A. Selenium concentrations greater than the background level were detected in all the other samples analyzed except sample RB1-7B + RB2-7A. In addition, vanadium concentrations in samples RB1-5A + RB2-5A and RB1-7B + RB2-7A exhibited greater concentrations of vanadium than the background level. In all instances the total concentrations detected in the samples were less than Total Threshold Limit Concentrations (TTLC).

Lead was detected at a total concentration in downgradient soil sample RBW1-5A + RBW2-5A which could theoretically exceed the STLC value for lead. The Waste Extraction Test (WET) performed on duplicate soil samples RBW1-5B and RBW2-5B indicated that the extractable concentration of lead in these samples is below the STLC and thus, is not classified as a hazardous concentration based on Article 11 criteria.

TABLE 9.2-1

RESULTS[a] OF CHEMICAL ANALYSES OF SOIL SAMPLES

| | | | Sample I.D.[b] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | TTLC[c] | STLC[d] | RB1-5A RB2-5A | RB1-7B RB2-7A | RBW1-3A RBW2-3A | RBW1-5A RBW2-5A | RB3-1A | RBW3-2A+3A-5A | RBW1-5B | RBW2-5B |
| Date Sampled | - | - | | | | | | | | |
| Ag | 500 | 5 | <0.50 | <0.49 | 0.48 | <0.50 | <0.50 | 0.49 | | |
| As | 500 | 5.0 | 0.69 | 0.87 | 0.096 | 0.69 | 1.2 | 0.49 | | |
| Al | - | - | 980 | 840 | 1,000 | 990 | 3,400 | 630 | | |
| Ba | 10,000 | 100 | 7.8 | 4.9 | 10 | 22 | 31 | 4.6 | | |
| Be | 75 | 0.75 | <0.40 | <0.39 | <0.30 | <0.40 | <0.40 | <0.39 | | |
| Cd | 100 | 1.0 | <0.30 | <0.29 | <0.29 | <0.30 | <0.30 | <0.29 | | |
| Cr (total) | 2,500 | 560 | 4.3 | 6.7 | 3.5 | 3.7 | 7.0 | 4.2 | | |
| Co | 8,000 | 80 | <2.6 | <2.5 | <2.5 | <2.6 | <2.6 | <2.5 | | |
| Cu | 2,500 | 25 | 4.4 | 6.0 | 2.3 | 10 | 11 | 1.4 | | |
| Hg | 20 | 0.2 | <0.03 | <0.03 | <0.03 | 0.06 | <0.03 | <0.03 | | |
| Mo | 3,500 | 350 | <0.99 | <0.97 | <0.96 | <0.99 | 0.99 | <0.97 | | |
| Ni | 2,000 | 20 | 2.0 | 2.2 | 3.7 | 4.4 | 3.7 | 1.8 | | |
| Pb | 1,000 | 5.0 | <5.0 | <4.9 | <4.8 | 53[h] | <5.0 | <4.9 | 2.1[i] | 0.98[i] |
| Se | 100 | 1.0 | 0.30 | <0.078 | 0.48 | 0.50 | 0.099 | 0.49 | | |
| Sb | 500 | 15 | <0.15 | <0.15 | <0.14 | <0.15 | <0.15 | <0.15 | | |
| Tl | 700 | 7.0 | <0.53 | <0.52 | <0.52 | <0.53 | <0.53 | <0.52 | | |
| Zn | 5,000 | 250 | 9.2 | 8.5 | 12 | 43 | 13 | 4.6 | | |
| V | 2,400 | 24 | 41 | 25 | 3.1 | 15 | 11 | 4.8 | | |
| TCE[e] | 2,040 | 204 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | | |
| PCP[f] | 17 | 1.7 | <10 | <10 | <1.0 | <10 | <10 | <1 | | |
| THC[g] | - | - | 16 | <10 | 225 | 28 | 18 | <10 | | |

TABLE 9.2-1 (concluded)

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[a] Concentrations in milligram/kilogram (mg/kg).
[b] Example of Sample I.D.: RBW1-3A+RBW2-3A = Composite of the "A" sample sleeve sample number 3 in borings RBW2 and RBW1.
[c] Total Threshold Limit Concentration (mg/kg) from California Administrative Code Title 22, Division 4, Chapter 30, Article 11.
[d] Soluble Threshold Limit Concentration in milligrams/liter (mg/l) from California Administrative Code Title 22, Division 4, Chapter 30, Article 11.
[e] Trichloroethylene.
[f] Pentachlorophenol.
[g] Total hydrocarbons.
[h] Maximum theoretical soluble concentration obtainable from WET analysis exceeds STLC.
[i] Concentrations (mg/l) obtained from WET analyses of duplicate samples RBW1-5B and RBW2-5B.

# 10.0 HYDROGEOLOGY

## 10.1 REGIONAL SETTING

The Redondo Generating Station is located near the southwestern edge of the West Coast ground water basin, a rectangular northwest-southeast trending subbasin of the Los Angeles coastal ground water basin (Plate 1). The physiographic boundaries of the West Coast basin are the Ballona escarpment on the north; the Baldwin, Rosecrans and Dominguez Hills on the east; and Pacific Ocean on the south and west. The Palos Verdes Hills bound the southwest corner of the basin. The Palos Verdes Hills were formed due to uplift on the Palos Verdes fault located along the northern and eastern base of the hills. The hills along the eastern margin of the basin formed due to uplift on the Newport-Inglewood structural zone, a series of en echelon faults and anticlinal folds that form a discontinuous barrier to ground water flow from the Central basin to the West Coast basin (Poland and others, 1959; CDWR, 1961).

The West Coast basin is underlain by a thick sequence (up to 13,000 feet thick) of middle Miocene through Holocene age marine and continental sediments deposited in a broad synclinal depression. The synclinal depression is locally interrupted by two series of anticlinal domes formed in Pliocene and older rocks. These northwest trending series of anticlinal domes extend from Gardena to Playa Del Rey and through Wilmington to Torrance. The only known fault displacing Quaternary deposits within the West Coast basin is the Charnock fault, located approximately 5 miles east-northeast of the site (CDWR, 1961).

## 10.2 STRATIGRAPHY

The West Coast basin is directly underlain by Pleistocene age, marine, and continental deposits of the San Pedro and Lakewood formations (CDWR, 1961). These formations consist of sand, sandstone, and silty sandstone aquifers separated by silt or clay aquitards with a cumulative thickness of greater than 800 feet. Locally, clay and silt deposits are absent and aquifers are in direct hydraulic contact. The regional hydrogeologic units are, from youngest to oldest stratigraphic order: (1) Old Dune Sand aquifer; (2) Manhattan Beach aquitard; (3) Gage-Gardena aquifer; (4) El Segundo aquitard; (5) Lynwood

aquifer; (6) Silverado aquifer; (7) Redondo Beach aquitard; and (8) Lower San Pedro aquifer. Fluvial deposits and active dune sand of Holocene age are locally present at the surface in the West Coast basin. Various names have been assigned to these hydrogeologic units in previously published reports on the hydrogeology of the West Coast basin. The stratigraphic nomenclature associated with these units is summarized in Table 10.2-1. The stratigraphic relationship of the units in the site region is depicted in Plate 8.

### 10.2.1 Regional Stratigraphy

The lowermost fresh water bearing strata within the site region is the Lower San Pedro aquifer of the San Pedro Formation. The Lower San Pedro aquifer consists of silty sand, fine sandy silt, and fine sand with trace clayey sand, silty clay, and gravel. The top of the aquifer occurs at an elevation of approximately -300 feet MSL at the coast and increases in depth inland (Plate 8). The aquifer is greater than 250 feet thick.

The Redondo Beach aquitard overlies the Lower San Pedro aquifer and consists of approximately 80 feet of sandy clay, silty clay, and clayey silt with minor sand and gravel. Shell fragments are abundant throughout the unit. The top of the aquitard occurs at elevations between -200 and -250 feet MSL near the coast increases in depth to the east (Plate 8).

The Silverado aquifer overlies the Redondo Beach aquitard and is the principal water bearing unit in the West Coast basin. The Silverado aquifer principally consists of medium to coarse sand with some interbedded fine sand, gravel, and silty sand. The aquifer is approximately 125 to 145 feet thick near the site and thickens to the east where it merges with the Lynwood aquifer (Plate 8). The El Segundo aquitard is absent in the site vicinity and the Silverado aquifer is directly overlain by the Gardena aquifer.

The Gardena aquifer is the basal unit of the Lakewood Formation and consists of fine to coarse sand and gravel with minor interbedded silty and sandy clay. Shell and wood fragments are abundant locally. The aquifer thickness is 65 to 75 feet in the site vicinity and increases to approximately 175 feet

TABLE 10.2-1

GENERALIZED STRATIGRAPHY,
EL SEGUNDO SAND HILLS

| Stratigraphic Unit Nomenclature | | | Stratigraphic Unit |
|---|---|---|---|
| CDWR (1961) | Poland and Others (1959) | LACFCD (1958) | Nomenclature Used in this Report |
| Active Dune Sand<br>Older Dune Sand | Dune Sand and Coastal Deposits | Dune Sand and Coastal Deposits | Old Dune Sand Aquifer |
| Lakewood Formation | | | |
| Bellflower Aquiclude | Unnamed Upper Pleistocene Deposits | Manhattan Beach Cap | Manhattan Beach Aquitard[1] |
| Gage/Gardena Aquifer | 200-foot Sand | 200-foot Sand | Gage Aquifer |
| San Pedro Formation | | | |
| Unnamed Aquiclude | Unnamed Aquiclude | El Segundo Cap | El Segundo Aquitard |
| Lynwood Aquifer | 400-foot Gravel | 400-foot Gravel | |
| Unnamed Aquiclude | Unnamed Aquiclude | Unnamed Aquiclude | |
| Silverado Aquifer | Silverado Water-Bearing Zone | Silverado Aquifer | Silverado Aquifer[2] |
| Unnamed Aquiclude | Unnamed Aquiclude | Redondo Beach Aquiclude | Redondo Beach Aquitard |

[1] Manhattan Beach Aquitard absent in site area. Old Dune Sand and Gage aquifers merged.
[2] Comprises merged Lynwood and Silverado aquifers (CDWR, 1961).

beneath the eastern portion of the El Segundo sand hills. The Gardena aquifer is similar in lithology to the underlying Silverado aquifer but is distinguished by a greater concentration of pebbles and gravel.

The Manhattan Beach aquitard typically consists of massive clay, silty clay, and sandy clay with abundant shells. The aquitard pinches out in the vicinity of the site and thickens beneath the eastern portion of the El Segundo sand hills (Plate 8) where sand, silty sand, and clayey silt are present in the upper part of this unit. Previous investigators have interpreted the upper surface of the Manhattan Beach aquitard to be an erosional unconformity (LACFCD, 1958). Portions of the Manhattan Beach aquitard were apparently removed by erosion allowing the Old Dune Sand aquifer to be deposited directly upon the Gardena aquifer.

The Old Dune Sand aquifer is the uppermost hydrogeologic unit. It consists of fine to medium dune sand overlying sand, silt, and gravel terrace deposits. The Old Dune Sand aquifer includes recent dune and beach sands along the coast. The thickness of the unit is variable depending on the land surface topography, and has a maximum thickness in the eastern portion of the El Segundo sand hills (Plate 8).

### 10.2.2 Site Stratigraphy

This section presents a summary of the nature and geometry of the near-surface geologic units at the site on the basis of data gathered from existing literature, well logs, onsite subsurface borings, and data obtained during the field investigation. These data were used to charactrize the shallow subsurface stratigraphy and construct two geologic cross-sections across the site (Plates 9 and 10). Some of the subsurface data used herein was collected during previous investigations by SCE (1977b, 1982), Dames & Moore (1946a, 1946b, 1947, 1952), and LeRoy Crandall & Associates (1964a, 1964b, 1964c, 1979, 1981).

The units immediately underlying the site consist of a series of unconsolidated shallow marine and continental deposits of Pleistocene and Holocene age. For the purpose of this investigation, the shallow subsurface stratigraphy at the site was divided into four hydrologic units. In decreasing stratigraphic succession, these units are: (1) Old Dune Sand (perched) aquifer; (2) clay aquitard; (3) Gardena-Silverado aquifer; and (4) the Redondo Beach aquitard. The stratigraphic relationship between the three uppermost units is presented on Plates 9 and 10.

The Old Dune Sand aquifer is the surficial unit throughout most of the site. It consists of fine to medium sand overlying fine to medium sand with minor gravel. The Old Dune Sand aquifer is not present at the surface in the vicinity of the chemical cleaning basin. The chemical cleaning basin and north retention basin are constructed on fill material which was placed in a natural surface depression formerly present at the site. This fill material is variable in thickness and consists of fine to medium sand, similar to the Old Dune Sand aquifer, with some rock, asphalt, and concrete fragments. The portion of the Old Dune Sand aquifer underlain by an aquitard in the western portion of the site is referred to as the "perched" aquifer and is distinguished from that portion of the Old Dune Sand aquifer which is in direct contact with the underlying Gardena-Silverado aquifer beneath the eastern portion of the site.

In the western portion of the site, clay, silt, and peat deposits form an aquitard up to six feet thick that separates the overlying fill and Old Dune Sand aquifer from the underlying Gardena-Silverado aquifer. This aquitard confines the underlying Gardena-Silverado aquifer and retards percolation of ground water from the Old Dune Sand aquifer into the Gardena-Silverado aquifer. The aquitard thickens towards the west and apparently pinches out towards the east beneath the chemical cleaning basin. It was detected in borings LCA-22 and RBW-2 but not in SCE borings 1 through 6 and RBW-3 (Plate 10).

The Gardena-Silverado aquifer consists of interbedded fine to coarse sand with gravel, pebbles, and occasional wood fragments. Based on the lithologic log from LACFCD observation well 705B (Plate 8), the Gardena aquifer is inferred to be approximately 65 feet thick. The Silverado aquifer is lithologically similar to the Gardena aquifer and is approximately 140 to 150 feet thick beneath the site.

The Redondo Beach aquitard underlies the Silverado aquifer and occurs at an elevation of approximately -200 feet MSL. It consists of approximately 80 feet of very fine sandy silt with some clay.

## 10.3 HYDRAULIC PROPERTIES

The Gardena-Silverado aquifer is unconfined in the eastern part of the site and confined in the western part of the site. East of the site, the Manhattan Beach aquitard is present (Plate 8) and the aquifer is confined. Constant rate drawdown and recovery pumping tests conducted on the Gardena-Silverado aquifer during testing of the dewatering system indicate the aquifer has a transmissivity of approximately 430 $cm^2/s$ (300,000 gpd/ft), and a storage coefficient of 0.10 (SCE, 1982 and file data). Assuming a saturated thickness of 200 to 225 feet, a hydraulic conductivity of 0.06 to 0.07 cm/s (1330 to 1500 gpd/ft) is estimated. CDWR (1961) reports transmissivities on the order of 290 to 360 $cm^2/s$ (200,000 to 250,000 gpd/ft) for this aquifer in the site vicinity.

The hydraulic conductivity of saturated soils of the Old Dune Sand (perched) aquifer beneath the chemical cleaning basin was estimated from the air permeability values obtained from the vadose zone soils (Table 9.1-1). The saturated soils are lithologically similar to the vadose zone samples tested. The air permeability values were converted to equivalent water hydraulic conductivity values using standard values for the density and viscosity of water (Freeze and Cherry, 1979). The calculated hydraulic conductivity values ranged from $3.2 \times 10^{-3}$ to $3.5 \times 10^{-3}$ cm/s (67 to 74 $gpd/ft^2$). Using these values and a saturated thickness of 12 feet (see boring log for RBW-2 in Appendix A), a transmissivity of approximately 1.2 to 1.3 $cm^2/s$ (800 to 900 gpd/ft) is calculated. The specific yield is estimated to range from 0.25 to 0.30 based on a graph relating specific yield to median grain size (Davis and DeWiest, 1966).

## 10.4 GROUND WATER FLOW

### 10.4.1 Regional Ground Water Flow

Ground water recharge to the Gardena-Silverado aquifer in the site vicinity principally occurs through injection of fresh water into the WCBBP. Replenishment to the Old Dune Sand aquifer is by direct infiltration of precipitation and artificially applied water.

Extensive ground water extraction in the inland portions of the West Coast basin caused an easterly gradient to develop and sea water intrusion to occur prior to 1965. Since installation of the WCBBP in 1965, a westerly (oceanward) ground water flow has been reestablished in the Gardena-Silverado aquifer. Injection along the WCBBP maintains ground water levels in the Gardena-Silverado aquifer at approximately 12 feet MLLW at the barrier, approximately 2500 feet east of the site (LACFCD, 1984). September, 1984 ground water levels typically range from 2.4 to 4.0 feet MLLW in site observation wells completed in the unconfined portion of the aquifer (SCE file data). These levels indicate a westerly gradient of approximately 0.003 to 0.004 (16 to 21 feet/mile). There are no data available for ground water levels in the Old Dune Sand aquifer in the site region.

### 10.4.2 Site Ground Water Flow

The site is situated in a coastal environment at or close to the area of natural ground water discharge to the ocean. Artificial discharge occurs as a result of operation of the site dewatering system. Two deep dewatering wells (DW-1 and DW-3) have a combined discharge rate of approximately 1800 gpm. In addition, four shallow dewatering wells and the well point dewatering system have a combined discharge rate of greater than 950 gpm (SCE, 1982 and file data). Prior to installation of this system, ground water flow beneath the site was westerly towards the ocean.

Water level data from the site (SCE file data and September 1985 data) indicate ground water in the perched aquifer flows horizontally towards both the west and the east of an apparent ground water ridge beneath the central portion of the site (Plate 11). The westerly flow is the natural ground water discharge to the ocean. The easterly flow is caused by the site dewatering system.

Gardena-Silverado aquifer piezometric levels where the aquifer is confined in the western portion of the site, and ground water surface levels where the aquifer is unconfined in the eastern part of the site, are affected by ground water extraction from the site dewatering system. The dewatering system causes ground water in the Gardena-Silverado aquifer beneath the site to generally flow towards the east. Ground water beneath the chemical cleaning basin in the merged Gardena-Silverado aquifer and overlying Old Dune Sand/perched aquifer flows southeast toward dewatering well DW-1 (Plate 12).

Continuous monitoring of ground water levels in several observation wells at the site prior to installation of the dewatering system indicated that changes in ground water levels occurred in response to tidal fluctuations (SCE file data). The variation between high and low tides was approximately 1 foot at the west boundary of the site and 0.3 foot in the central portion. No fluctuations were detected at the east boundary of the site. Based on these data, tidal fluctuations are not interpreted to affect ground water flow beneath the chemical cleaning basin.

Based on water level measurements in wells RBW-3 and RBW-2, the gradient of the ground water surface beneath the chemical cleaning basin is calculated to be approximately 0.003. The hydraulic conductivity values calculated from air permeability tests, (Table 9.1-1) are considered to be reasonable estimates of the saturated soils beneath the chemical cleaning basin due to the similar lithology of the saturated soils and vadose zone soils. An average linear flow velocity, V, in the uppermost aquifer beneath the chemical cleaning basin is estimated to be $2.4 \times 10^{-5}$ to $2.6 \times 10^{-5}$ cm/s (0.07 to 0.08 ft/day) and is calculated as follows:

$$V = \frac{K \times i}{n}$$

where K = hydraulic conductivity =

$3.2 \times 10^{-3}$ to $3.5 \times 10^{-3}$ cm/s (9 to 10 ft/day)

i = ground water gradient = 0.003

n = porosity = 0.40 (Table 9.1-1)

Ground water flow velocity south of the chemical cleaning basin increases near well DW-1. This is due to the higher ground water gradient near the dewatering well and the higher hydraulic conductivity of the Gardena-Silverado aquifer. Based on a hydraulic conductivity of the Gardena-Silverado aquifer of 0.06 to 0.07 cm/s (170 to 200 ft/day), and a ground water gradient between wells RBW-2 and P-9 of 0.012, a range of linear flow velocities of $1.8 \times 10^{-3}$ to $2.1 \times 10^{-3}$ cm/s (5 to 6 ft/day) are calculated.

## 10.5 GROUND WATER QUALITY

Ground water in the Gardena-Silverado aquifer contains chloride concentrations in excess of 15,000 ppm in the site vicinity (LACFCD, 1984). Analyses of Gardena-Silverado ground water samples from the dewatering system wells indicate chloride concentrations of approximately 10,000 to 12,000 mg/l. Table 10.5-1 presents May, 1984 water quality data for ground water from wells DW-1 and DW-3. The high chloride and total dissolved solid concentrations of this very saline (Hem, 1970) ground water render it unusable for drinking water or agricultural use.

Ground water samples were collected from wells RBW-1, RBW-2, RBW-3, P-1, and P-15 and submitted for a chemical analysis to evaluate ground water quality near the chemical cleaning basin (Appendix F and Table 10.5-2). Samples from RBW-3 and P-1 were considered to be representative background samples because both wells were hydraulically upgradient of the chemical cleaning and north waste water basins. Samples RBW-1 and RBW-2 were downgradient of the chemical cleaning basin. Sample P-15 provided data on the water quality in the perched aquifer west of the chemical cleaning basin. The results from analyses of duplicate samples 1RBW-1 and 2RBW-1 were similar for all constituents. The mineral content reported for the field and travel blanks (deionized water) were near the detection limit for all constituents. These results imply that the water quality analyses were both accurate and reproducible.

Results of the chemical analyses of RBW-1, RBW-2, and P-15 were compared to results obtained from the background samples (RBW-3 and P-1), primary and secondary drinking water standards, and to a published analysis of sea water

TABLE 10.5-1

RESULTS OF GROUND WATER ANALYSES OF
DEWATERING WELL SAMPLES

| | Dewatering Well | |
|---|---|---|
| | DW-1 | DW-3 |
| Physical: | | |
| pH @ 25°C | 7.2 | 7.6 |
| sp. cond. (umhos/cm) @ 25°C | 27,900 | 31,900 |
| Cations: | | |
| Na (mg/l) | 5350 | 6750 |
| Ca (mg/l) | 570 | 270 |
| Mg (mg/l) | 708 | 720 |
| K (mg/l) | 103 | 239 |
| Anions: | | |
| Cl (mg/l) | 10,300 | 11,900 |
| $HCO_3$ (mg/l as $CaCO_3$) | 284 | 194 |
| $CO_3$ (mg/l as $CaCO_3$) | --- | --- |
| $SO_4$ (mg/l) | 1370 | 1720 |
| $NO_3$ (mg/l) | 5.2 | 0.42 |
| Total Dissolved Solids (mg/l) | 18,740 | 21,960 |
| Sum of cations (mg/l as $CaCO_3$) | 16,100 | 18,600 |
| Sum of anions (mg/l as $CaCO_3$) | 16,200 | 18,700 |

Source: SCE unpublished data, May, 1984.

TABLE 10.5-2

RESULTS[a] OF CHEMICAL ANALYSES OF GROUND WATER SAMPLES

| | Sea Water Composition (Hem, 1970) | Drinking[b] Water Standards | STLC[c] | Sample I.D. 1RBW-1[d] | 2RBW-1[d] | RBW-2 | RBW-3 | P-1 | P-15 |
|---|---|---|---|---|---|---|---|---|---|
| Date Sampled | - | - | - | 7/11/85 | 7/11/85 | 7/11/85 | 7/30/85 | 7/12/85 | 7/12/85 |
| Na | 10,500 | - | - | 200 | 200 | 750 | 150 | 150 | 230 |
| K | 380 | - | - | 22 | 22 | 54 | 14.2 | 6.8 | 12 |
| Ca | 400 | - | - | 110 | 110 | 180 | 180 | 73 | 180 |
| Mg | 1,350 | - | - | 34 | 34 | 160 | 51.7 | 30 | 49 |
| $HCO_3$ | 142 | - | - | 388 | 404 | 927 | 657 | 285 | 607 |
| $CO_3$ | -- | - | - | 1.6 | 1.34 | 3.32 | 1.1 | 0.275 | 1.05 |
| Cl | 19,000 | 250 | - | 280 | 290 | 1,300 | 166 | 114 | 290 |
| $SO_4$ | 2,700 | 250 | - | 152 | 151 | 271 | 205 | 210 | 241 |
| $NO_3$[e] | 0.5 | 10 | - | 0.5 | 0.4 | 0.1 | 0.04 | 12 | 0.5 |
| F | 1.3 | 1.4 to 2.4 | 180 | 3.4 | 3.4 | 6.9 | 0.99 | 0.7 | 1.0 |
| OH | -- | - | - | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Mo | 0.01 | - | 350 | 0.026 | 0.031 | <0.01 | <0.01 | <0.01 | <0.01 |
| Pb | 0.00003 | 0.05 | 5.0 | 0.011 | 0.001 | 0.005 | 0.002 | 0.003 | 0.005 |
| Sb | 0.005 | 0.01 | 15 | <0.002 | <0.002 | 0.016 | <0.002 | 0.004 | <0.002 |
| Zn | 0.01 | 5.0 | 250 | 0.01 | 0.094 | 0.032 | 0.057 | 0.028 | 0.017 |
| Ag | 0.0003 | 0.05 | 5 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |

TABLE 10.5-2 (continued)

| | Sea Water Composition (Hem, 1970) | Drinking[b] Water Standards | STLC[c] | Sample I.D. 1RBW-1[d] | 2RBW-1[d] | RBW-2 | RBW-3 | P-1 | P-15 |
|---|---|---|---|---|---|---|---|---|---|
| As | 0.003 | 0.05 | 5.0 | 0.009 | 0.007 | 0.003 | 0.008 | <0.001 | 0.002 |
| Al | 0.01 | - | - | 2.4 | 1.7 | 0.52 | 0.77 | 1.2 | <0.02 |
| Ba | 0.03 | 1.0 | 100 | 0.082 | 0.073 | 0.12 | 0.064 | 0.19 | 0.14 |
| Be | 0.0000006 | - | 0.75 | <0.004 | <0.004 | <0.004 | <0.004 | <0.004 | <0.004 |
| Cd | 0.00011 | 0.01 | 1.0 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 |
| Cr (total) | 0.00005 | - | 560 | <0.029 | <0.029 | <0.029 | <0.029 | <0.029 | <0.029 |
| Co | 0.0005 | - | 80 | <0.026 | <0.026 | <0.026 | <0.026 | <0.026 | <0.026 |
| Cu | 0.003 | 1.0 | 25 | 0.012 | 0.015 | <0.007 | <0.007 | 0.010 | 0.007 |
| Hg | 0.00003 | 0.002 | 0.2 | <0.0003 | <0.0003 | <0.0003 | <0.0003 | 0.0004 | <0.0003 |
| Ni | 0.002 | - | 20 | 0.053 | 0.045 | <0.008 | <0.008 | 0.014 | 0.012 |
| Se | 0.004 | 0.01 | 1.0 | 0.005 | 0.007 | 0.002 | <0.001 | <0.001 | 0.007 |
| Tl | -- | - | 7.0 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| V | 0.002 | - | 24 | 0.25 | 0.21 | 0.037 | 0.027 | <0.015 | <0.015 |
| TCE[f] (ug/l) | -- | - | 204 | <2.5 | <2.5 | <2.5 | <0.5 | 65 | <0.5 |
| PCP[g] (ug/l) | -- | - | 1.7 | <10 | <10 | <10 | <5 | <200 | <200 |
| THC[h] | -- | - | - | <10 | <10 | <10 | <10 | <10 | <10 |
| TDS[i] | -- | 500 | - | 1,050 | 1,100 | 3,100 | 1,150 | 790 | 1,300 |

41.8S/1-T10.5-2A

TABLE 10.5-2 (concluded)

| | Sea Water Composition (Hem, 1970) | Drinking[b] Water Standards | STLC[c] | Sample I.D. | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1RBW-1[d] | 2RBW-1[d] | RBW-2 | RBW-3 | P-1 | P-15 |
| Hardness | -- | - | - | 417 | 417 | 1,120 | 666 | 308 | 654 |
| Alkalinity | -- | | - | 321 | 333 | 765 | 540 | 234 | 499 |
| pH (field)[j] | -- | - | - | 6.6 | 6.6 | 6.6 | 7.1 | 6.8 | 7.0 |
| pH (lab)[j] | -- | 6.5 to 8.5 | - | 7.7 | 7.6 | 7.5 | 7.3 | 7.1 | 7.3 |
| Elecrical Conductance-field (umhos/cm) | -- | - | - | 1,200 | 1,200 | 2,300 | 800 | 790 | 1,400 |
| Electrical Conductance-lab (umhos/cm) | -- | - | - | 1,680 | 1,710 | 5,040 | 1,790 | 1,160 | 1,990 |
| Salinity-field (parts/thousand) | -- | - | - | 0 | 0 | 10 | 0 | 0 | 0 |
| Temperature-field (°C) | | - | - | 24 | 24 | 24 | 22 | 23 | 22 |

a All values in milligram/liter unless noted otherwise.
b Drinking water standards from Code of Federal Regulations 40 CFR 141 and 40 CFR 143 and California Administrative Code Title 22, Division 4, Chapter 15, Article 4.
c Soluble Threshold Limit Concentration from California Administrative Code Title 22, Division 4, Chapter 30, Article 11.
d Replicate ground water samples from well RBW-1.
e Expressed as milligrams/liter N.
f Trichloroethylene in micrograms/liter.
g Pentachlorophenol in micrograms/liter.
h Total hydrocarbons.
i Total dissolved solids.
j pH units.

(Hem, 1970). The relative amounts of anions and cations were calculated from water quality data and plotted on a trilinear diagram (Plate 13). The results indicate a ground water type without dominant cations or anions for all samples analyzed.

Background sample RBW-3 contained concentrations of TDS and major cations and anions (except sodium, sulfate, and nitrate) equal to or greater than the concentrations in background sample P-1. Ground water quality of samples from RBW-1 and P-15 is generally similar to the background samples. However, these samples contained concentrations of sodium and chloride greater than the range of background concentrations. Fluoride, carbonate, and potassium concentrations in the samples from RBW-1, and sulfate and TDS concentrations in sample P-15 were also greater than the range of background concentrations for these constituents. The concentrations of TDS and the major cations and anions (except nitrate and calcium) in sample RBW-2 were higher than concentrations of those ions in the background samples.

Concentrations of Article 11 inorganics were similar in all samples analyzed. In addition, the concentrations were below the STLC values in all samples analyzed (Table 10.5-2). PCP was not detected in any of the samples. TCE was detected in sample P-1 at a concentration (65 mg/l) below the STLC value for TCE. The concentrations of fluoride and chloride in samples from RBW-1 and RBW-2 exceeds drinking water standards. The sulfate concentration in RBW-2, chloride concentration in sample P-15, and nitrate concentration in sample P-1 also exceed drinking water standards. Total dissolved solids (TDS) concentrations exceed the drinking water standard in all water samples analyzed. These ground water quality data indicate the shallow ground water near the chemical cleaning basin is fresh (<1,000 mg/l TDS, Hem, 1970) to slightly saline (1,000 to 3,000 mg/l TDS, Hem, 1970) and is not suitable for use as drinking water.

## 11.0 VADOSE ZONE AND GROUND WATER MONITORING

There is currently no vadose zone monitoring being conducted onsite near the chemical cleaning basin. Vadose zone monitoring is not considered to be an effective leachate detection method for the chemical cleaning basin. It is unlikely that vadose zone monitoring at the edges of the basin would detect leakage from the basin prior to the leachate migrating to the ground water due to the relatively permeable nature of vadose zone soils near the basin and shallow depth to ground water.

There is currently no ground water monitoring being conducted at the site. However, wells RBW-1, RBW-2, and RBW-3 are designed and located so that future ground water monitoring could be conducted if necessary. RBW-1 and RBW-2 are located downgradient of the basin near the base of the south berm. Well RBW-3 is upgradient of the basin. The wells and screened in the upper portion of the uppermost aquifer beneath the chemical cleaning basin. The wells are constructed of PVC casing with bentonite and cement/bentonite surface seals and locking covers as shown in Appendix A.

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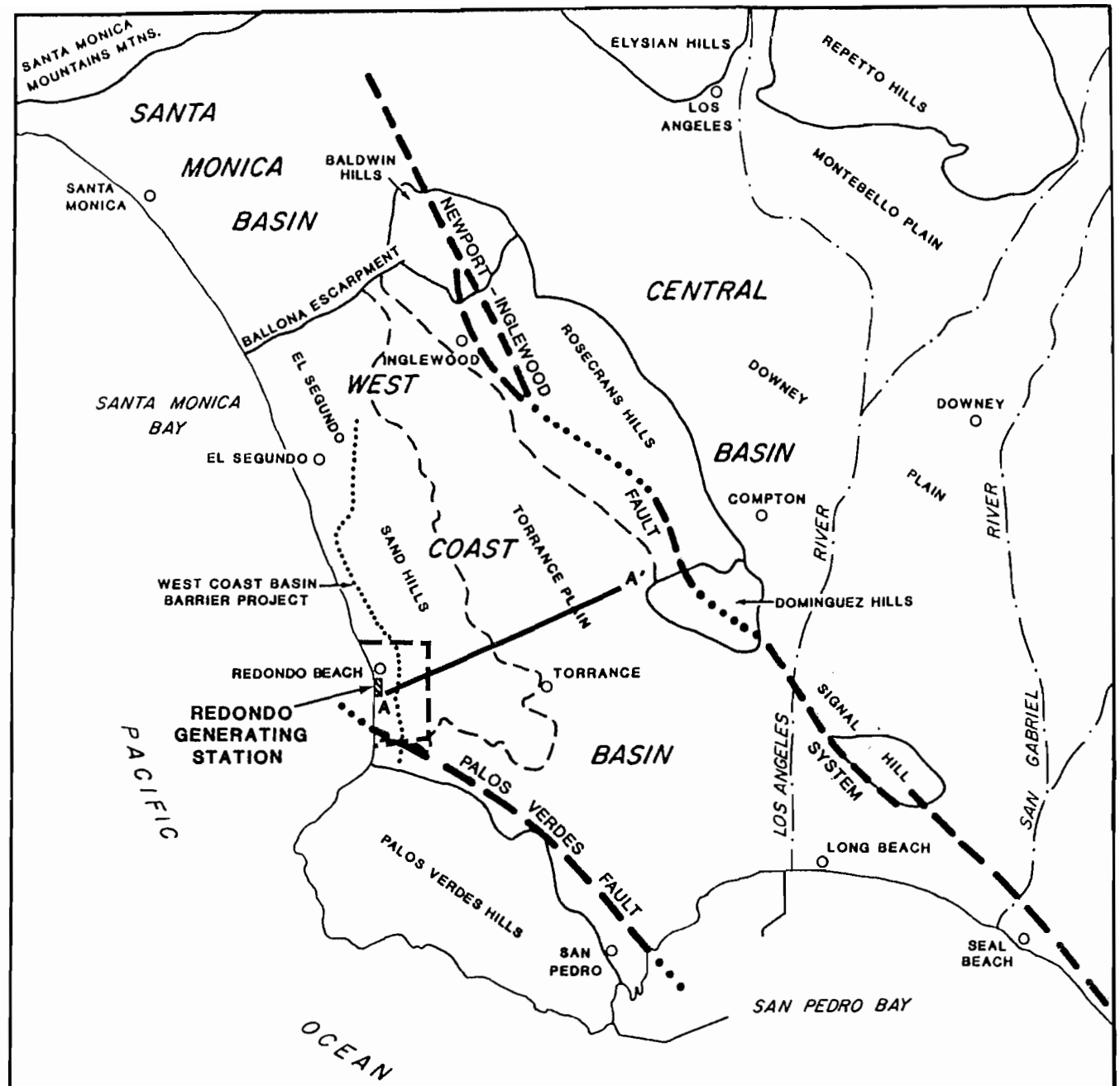



**EXPLANATION :**

- - — — - APPROXIMATE 1 MILE LIMIT

A——A' GEOLOGIC CROSS SECTION (PLATE 6)

MODIFIED AFTER CDWR, 1961

PLATE 1

# REGIONAL PHYSIOGRAPHY AND GROUND WATER BASINS

Dames & Moore

0 1000 2000 FEET

SCALE

BASE MAP SOURCE:

U.S.G.S. REDONDO BEACH 7.5' QUADRANGLE

**EXPLANATION:**

| | |
|---|---|
| A ▬ A' | LINE OF CROSS SECTION |
| ⌒ | WEST COAST BASIN BARRIER PROJECT |
| ○ | ABANDONED WELL OR EXPLORATION DRILL HOLE |
| ● | GROUND WATER OBSERVATION WELL |
| 705 B | LACFCD WELL NUMBER |
| P-20 | SCE PIEZOMETER |

PLATE 2

SITE VICINITY MAP

Dames & Moore

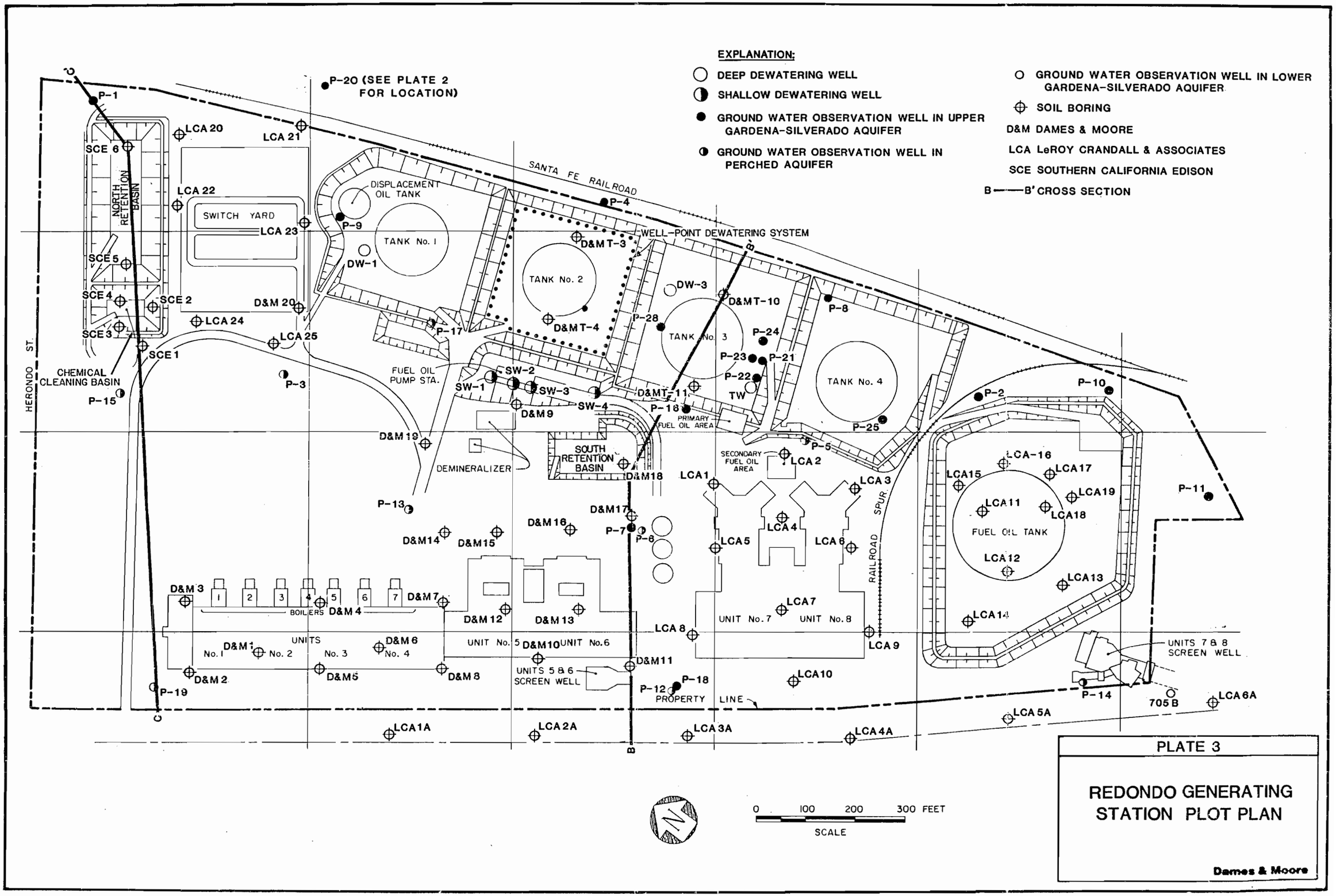



PLATE 3

REDONDO GENERATING STATION PLOT PLAN

Dames & Moore

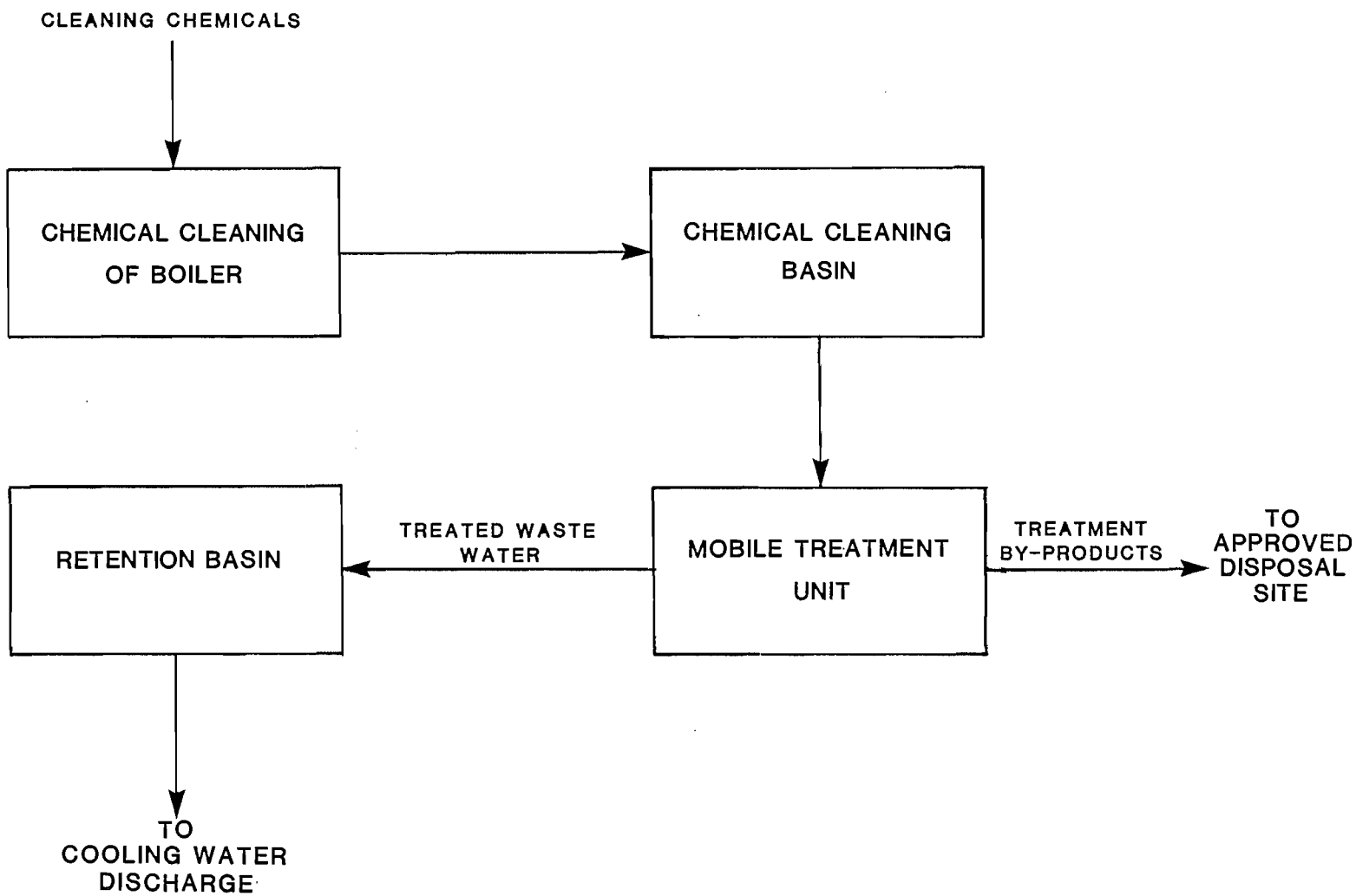
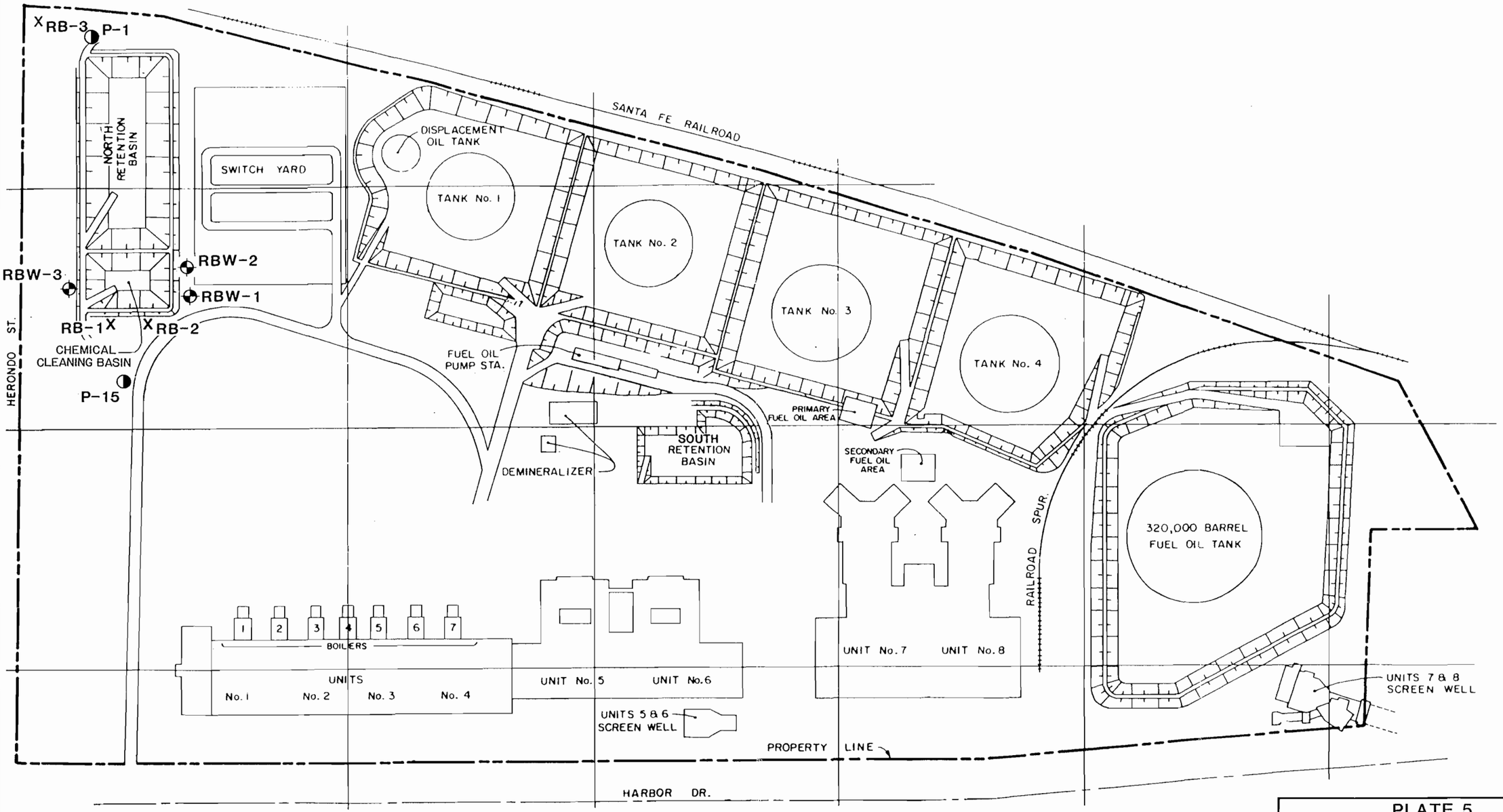



PLATE 4

SCHEMATIC OF BOILER CLEANING WASTE FLOW

Dames & Moore




EXPLANATION:

- X NEW SOIL BORING
- NEW OBSERVATION WELL
- EXISTING PIEZOMETER

PLATE 5

SOIL BORING AND OBSERVATION WELL LOCATION MAP

Dames & Moore

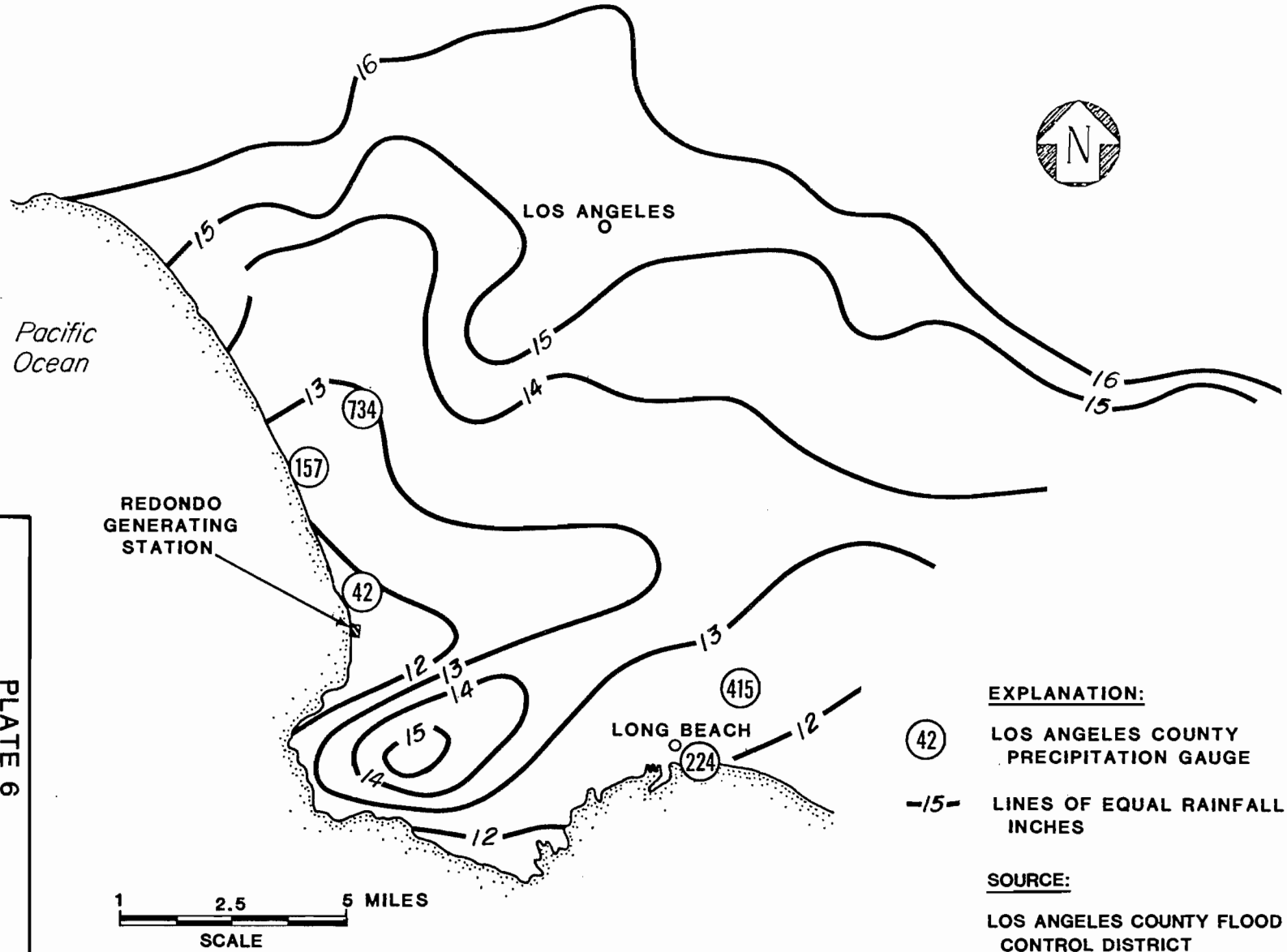
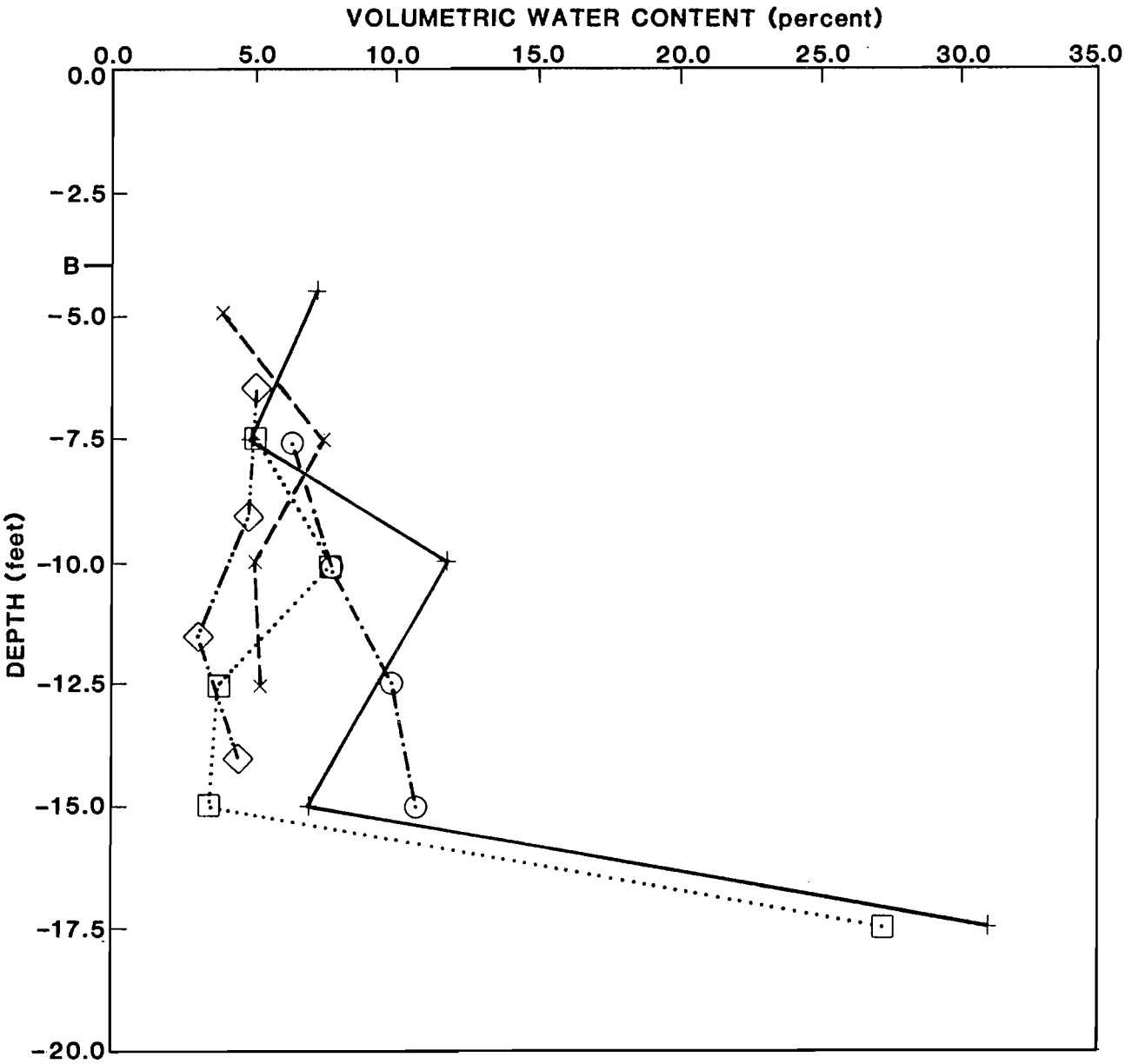



PLATE 6

ISOHYETAL MAP
85 YEAR MEAN
ANNUAL RAINFALL

Dames & Moore




**EXPLANATION**

RBW-1

RBW-2

RBW-3

RB-1

RB-2

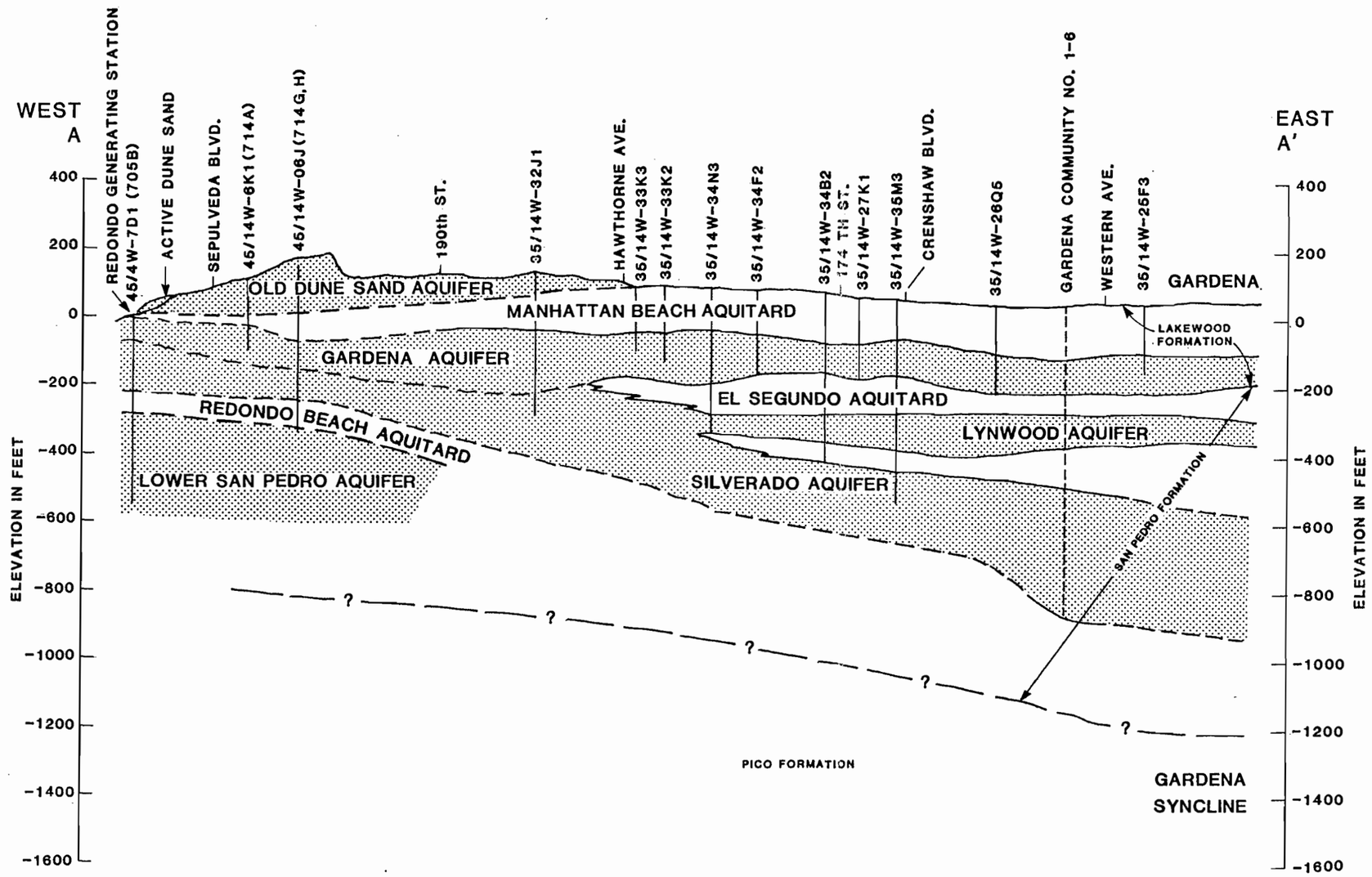
DATUM ELEVATION=20 FT MSL

NOTE: B=BASE OF BASIN

PLATE 7

VOLUMETRIC WATER CONTENT VS. DEPTH

Dames & Moore




**EXPLANATION:**

AQUIFER: PRINCIPALLY COMPOSED OF SAND AND GRAVEL

AQUITARD: PRINCIPALLY COMPOSED OF SILT AND CLAY

(705 B) LACFCD WELL NUMBER (SEE PLATE 2 FOR LOCATION)

45/13W-3R1 CDWR WELL NUMBER

HORIZONTAL

0 2000 4000 6000 8000 FEET

0 200 400 600 800 FEET

VERTICAL SCALE

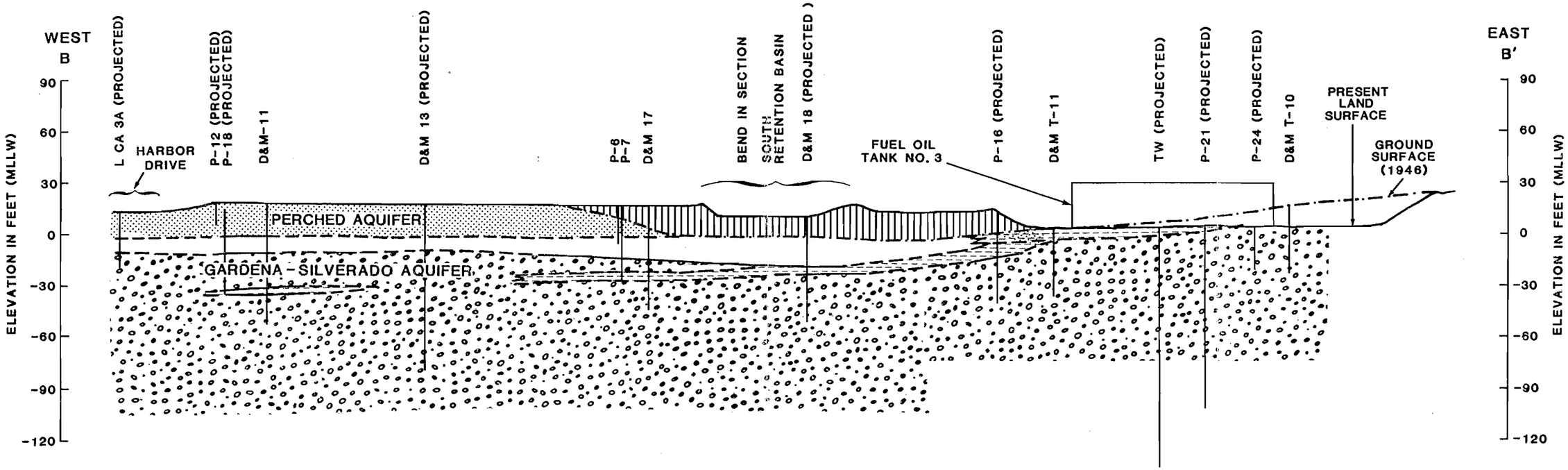
NOTE: LOCATION OF GEOLOGIC SECTION IS SHOWN ON PLATE 1 AND 2

MODIFIED AFTER CDWR (1961)

PLATE 8

REGIONAL GEOLOGIC CROSS-SECTION A-A'

Dames & Moore




EXPLANATION:

PERCHED AQUIFER: FINE TO MEDIUM SAND

GARDENA-SILVERADO AQUIFER: INTERBEDDED FINE SAND, MEDIUM TO COARSE SAND WITH GRAVEL, AND LENSES OF SILTY SAND

AQUITARD: PEATY SILT AND CLAY

FILL: FINE SAND, AND GRAVEL

SILTY SAND

| | | | |
|---|---|---|---|
| P-16 | SCE PIEZOMETER | D&M 18 | DAMES & MOORE SOIL BORING |
| TW | SCE TEST DEWATERING WELL | LCA 3A | LEROY CRANDALL & ASSOCIATES SOIL BORING |

VERTICAL
0 30 60 90 FEET
0 40 80 120 FEET
HORIZONTAL
SCALE

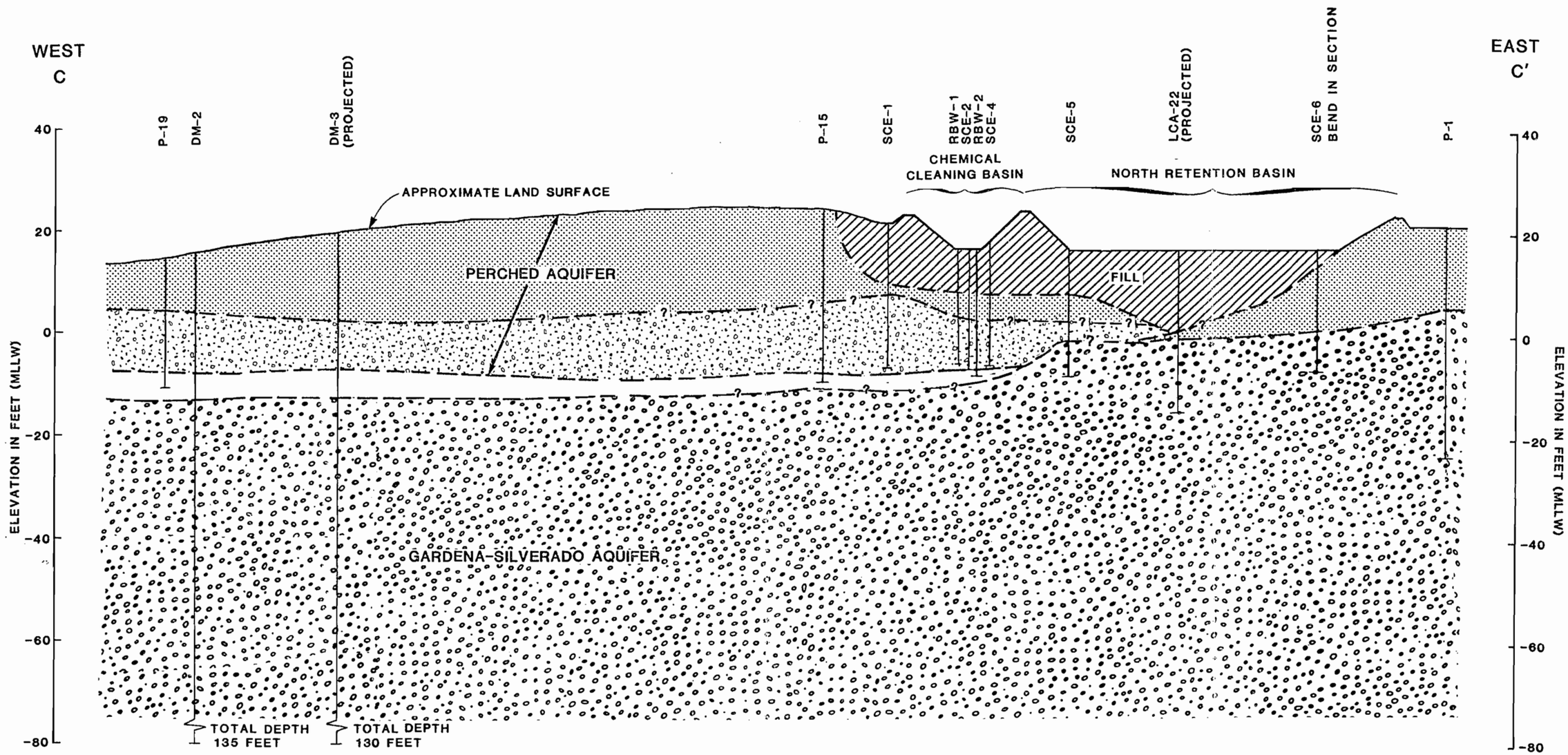
NOTE:
LOCATION OF SECTION SHOWN ON PLATE 3

MODIFIED AFTER SCE, 1982

PLATE 9

GEOLOGIC CROSS SECTION B-B' AT SITE

Dames & Moore




EXPLANATION:

PERCHED AQUIFER: FINE TO MEDIUM SAND OVERLYING FINE TO MEDIUM SAND WITH TRACE GRAVEL

GARDENA-SILVERADO AQUIFER: INTERBEDDED FINE SAND AND MEDIUM TO COARSE SAND WITH GRAVEL AND LENSES OF SILTY SAND

AQUITARD: PEATY SILT AND CLAY

FILL: FINE SAND AND GRAVEL

| | |
|---|---|
| P-16 | SCE PIEZOMETER |
| D&M 18 | DAMES & MOORE SOIL BORING |
| LCA 3A | LEROY CRANDALL & ASSOCIATES SOIL BORING |

NOTE:
LOCATION OF SECTION SHOWN ON PLATE 3

VERTICAL
0 20 40 FEET
0 100 200 FEET
HORIZONTAL
SCALE

PLATE 10

GEOLOGIC CROSS SECTION C-C' AT SITE

Dames & Moore

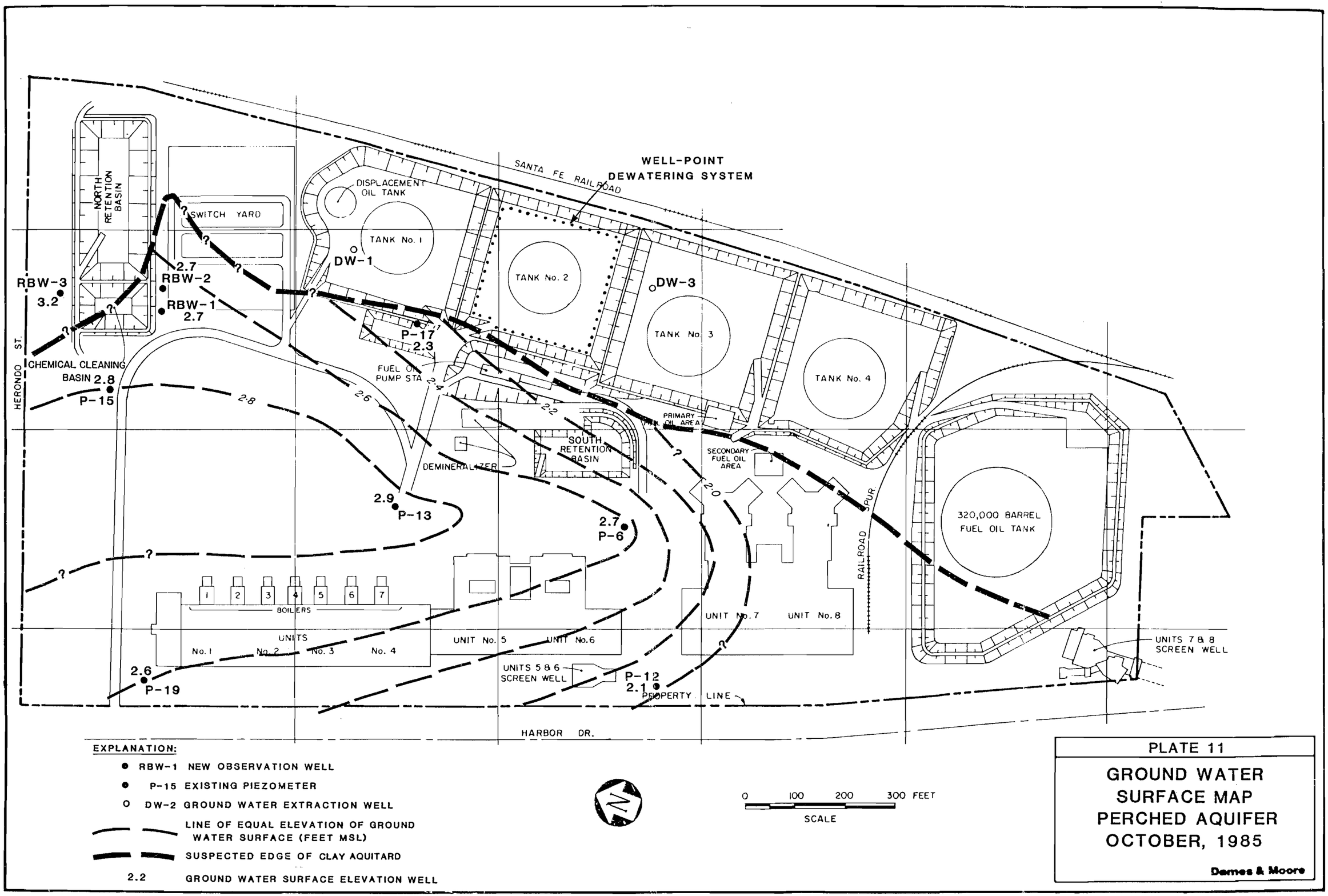
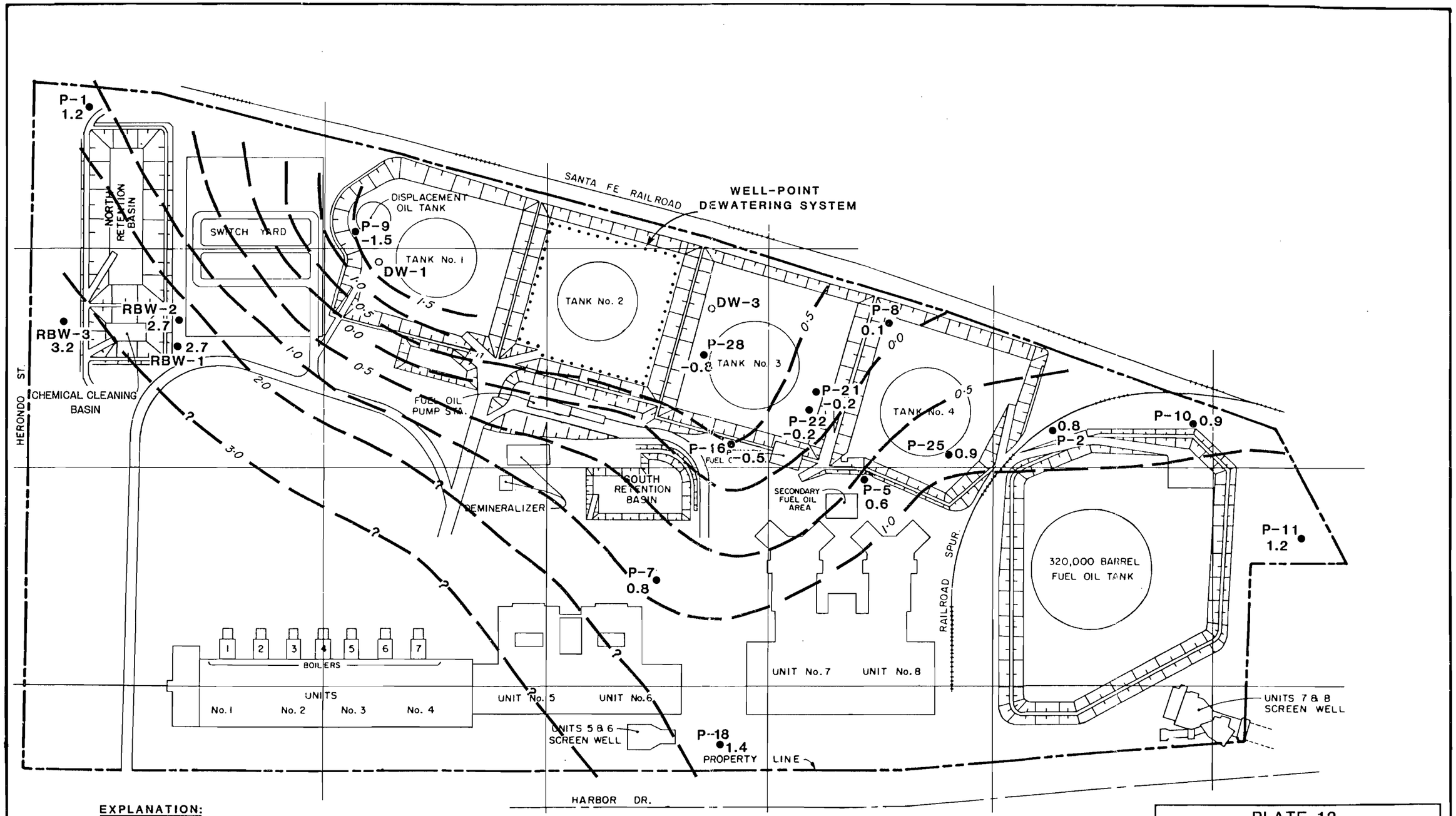



PLATE 11

GROUND WATER SURFACE MAP PERCHED AQUIFER OCTOBER, 1985

Dames & Moore




EXPLANATION:

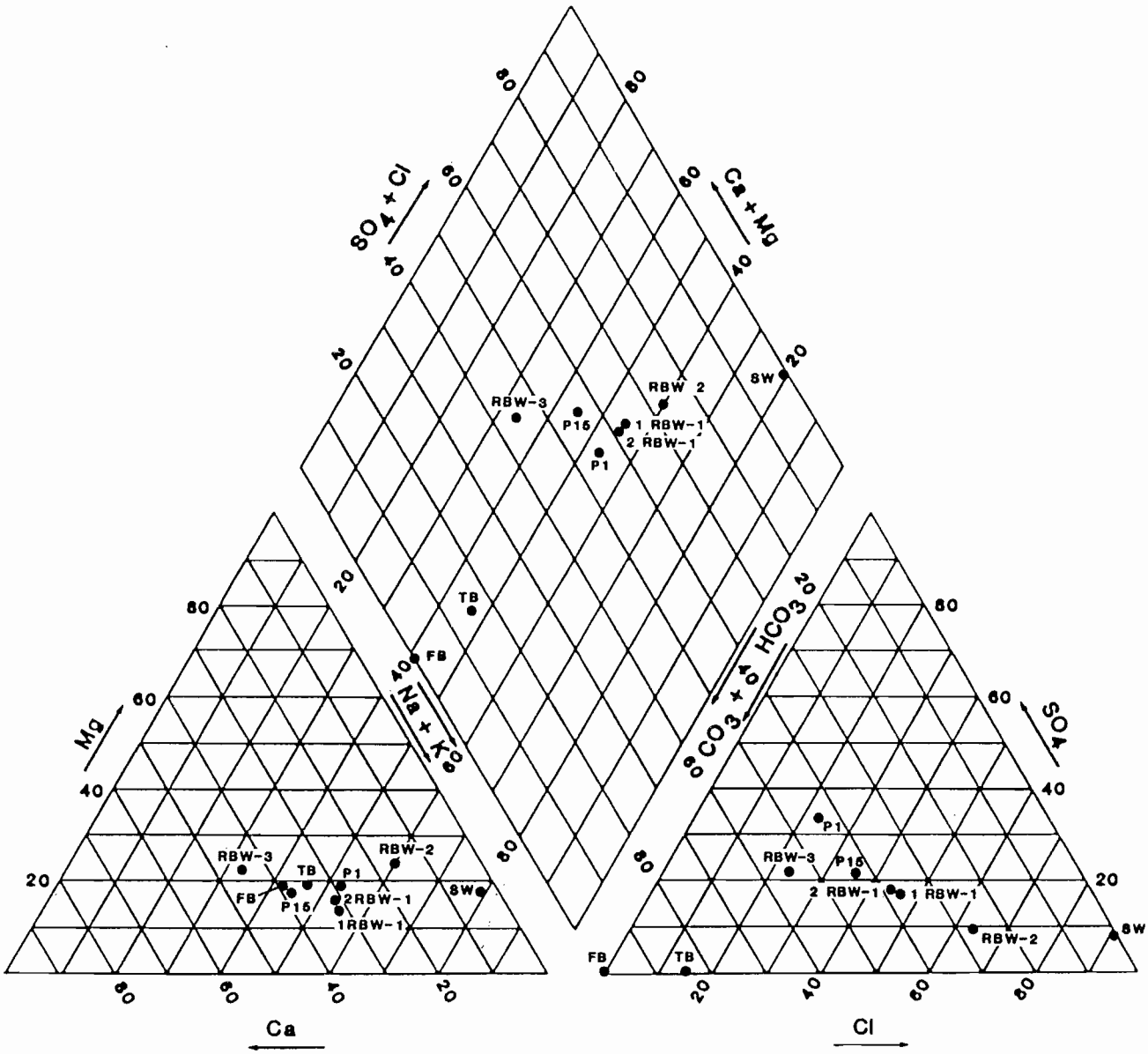
- ● RBW-1 OBSERVATION WELL
- ● P-15 EXISTING PIEZOMETER
- ○ DW-1 GROUND WATER EXTRACTION WELL
- — — — LINE OF EQUAL ELEVATION OF POTENTIOMETRIC SURFACE (FEET MSL)
- -0.5 POTENTIOMETRIC SURFACE ELEVATION

0 100 200 300 FEET
SCALE

PLATE 12

POTENTIOMETRIC SURFACE MAP
GARDENA-SILVERADO AQUIFER
OCTOBER, 1985

Dames & Moore




EXPLANATION

| | |
|---|---|
| 1 RBW-1 | SAMPLE NUMBER |
| SW | SEAWATER |
| FB | FIELD BLANK |
| TB | TRAVEL BLANK |

(Modified after Piper, 1944)

SCALE = % meq/l

PLATE 13

TRILINEAR DIAGRAM
GENERAL
MINERAL ANALYSES

Dames & Moore

Appendix A

# APPENDIX A

## LOGS OF BORINGS AND WELL CONSTRUCTION DETAILS

| MAJOR DIVISIONS | | | GRAPH SYMBOL | LETTER SYMBOL | TYPICAL DESCRIPTIONS |
|---|---|---|---|---|---|
| COARSE GRAINED SOILS<br>MORE THAN 50 % OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE | GRAVEL AND GRAVELLY SOILS<br>MORE THAN 50 % OF COARSE FRACTION RETAINED ON NO. 4 SIEVE | CLEAN GRAVELS (LITTLE OR NO FINES) | | GW | WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES |
| | | | | GP | POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES |
| | | GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES) | | GM | SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES |
| | | | | GC | CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES |
| | SAND AND SANDY SOILS<br>MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE | CLEAN SAND (LITTLE OR NO FINES) | | SW | WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES |
| | | | | SP | POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES |
| | | SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES) | | SM | SILTY SANDS, SAND-SILT MIXTURES |
| | | | | SC | CLAYEY SANDS, SAND-CLAY MIXTURES |
| FINE GRAINED SOILS<br>MORE THAN 50 % OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE | SILTS AND CLAYS | LIQUID LIMIT LESS THAN 50 | | ML | INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY |
| | | | | CL | INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS |
| | | | | OL | ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY |
| | SILTS AND CLAYS | LIQUID LIMIT GREATER THAN 50 | | MH | INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS |
| | | | | CH | INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS |
| | | | | OH | ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS |
| HIGHLY ORGANIC SOILS | | | | PT | PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS |

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

**SOIL CLASSIFICATION CHART**

SAMPLE TYPE

■ UNDISTURBED

☒ DISTURBED

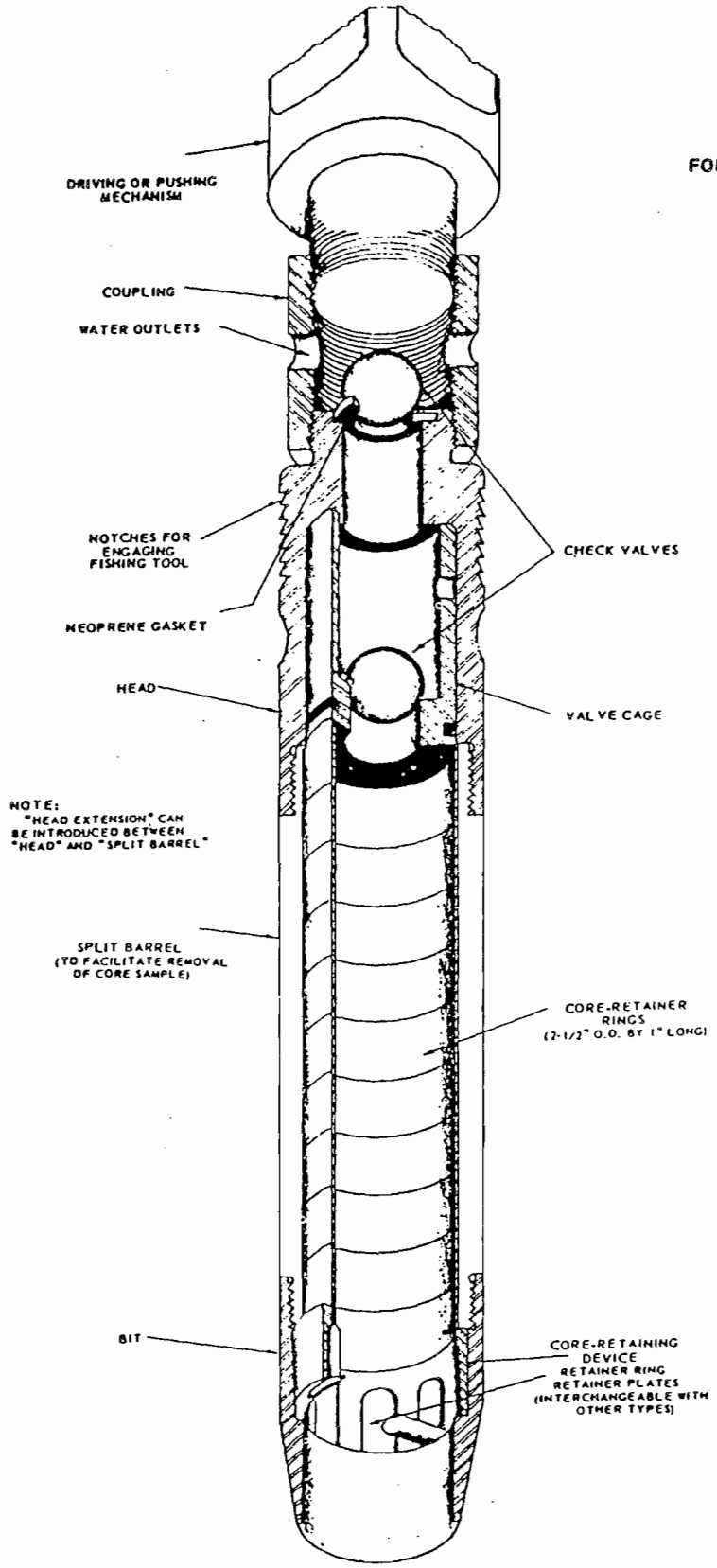
☐ NO SAMPLE RETREIVED

UNIFIED SOIL CLASSIFICATION SYSTEM

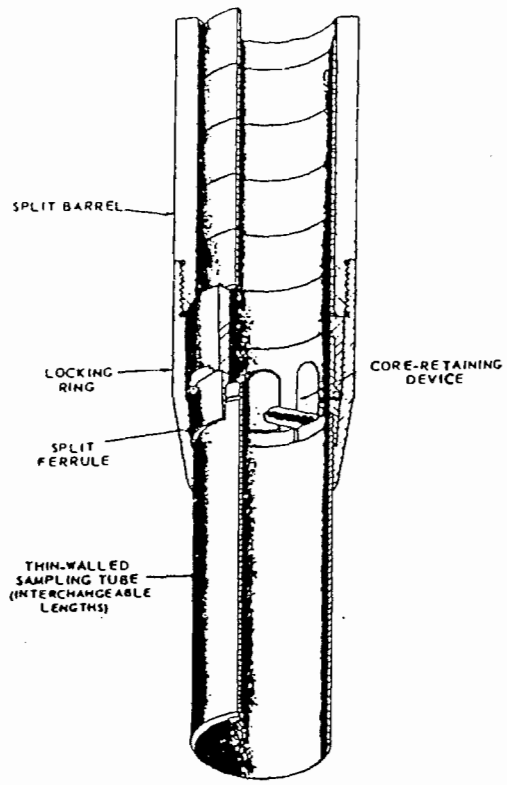
DAMES & MOORE

# SOIL SAMPLER TYPE U

FOR SOILS DIFFICULT TO RETAIN IN SAMPLER




## ALTERNATE ATTACHMENTS




417.9 (5-68)

## BORING RB-1

SURFACE ELEVATION: 20.44 FEET MSL

SAMPLING METHOD: DAMES & MOORE U-TYPE

DRILLING METHOD: 3 3/4" I.D. HOLLOW STEM AUGER

| DEPTH METERS | DEPTH FEET | ANALYTICAL DATA FIELD %LEL | ANALYTICAL DATA FIELD SOIL pH | SAMPLE DATA BLOWS PER FOOT | SAMPLE DATA SAMPLE DEPTH | SAMPLE DATA SAMPLE NUMBER | SAMPLE DATA SAMPLE TYPE | SOIL TYPE USCS | SOIL TYPE SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 6.5 | 38 | 0.5 | 1 | ■ | FILL | | ASPHALT |
| | | 0 | 5.7 | 45 | 2.5 | 2 | ■ | SP | | DARK BROWN COARSE SAND WITH SOME CLAY AND GRAVEL, DAMP (FILL) |
| | | | | | | | | | | TAN MEDIUM TO COARSE SAND, DAMP |
| | 5 | 0 | 6.0 | 34 | 5 | 3 | ■ | | | TAN MEDIUM TO COARSE SAND WITH BLACK MOTTLED SPOTS, DAMP |
| | | 0 | 7.0 | 13 | 7.5 | 4 | ■ | | | DARK BROWN SAND, DAMP |
| | 10 | 0 | 6.2 | 17 | 10 | 5 | ■ | | | TAN MEDIUM TO COARSE SAND, DAMP |
| | | 0 | 5.7 | 23 | 12.5 | 6 | ■ | | | TAN MEDIUM TO COARSE SAND, DAMP |
| | 15 | 0 | 5.7 | 25 | 15 | 7 | ■ | | | AS ABOVE, WET |
| | | 0 | 6.2 | 8 | 17.5 | 8 | ■ | | | TAN MEDIUM TO COARSE SAND, SATURATED |
| | 20 | | | | | | | | | BORING COMPLETED AT A DEPTH OF 19 FEET ON 7/1/85 |
| | | | | | | | | | | WATER ENCOUNTERED AT 16 FEET B.G.S. |
| | 25 | | | | | | | | | |

## BORING RB-2

SURFACE ELEVATION: 20.35 FEET MSL

SAMPLING METHOD: DAMES & MOORE U-TYPE

DRILLING METHOD: 3 3/4" I.D. HOLLOW STEM AUGER

| DEPTH METERS | DEPTH FEET | ANALYTICAL DATA FIELD %LEL | ANALYTICAL DATA FIELD SOIL pH | SAMPLE DATA BLOWS PER FOOT | SAMPLE DATA SAMPLE DEPTH | SAMPLE DATA SAMPLE NUMBER | SAMPLE DATA SAMPLE TYPE | SOIL TYPE USCS | SOIL TYPE SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ASPHALT |
| | | 0 | 6.2 | 40 | 1 | 1 | ■ | FILL | | DARK BROWN SLIGHTLY SILTY SAND WITH CLAY INCLUSIONS (YELLOW-GREY) AND CONCRETE FRAGMENTS |
| | | 0 | 6.1 | 30 | 2.5 | 2 | ■ | | | DARK TAN SAND WITH OCCASIONAL GRAVEL FRAGMENTS, DAMP |
| | 5 | 0 | 6.2 | 36 | 5 | 3 | ■ | SW | | DARK TAN GRAVELLY SAND WITH SOME CLAY, DAMP |
| | | 0 | 6.1 | 30 | 7.5 | 4 | ■ | SP | | TAN MEDIUM TO COARSE SAND, DAMP |
| | 10 | 0 | 6.2 | 20 | 10 | 5 | ■ | SM | | BLACK TO VERY DARK BROWN SLIGHTLY SILTY SAND, DAMP STRONG HYDROGEN SULFIDE ODOR |
| | | 0 | 5.9 | 17 | 12.5 | 6 | ■ | SP | | TAN MEDIUM TO COARSE SAND, DAMP |
| | 15 | 0 | 6.2 | 27 | 15 | 7 | ■ | | | DARK BROWN MEDIUM TO COARSE SAND, DAMP, GRADES TAN AT 16.5 FEET |
| | | 0 | 6.9 | 12 | 17.5 | 8 | ■ | | | DARK BROWN MEDIUM TO COARSE SAND WITH SHELL FRAGMENTS, SATURATED |
| | 20 | | | | | | | | | BORING COMPLETED AT A DEPTH OF 19 FEET ON 7/1/85 |
| | | | | | | | | | | WATER ENCOUNTERED AT 17 FEET B.G.S. |
| | 25 | | | | | | | | | |

# LOG OF BORING

Dames & Moore

# BORING RB-3

SURFACE ELEVATION:

SAMPLING METHOD: DAMES & MOORE U-TYPE

DRILLING METHOD: 3 3/4" I.D. HOLLOW STEM AUGER

| DEPTH METERS | DEPTH FEET | ANALYTICAL DATA FIELD | | %LEL | SOIL pH | | SAMPLE DATA | BLOWS PER FOOT | SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE TYPE | SOIL TYPE USCS | SYMBOLS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | FILL | | MIXTURE OF DARK BROWN SILTY SANDY GRAVEL AND DARK TAN MEDIUM TO COARSE SAND WITH WOOD FRAGMENTS |
| | 5 | | | 0 | | | | 5 | 5.5 | 1 | ■ | | | |
| | 10 | | | | | | | | | | | | | BORING COMPLETED AT A DEPTH OF 6.5 FEET ON 7/1/85<br>NO WATER ENCOUNTERED |

# LOG OF BORING

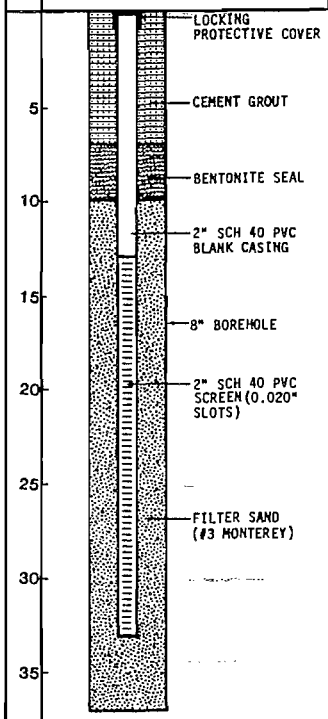
Dames & Moore

# BORING RBW-3

SURFACE ELEVATION: 20.79 FEET MSL

SAMPLING METHOD: DAMES & MOORE U-TYPE

DRILLING METHOD: 3 3/4" I.D. HOLLOW STEM AUGER




| DEPTH (IN FEET) | SOIL pH | % LEL | BLOWS PER FOOT | SAMPLE DEPTH | SAMPLE NUMBER | SAMPLE TYPE | USCS | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | FILL | ROCK AND CONCRETE FILL |
| 5 | 6.9 | 0 | 71 | 4.5 | 1 | ■ | SP | BROWN FINE TO MEDIUM SAND WITH TRACE SILT |
| | 7.5 | 0 | 60 | 7.5 | 2 | ■ | | LIGHT GREY VERY FINE TO FINE SAND |
| 10 | 7.9 | 0 | 64 | 10.0 | 3 | ■ | | AS ABOVE |
| | 8.0 | 0 | 22 | 12.5 | 4 | ■ | | LIGHT BROWN TO GREY VERY FINE TO FINE SAND |
| 15 | 8.3 | 0 | 19 | 15.0 | 5 | ■ | | AS ABOVE |
| | 7.7 | 0 | 26 | 17.5 | 6 | ■ | | LIGHT BROWN VERY FINE TO FINE SAND WITH TRACE OF SHELL FRAGMENTS, SATURATED |
| 20 | | | | | | | | LIGHT BROWN FINE SAND WITH TRACE OF SHELL FRAGMENTS, SATURATED |
| 25 | | | | | | | | AS ABOVE |
| 30 | | | | | | | | |
| 35 | | | | | | | | LIGHT BROWN MEDIUM TO FINE SAND, SATURATED |
| 40 | | | | | | | | |

BORING COMPLETED AT A DEPTH OF 37 FEET ON 8/30/85
WATER ENCOUNTERED AT 17 FEET B.G.S.

# LOG OF BORING

**Dames & Moore**

# APPENDIX G

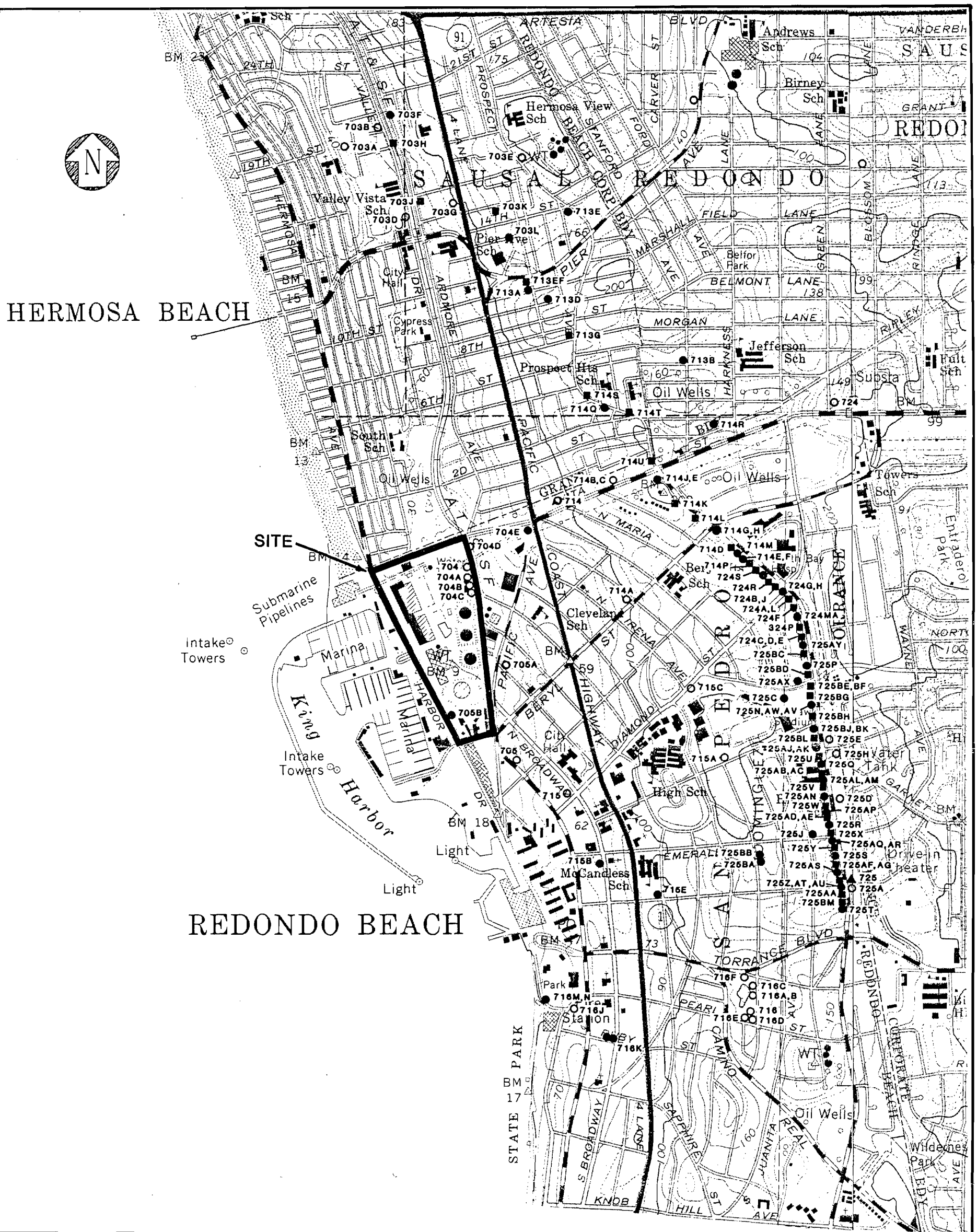
## LOCATION AND CONSTRUCTION DETAILS OF WELLS WITHIN ONE MILE OF THE SITE

APPENDIX G (continued)

| LACFCD Well No. | Casing Diameter (inches) | Well Depth (feet) | Type of Well or Well Use | Geologic Log |
|---|---|---|---|---|
| 714 J | 4 | 417 | O | X |
| K | 12 | 413 | I | X |
| L | 12 | 373 | I | X |
| M | 12 | 349 | I | X |
| P | 12 | 362 | I | X |
| Q | 4 | 440 | O | X |
| R | 4 | 380 | O | X |
| S | 12 | 438 | I | X |
| T | 12 | 440 | I | X |
| U | 12 | 443 | I | X |
| 724 | 12 | 130 | O | - |
| 724 A | - | 791 | A | X |
| B | 8 | 371 | O | X |
| C | 6 | 322 | O | - |
| D | 4 | 331 | O | X |
| E | 4 | 545 | O | X |
| F | 4 | 327 | O | X |
| G | 4 | 341 | O | X |
| J | 12 | 365 | I | X |
| K | 12 | 349 | I | X |
| L | 12 | 333 | I | X |
| M | 12 | 532 | I | |
| N | 12 | 532 | I | X |
| P | 12 | 323 | I | X |
| R | 12 | 360 | A | X |
| S | 12 | 640 | A | X |
| 705 | - | - | A | - |
| 705 A | - | - | A | - |
| B | 2 | 231 | O | X |
| 715 | - | - | A | - |
| 715 A | 6 | 213 | A | X |
| B | 2 | 364 | O | X |
| C | - | 445 | A | X |
| D | 2 | 261 | O | X |
| E | 4 | 440 | O | X |
| 725 | 18 | 526 | E | X |
| 725 A | 12 | 519 | A | X |
| C | 12 | 336 | A | X |
| D | 16 | 560 | A | X |
| E | 16 | 535 | A | X |
| H | - | 730 | A | X |
| J | 2 | 283 | O | X |
| N | 8 | 317 | O | X |
| P | 6 | 300 | O | X |
| Q | 6 | 322 | O | X |

APPENDIX G (continued)

| LACFCD Well No. | Casing Diameter (inches) | Well Depth (feet) | Type of Well or Well Use | Geologic Log |
|---|---|---|---|---|
| 725 R | 6 | 321 | O | X |
| S | 6 | 332 | O | X |
| T | 8 | 352 | O | X |
| U | 12 | 309 | I | X |
| V | 12 | 347 | I | X |
| W | - | 547 | I | - |
| X | 12 | 360 | I | X |
| Y | 12 | 347 | I | X |
| Z | 12 | 359 | I | X |
| AA | 12 | 367 | I | X |
| AB | 12 | 642 | I | - |
| AC | 12 | 642 | I | X |
| AD | 12 | 373 | I | - |
| AE | 12 | 630 | I | X |
| AF | 12 | 627 | I | - |
| AG | 12 | 627 | I | X |
| AJ | 4 | 340 | O | X |
| AK | 4 | 632 | O | X |
| AL | 4 | 346 | O | X |
| AM | 4 | 347 | O | X |
| AN | 4 | 586 | O | X |
| AP | 4 | 329 | O | X |
| AQ | 4 | 347 | O | X |
| AR | 4 | 608 | O | X |
| AS | 4 | 365 | O | X |
| AT | 4 | 357 | O | X |
| AU | 4 | 630 | O | X |
| AV | 4 | 335 | O | X |
| AW | 4 | 552 | O | X |
| AX | 4 | 325 | O | X |
| AY | 4 | 347 | O | X |
| BA | 4 | 560 | O | X |
| BB | 4 | 435 | O | X |
| BC | 12 | 336 | I | X |
| BD | 12 | 304 | I | X |
| BE | 12 | 624 | I | - |
| BF | 12 | 624 | I | X |
| BG | 12 | 342 | I | X |
| BH | 12 | 332 | I | X |
| BJ | 12 | 616 | I | - |
| BK | 12 | 616 | I | X |
| BL | 12 | 330 | I | X |
| BM | 12 | 675 | I | X |
| 716 | - | 306 | A | X |
| 716 A | 16 | 364 | O | X |
| B | 16 | 311 | A | X |
| C | 12 | 311 | A | X |
| D | 16 | 325 | A | X |




**EXPLANATION**

- ■ GROUND WATER INJECTION WELL
- ● GROUND WATER OBSERVATION WELL
- ▲ GROUND WATER EXTRACTION WELL
- O ABANDONED WELL OR EXPLORATION DRILL HOLE
- 716L L.A.C.F.C.D. WELL NUMBER

0 — 1/2 — 1 MILE

SCALE

REFERENCE:
BASE MAP FROM USGS 7.5' QUADRANGLE,
REDONDO BEACH, 1963

PLATE G-1

WELL LOCATION MAP

Dames & Moore

# Soil Investigation Report, Wastewater Retention Basins, 1999

**Staff Query 1**

# Soil Investigation Report
# Wastewater Retention Basins

## Redondo Generating Station

August 23, 1999

Prepared by:

P. Hamilton, CEG #998
Engineering Geologist

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Conclusions ..... 15

**Appendix 1: North and BCCB Basins**
Field Forms
Boring Logs
Bar Charts

**Appendix 2: South Basin**
Field Forms
Boring Logs
Bar Charts

**Appendix 3: Laboratory Reports – North Basin**

**Appendix 4: Laboratory Reports – BCCB**

**Appendix 5: Laboratory Reports – South Basin**

# Introduction

As a part of the Consent Agreement with the Department of Toxic Substances Control (BC 121219), Southern California Edison Company (Edison) has agreed to perform a soil investigation beneath the three regulated units at the Redondo Generating Station. The investigation was designed to determine if the regulated units or basins had released any water containing the Constituents of Concern to the soil beneath the liners. This report compiles all of the data and information derived during the soil exploration. All exploration was performed in compliance with a Work Plan submitted to the DTSC for similar work. The Work Plan was part of the Edison submittal titled "Leak Detection Investigation, Etiwanda Generating Station," dated April 1996. Any deviation or field change to the plan is described in this report.

The report begins with a presentation of the exploration methodology used to obtain the soil samples below each basin. The results of the investigation are divided into two sections: North and Boiler Chemical Cleaning Basins and the South Basin. The North and BCCB Basins have been combined since they are contiguous units. Each section has a description of results of the physical field operations which include the liner conditions, material encountered, and any exploration problems. This is followed by a discussion of the analytical results from the soil samples. A summary of the ground water findings is presented before the general conclusions.

## Exploration

The exploration below the three basins was scheduled for different days as the basins were released from service, drained, and cleaned. Work occurred at each basin on the following days: 4/2/97 to 4/3/97 for the North Basin, 4/17/97 for the BCCB, and 5/19/97 for the South Basin. The exploration below the North Basin required two days because of two factors. First, the average thickness of the asphalt liner was discovered to be 16 inches. Second, the soil encountered was predominantly fill material evidenced by pieces of wire, rubber, wood, glass, and paper.

The soil beneath the three basins was investigated by obtaining samples from hand augered borings. Twenty-four exploratory borings were advanced below the liners: four in the BCCB and ten in each of the North Basin and South basins. The locations of the borings are shown on Figures 2 and 10. The location of the basins on the station property is shown on Figure 1.

The exploratory holes were drilled using a minimum 3-inch diameter, hand auger. The plan was to obtain samples in each hole at 0.5, 3, and 5 feet with a drive sampler attached on the hand auger equipment. The samples were retrieved in a plastic inter tube within the drive sampler.

Appendix 1 contains the field forms for the North and BCCB Basins with the forms for the South Basin in Appendix 2. These forms include the Daily Reports and the Calibration Log for the sampling days. Detailed boring logs for the North and BCCB Basins are presented in Appendix 1. Appendix 2 contains the logs for the South Basin.

The soil samples removed from the exploratory holes were delivered to Weck Laboratory to be analyzed for the following parameters: pH, metals including chromium 6, chloride, fluoride, and VOCs. Iron and aluminum were

added to the parameter list during the investigation of the South Basin. The laboratory reports for the three basins are included in Appendix 3 (North Basin), Appendix 4 (BCCB), and Appendix 5 (South Basin).

## North and Boiler Chemical Cleaning Basins

### Physical Results

The liner openings removed for the exploration indicated the North Basin was constructed of two, 6-inch layers of asphaltic concrete over a 4-inch thick gravelly base. It was unclear if the two layers were placed concurrently or as a relining. The thick layer of asphalt was covered with a single layer of HDPE. The BCCB has a single 7-inch layer of asphalt over a 9-inch layer of base composed of dark brown gravel with a silty sand matrix. The asphalt is covered by two layers of HDPE separated by a geonet material to allow drainage of leakance to the collection system.

The 10 exploratory borings in the North Basin were placed on a 50 by 60-foot grid as shown on Figure 2. The pattern for the 4 boring in the BCCB was more random with boring BCCB2 located in an area where the liner had apparently been patched. The figure also indicates the position of the ground water monitoring wells adjacent to the two basins.

The logs for the 10 borings below the North Basin are contained in Appendix 1. They indicate the basin is constructed on basically two horizons, a layer of sand over a silty sand. The upper, 1 to 4-foot thick sand layer is predominantly brown in color with layers of tan, gray, and red-brown. It has a medium to coarse grained texture with minor amounts of gravel. Though the sand

was predominantly dry, a damp zone was noted at 2.5 feet in boring NB1 and was associated with an orange stained gravel.

The lower, silty sand horizon is brown to red-brown in color and is distinguished by the presence of gravel. In boring NB8, the color of the silty sand layer was black because of a high biotite content. In most cases, the gravel was observed with red or orange staining on the surface.

Boring NB6 encountered a clayey sand below the silty sand at 3.5 feet. The 5-foot sample was composed of a black, fibrous peat material with shell fragments. This layer is not at an elevation to be related to the known lagoonal deposits in the area.

Present in both layers, and common to all borings, was debris which indicates the sand and silty sand is not native deposits. The material is most likely fill placed in an old lagoon to develop useable land. The debris included brick and asphalt pieces, wood, glass, paper, copper wire, and rubber. A gravelly material was discovered in boring NB1 which appeared to be caused by high heat as in a furnace. The debris caused difficult drilling conditions. The 5-foot sample in boring NB1 became wedged below a rubber material and required a jack to remove the sampler. Refusal was reached at boring NB5 when an apparent cement layer was encountered at 3 feet. The nearby monitoring well, RW-4, required relocation during drilling when an impenetrable layer was encountered at 7 feet in depth with the drill rig. The hard layers encountered in the boring and well were at about the same horizon.

Two layers of sand was encountered below the BCCB. The upper 2 to 3 feet was a brown, medium grained sand as observed beneath the North Basin. The lower layer was a tan, uniform grained sand which appeared to be moist beach sand. The evidence of debris was present in the drill cuttings of the 4 exploratory borings. The boring logs are contained in Appendix 1.

**Analytical Results**

Twenty-nine soil samples were removed from the 10 exploratory holes below the North Basin. Twelve soil samples were collected from the 4 exploratory holes in the BCCB. A summary of the resultant analytical data is shown in ranges for all samples and then by horizon on Tables 1 and 2. The maximum detected concentration and its location are also given on the tables. A complete listing of the data from the lab analysis for the North Basin is arranged by boring on Table 3. The same data is arranged by depth on Table 4. The data for the BCCB is shown on Tables 5 and 6. The depths shown on the tables are calculated from the contact with soil. The laboratory data reports and Chain of Custody forms are contained in Appendix 1. The results of the method 8260 analysis indicated that no VOCs were present in any of the samples.

A bar chart was created for each parameter listed on Tables 4 and 6 except for chromium 6, selenium, TCE, and VOC parameters. These parameters were not detected in any soil sample retrieved from beneath the North and BCCB Basins. The 19 bar charts are contained in Appendix 1. The field pH values were not graphed. The color coded bar chart graphically displays a comparison of the samples from each horizon. The charts show all horizons for each boring to exhibit how the concentrations varied with depth. If the laboratory indicated the parameter was not detected, the sample concentration was assigned the PQL value for graphing purposes only. This does not imply that this value is present in the soil sample. The PQL is clearly denoted on each chart where it was used.

The data demonstrates the highest concentration of metals below the North Basin is present at the 5-foot soil horizon. This was most notable beneath the western portion of the basin in borings NB1, 2, 3, 9, and 10. The highest concentrations detected were for vanadium, nickel, and lead. The bar charts for

each of these metals display similar characteristics. The highest concentrations were detected in borings NB3 and 1 at the 5-foot horizon with secondary peaks in boring NB2 at the 0.5-foot horizon. Boring NB3 recorded the highest values at the 5-foot horizon with the following concentrations: vanadium - 2,920 mg/Kg (Chart 18), nickel - 1,500 mg/Kg (Chart 15), lead - 94.3 mg/Kg (Chart 12).

The analytical results for the soil samples below the BCCB show the highest concentration of metals to be beneath the liner at the 0.5-foot horizon. The data indicates the metals did not mobilize from the soil immediately below the liner. The most notable constituents were vanadium (Chart 18), nickel (Chart 15), lead (Chart 12), and copper (Chart 9).

The areal distribution of the vanadium concentration for each horizon beneath the North and BCCB is contoured on Figures 3 through 5. Figure 3, the 0.5-foot horizon, indicates higher concentrations below the BCCB and in the northwest corner of the North Basin at boring NB2. The concentrations were relatively consistent in the 3-foot horizon with slightly higher values below the BCCB and the western portion of the North Basin. The 5-foot horizon, Figure 5, displays the highest concentrations below the western portion of the North Basin at borings NB3 and 1. The soil below the BCCB exhibit concentrations consistent with soil samples from the eastern portion of the North Basin. It should be noted the contour interval of the middle layer is only 5 mg/Kg which indicates the smallest concentrations.

The areal extent of the nickel concentration below the basins is contoured on Figures 6 through 8. The plots indicate a similar distribution of nickel as observed for vanadium. It is present immediately below the BCCB liner and in the northwestern corner of the North Basin in the 0.5-foot horizon. The 3-foot horizon displays consistent values. As with the vanadium, the highest concentrations were detected at borings NB3 and 1 with lesser values at borings NB2, 9, 10, and 4.

## Ground Water

Two ground water aquifers are located below the North and BCCB Basin complex. The most recent ground water gradient plot is presented on Figure 9. The monitoring wells and contours for the Perched Aquifer are shown in green. Beneath the BCCB, the Perched Aquifer is separated from the underlying Silverado by a clay horizon. The clay layer is missing under the North Basin exposing the Silverado Aquifer.

The ground water gradient of the Silverado Aquifer over the past 3-year period had been consistently in a southwest direction. It is controlled by a series of three dewatering wells on the station. The perched water flows over the clay in a southeast direction and cascades on to the Silverado near well RW-23. The Perched Aquifer experienced a short duration gradient reversal in February 1998 caused by recharge from winter rainfall.

The analytical results from the ground water sampling events indicate a higher than background concentration of arsenic in compliance well RW-6 in the Silverado Aquifer. The increased content was sustained throughout the sampling events with the highest value of 222 ug/L recorded in the 9/97 event. Higher than background arsenic concentrations were also detected in compliance well RW-2 in the Perched Aquifer.

Vanadium was recorded in the background well for the Perched Aquifer, RW-7. The two associated compliance wells also detected vanadium, well RW-1 had lower values while well RW-2 sometimes contained higher than background concentrations. During the gradient reversal, well RW-1 recorded the highest concentration at 724 ug/L. Well RW-1 was in a background position during this sampling event.

New downgradient monitoring wells have recently been installed, RW-22 and 23 (Figure 9). Well RW-2 was replaced by a new well about 20 feet to the west and was designated RW-2A. These wells will be included in the September 1999 sampling event.

**Conclusions**

The data for the BCCB shows the highest concentrations of metals were discovered in the soils immediately below the liner in the 0.5-foot horizon. Except for vanadium, the metal concentrations were consistent with samples from the North Basin when compared to the two lower horizons. The vanadium remains higher in the 3-foot horizon.

The metal concentrations beneath the North Basin did not have a normal variation between the horizons. The middle, 3-foot horizon usually recorded lower concentrations than the 5-foot horizon. If the metals are mobile, they should continue a downward migration unless a low permeable soil is encountered. There was no evidence of a material change that would account for the accumulation of metal like vanadium and nickel at the 5-foot horizon.

The ground water level is about 10 feet below the lower soil horizon sampled. Ground water analysis shows the presents of arsenic at compliance well RW-6. The highest concentration of arsenic in the soil was determined to be 10 mg/Kg in boring NB3 at the 5-foot horizon. Figure 9 shows well RW-6 is not downgradient of boring NB3. Vanadium has also been detected in the background well RW-7 and during the short term gradient reversal in the Perched Aquifer.

In light of the debris discovered in the soil below the North Basin, it could be concluded that the metal concentrations detected could have been contained in the fill material placed in the old lagoon to develop usable land. This would be consistent with the soil horizon variations observed in this study.

## South Basin

### Physical Results

Old aerial photographs showed that the South Basin was initially about half the present size with the original basin being the southern half with the arcing slope. At some date, the basin was enlarged with the northern addition as delineated on Figure 10. The exploration revealed a different design for each basin segment. The original basin was constructed with 4 to 6 inches of asphalt placed over the native soil. No base material was utilized. The addition was founded on 2 to 4 inches of a gravelly sand, base material. Welded wire mesh was placed on the base before applying a 4-inch layer of gunite. Because of improper support, the wire was not encapsulated by the gunite. At all exposed locations, the wire was severely oxidized. The construction seam between the two liners was exposed near boring SB6. Apparently, the asphalt was cut along the base of the old north slope and the gunite was lapped over the contact. There was no evidence of a water stop or other seam treatment. A single layer of HDPE was installed over the entire basin.

A flat, raised area was detected in the southwest corner of the basin. It was not determined if this "pad" was concrete or asphalt since it was covered by the HDPE. This type of pad could be used for a submersible pump so that the vibration from the operation would not damage the liner material. Boring SB4 was positioned adjacent to the pad. When the HDPE was cut, a 3 to 4-inch layer of white sand was observed. The sand was probably placed in the basin as a leveling layer against the pad. This would inhibit any sharp edges and potential damage to

the liner material. Of interest, the sand was saturated with water trapped between the asphalt and the HDPE. The saturated sand was sampled for analysis.

The 10 exploratory borings in the South Basin were placed on an approximate 50 by 60-foot grid as shown on Figure 10. The holes were closer together in the arc section. The boring logs are contained in Appendix 2. The figure also indicates the position of the ground water monitoring wells adjacent to the basin.

The soil material beneath the basin is predominately a medium grained sand. A wide range of soil colors was observed during the investigation. The most prominent color was a bright red-orange. The soil color was also described as green, yellow, gray, and black. There were thin layers of gravelly sand, sandy silt/silty sand, silt, and clay encountered in the borings. Some of the layers contained shell fragments and pods of silt and clay. Fill was located in borings SB5 and 6 evident by pieces of brick, asphalt and copper wire. The fill may be related to construction activities when the addition was installed. The cuttings from boring SB1 and 2 appear to be native materials with shell fragments.

All of the cuttings below the basin addition showed red to orange soil color. The color indicates the movement of water through the sand oxidizing the native iron present in the soil. The pH field screening recorded values as low as 3.9 and as high as 10.2.

The sand soil beneath the original basin was not oxidized and was tan and gray in color. The upper 6 inches of boring SB3 was an altered yellow color. The upper portions of borings SB7 and 8 had a green to gray-green color. Black colored sand was observed in the lower zones of borings SB8 and 9.

Ground water was encountered at 4.5 feet in borings SB4, 7, 8, 9, and 10. This level is consistent with the monitoring wells along the perimeter of the basin.

**Analytical Results**

Twenty-nine soil samples were removed from the 10 exploratory holes below the South Basin. A summary of the resultant analytical data is shown in ranges for all samples and then by horizon on Table 7. The maximum detected concentration and its location are also given on the table. A complete listing of the data from the lab analysis for the South Basin is arranged by boring on Table 8. The same data is arranged by depth on Table 9. The depths shown on the tables are calculated from the contact with soil. The laboratory data reports and Chain of Custody forms are contained in Appendix 2. The results of the method 8260 analysis indicated that no VOCs were present in any of the samples.

A bar chart was created for each parameter listed on Table 9 except for chromium 6, TCE, and VOC parameters. These parameters were not detected in any soil sample retrieved from beneath the basin. The 20 bar charts are contained in Appendix 2. The field pH values were not graphed. The color coded, bar chart graphically displays a comparison of the samples from each horizon. The charts show all horizons for each boring to exhibit how the concentrations varied with depth. If the laboratory indicated the parameter was not detected, the sample concentration was assigned the PQL value for graphing purposes only. This does not imply that this value is present in the soil sample. The PQL is clearly denoted on each chart where it was used.

The pH value for each soil sample was screened in the field and measured in the laboratory. Chart 1 (Appendix 2) displays the laboratory pH data derived from the soil samples and allows a comparison between sampling horizons. If the normal pH range is considered to be 6 to 8, areas of altered pH can be observed. The pH values are higher than normal in the 0.5-foot horizon below the addition section and in the fill encountered in boring SB6. Lower than normal pH values

were recorded at the 3 and 5-foot horizons in boring SB5. Borings SB3 and 8 measured lower pH values in the 0.5-foot horizon below the original section.

Background concentrations for the metal constituents were not developed. However, when the analytical results are compared to other soil samples from below the basin, it is evident that areas of increased concentrations are present below both the original and addition sections. It was determined that only barium showed an increase below the addition section with a recorded high of 198 mg/Kg. This was detected in the 0.5-foot horizon. The concentrations returned to more consistent values in the lower two horizons.

The data for the original basin shows increased metal concentrations in each of the three sampled horizons. The highest values were measured in the southeastern portion of the basin at borings SB8, 9, and 10, with boring SB9 having the largest percentage of the increases. The 0.5-foot horizon recorded the highest concentrations of chromium, copper, cobalt, lead, nickel, vanadium, and zinc. Except for copper, these higher concentrations continue into the lower two horizons.

As described previously, a sample was obtained from the leveling sand between the asphalt and the HDPE at boring SB4 (Sample SB4-1A). This sand was saturated. The analytical results indicated no increased metal content. The low metal content shows the sand is most likely a fill material.

The areal distribution of the vanadium concentration for each horizon is contoured on Figures 11 through 13. The contours indicate the highest values concentrate below the southeastern portion of the original basin. Higher than background concentrations of vanadium have been recorded in ground water samples from compliance monitoring wells RW-11 and 13.

The extent of the nickel concentration was contoured to develop Figures 14 through 16. The highest values in the 0.5-foot horizon are concentrated in the south-southeastern portion of the basin as with the vanadium concentration. The

contours of the 3-foot horizon are dominated by the highest concentration at boring SB7. The 5-foot horizon indicates the highest values in borings SB2, and SB7 through 10.

**Ground Water**

The ground water gradient beneath the South Basin has remained constant since the investigation began in 1996 (Figure 17). The flow direction is to the southeast as the water in the Perched Aquifer cascades on to the Silverado Aquifer. The ground water which flows beneath the basin will eventually reach a dewatering well.

The relationship of background and compliance ground water samples indicate a few metal parameters are higher than the background. Arsenic and nickel were detected in the compliance wells RW-12 and 13 but not in the background samples. Higher concentrations of molybdenum and selenium were recorded in compliance well RW-13.

The most significant finding was the higher concentrations of vanadium first discovered in compliance wells RW-11 and 12. The concentration was later found to be even higher at the initial sampling of compliance well RW-13. These findings were validated in each of the subsequent sampling events. The data tends to indicate the vanadium plume has most likely moved farther downgradient towards the dewatering wells in the Silverado Aquifer.

New downgradient monitoring wells have recently been installed, RW-18 through 21. These wells were positioned to investigated the extent of the vanadium plume. These wells will be included in the September 1999 sampling event.

## Conclusions

The physical observations and analytical data from the soil samples indicate that metal concentrations have increased in several areas below the South Basin. The change in concentrations is most likely attributed to the leakage of wastewater from the basin before it was relined. The red/orange color of the material beneath the northern addition shows that water had migrated through the sediments causing iron oxidation and changes in the pH values. However, the wastewater has left only higher barium concentrations in the soils.

The soils below the original segment of the basin contains higher concentrations of several metals and shows some alteration to the pH values. The highest concentrations observed are for vanadium and nickel. Ground water was encountered in several borings at a depth of 4.5 feet in the eastern portion of the basin. Soil samples from this depth indicated some of the highest concentrations of vanadium. As stated earlier, vanadium has been detected in the ground water downgradient of the basin.

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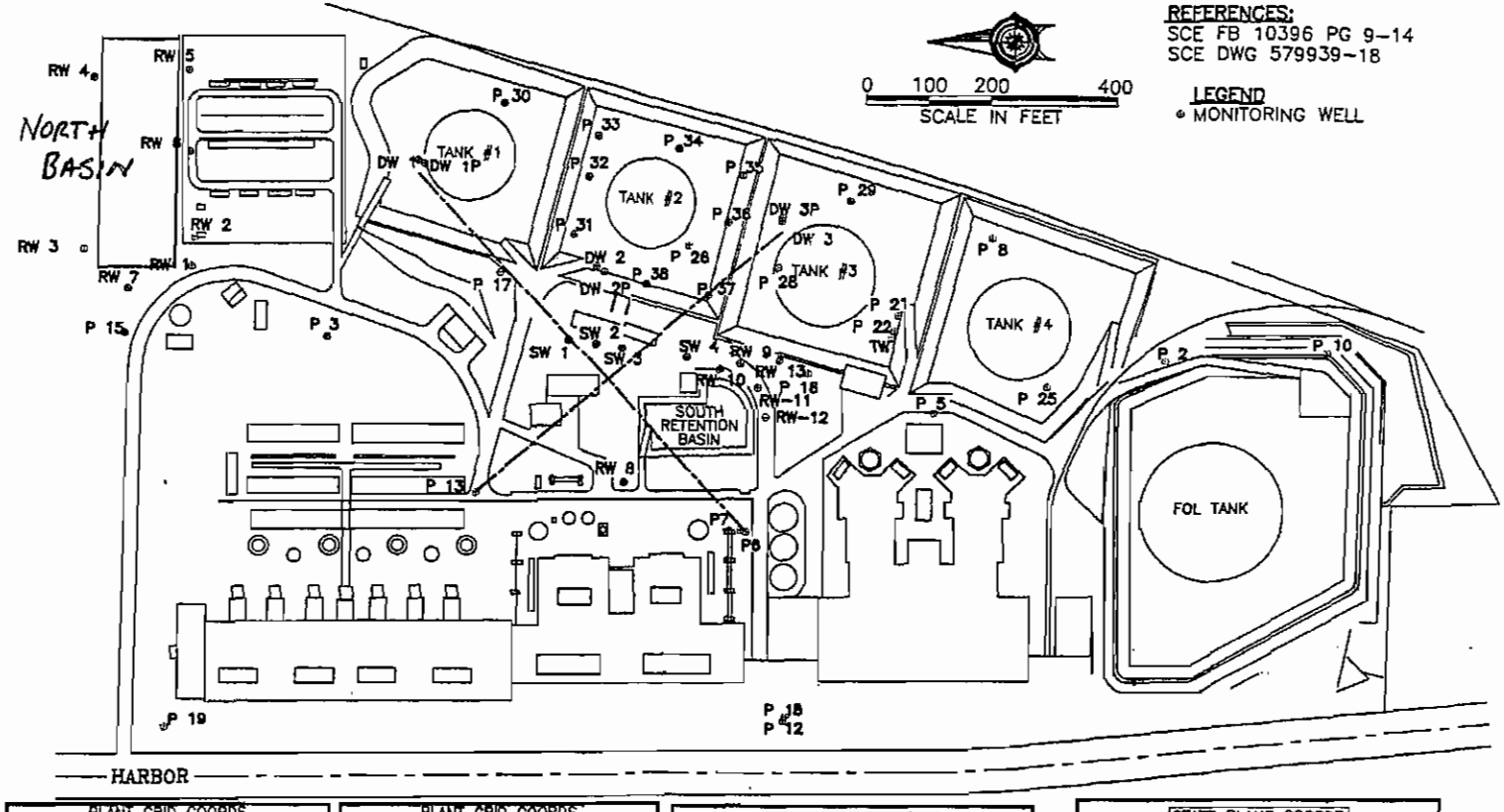
| PLANT GRID COORDS | | | |
|---|---|---|---|
| PT# | NORTHING | EASTING | ELEV. |
| P2 | -1310.027 | 474.513 | 19.462 |
| P5 | -942.694 | 389.810 | 14.704 |
| P6 | -644.002 | 198.157 | 17.382 |
| P7 | 634.779 | 200.944 | 17.220 |
| P8 | -1034.137 | 671.876 | 7.394 |
| P10 | -1564.059 | 487.391 | 19.471 |
| P12 | -704.271 | -108.480 | 14.365 |
| P13 | -201.065 | 264.013 | 17.870 |
| P15 | 358.822 | 513.124 | 24.861 |
| P16 | -740.903 | 453.237 | 16.132 |
| P17 | -239.378 | 616.033 | 16.280 |
| P18 | -708.068 | -102.084 | 14.574 |
| P19 | 301.402 | -117.510 | 15.198 |
| P21 | -884.492 | 547.080 | 5.526 |
| P22 | -879.949 | 522.389 | 5.899 |
| P25 | -1124.221 | 432.544 | 7.887 |
| P26 | -547.288 | 658.670 | 6.514 |
| P28 | -691.862 | 622.720 | 5.201 |
| SW1 | -350.744 | 508.053 | 7.561 |
| SW2 | -395.060 | 499.821 | 7.609 |
| SW3 | -436.068 | 493.770 | 6.749 |
| SW4 | -544.530 | 479.835 | 5.654 |
| DW1 | -104.314 | 797.235 | 7.333 |
| DW3 | -697.794 | 697.679 | 5.542 |
| RW1 | 261.560 | 624.049 | 17.503 |
| RW2 | 257.408 | 669.451 | 17.291 |
| RW3 | 435.580 | 650.521 | 22.786 |
| TW | -874.685 | 512.095 | 7.286 |

| STATE PLANE COORDS | | | |
|---|---|---|---|
| PT# | NORTHING | EASTING | ELEV. |
| P2 | 1767502.478 | 6442393.414 | 19.462 |
| P5 | 1767801.771 | 6442164.217 | 14.704 |
| P6 | 1767994.300 | 6441866.088 | 17.382 |
| P7 | 1768003.849 | 6441864.806 | 17.220 |
| P8 | 1767835.326 | 6442458.830 | 7.394 |
| P10 | 1767276.577 | 6442510.321 | 19.471 |
| P12 | 1767812.475 | 6441611.926 | 14.365 |
| P13 | 1768424.752 | 6441742.633 | 17.870 |
| P15 | 1769037.535 | 6441737.560 | 24.861 |
| P16 | 1768011.714 | 6442138.398 | 16.132 |
| P17 | 1768535.634 | 6442078.923 | 16.280 |
| P18 | 1767811.666 | 6441619.321 | 14.574 |
| P19 | 1768724.150 | 6441187.300 | 15.198 |
| P21 | 1767919.868 | 6442283.272 | 5.526 |
| P22 | 1767913.760 | 6442258.916 | 5.899 |
| P25 | 1767654.231 | 6442278.278 | 7.887 |
| P26 | 1768273.013 | 6442245.226 | 6.514 |
| P28 | 1768126.529 | 6442272.364 | 5.201 |
| SW1 | 1768389.553 | 6442026.745 | 7.561 |
| SW2 | 1768345.806 | 6442037.601 | 7.609 |
| SW3 | 1768305.972 | 6442049.074 | 6.749 |
| SW4 | 1768201.475 | 6442081.299 | 5.654 |
| DW1 | 1768733.604 | 6642187.937 | 7.333 |
| DW3 | 1768152.167 | 6642343.051 | 5.542 |
| RW1 | 1768994.933 | 6441878.802 | 17.503 |
| RW2 | 1769009.951 | 6441921.848 | 17.291 |
| RW3 | 1769164.295 | 6441830.844 | 22.786 |
| TW | 1767914.309 | 6442247.366 | 7.286 |




**REFERENCES:**
SCE FB 10396 PG 9-14
SCE DWG 579939-18

**LEGEND**
• MONITORING WELL

| PLANT GRID COORDS | | | |
|---|---|---|---|
| PT# | NORTHING | EASTING | ELEV. |
| RW4 | 419.968 | 929.069 | 22.751 |
| RW5 | 267.509 | 941.511 | 17.673 |
| RW6 | 265.227 | 809.466 | 17.665 |
| RW7 | 364.630 | 567.468 | 25.135 |
| RW8 | -441.375 | 276.377 | 19.847 |
| RW9 | -631.079 | 469.398 | 12.908 |
| RW10 | -597.974 | 459.850 | 12.520 |
| RW11 | -660.629 | 430.214 | 15.828 |
| RW12 | -673.071 | 382.932 | 18.590 |
| RW13 | -692.610 | 453.030 | 16.300 |
| P3 | 42.366 | 512.359 | 20.122 |

| PLANT GRID COORDS | | | |
|---|---|---|---|
| PT# | NORTHING | EASTING | ELEV. |
| P29 | -808.000 | 730.735 | 6.399 |
| P30 | -245.924 | 893.387 | 7.439 |
| P31 | -358.038 | 677.108 | 7.409 |
| P32 | -381.826 | 771.710 | 7.234 |
| P33 | -397.367 | 837.902 | 7.271 |
| P34 | -531.449 | 817.106 | 7.276 |
| P35 | -633.540 | 773.329 | 7.792 |
| P36 | -611.492 | 695.835 | 7.044 |
| P37 | -578.643 | 579.540 | 6.639 |
| P38 | -477.496 | 597.440 | 6.460 |
| DW1P | -114.855 | 791.843 | 7.725 |
| DW2 | -394.560 | 625.035 | 5.667 |
| DW3P | -698.626 | 702.728 | 6.422 |
| DW2P | -407.812 | 615.905 | 6.900 |

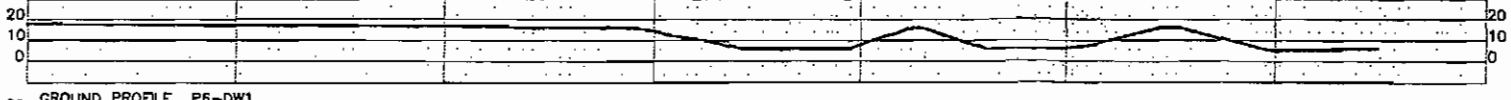
| STATE PLANE COORDS | | | |
|---|---|---|---|
| PT# | NORTHING | EASTING | ELEV. |
| RW4 | 1769265.419 | 6642090.856 | 22.751 |
| RW5 | 1769131.795 | 6642165.308 | 17.673 |
| RW6 | 1769075.043 | 6642046.060 | 17.665 |
| RW7 | 1769073.787 | 6641802.744 | 25.135 |
| RW8 | 1768211.958 | 6641855.210 | 19.847 |
| RW9 | 1768118.373 | 6642107.635 | 12.908 |
| RW10 | 1768144.553 | 6642085.237 | 12.520 |
| RW11 | 1768393.123 | 6642372.014 | 15.828 |
| RW12 | 1768405.565 | 6642324.732 | 18.590 |
| RW13 | 1768055.620 | 6642118.230 | 16.300 |
| P3 | 1768749.165 | 6641867.895 | 20.122 |
| P29 | 1768065.539 | 6642418.773 | 6.399 |
| P30 | 1768644.516 | 6642334.094 | 7.439 |

| STATE PLANE COORDS | | | |
|---|---|---|---|
| PT# | NORTHING | EASTING | ELEV. |
| P31 | 1768452.912 | 6642183.648 | 7.409 |
| P32 | 1768470.430 | 6642279.610 | 7.234 |
| P33 | 1768483.691 | 6642346.296 | 7.271 |
| P34 | 1768353.032 | 6642382.884 | 7.276 |
| P35 | 1768241.978 | 6642385.308 | 7.792 |
| P36 | 1768229.959 | 6642305.639 | 7.044 |
| P37 | 1768211.708 | 6642186.180 | 6.639 |
| P38 | 1768311.189 | 6642160.593 | 6.460 |
| DW1P | 1768721.776 | 6642187.394 | 7.725 |
| DW2 | 1768398.107 | 6642151.371 | 5.667 |
| DW3P | 1768153.500 | 6642347.992 | 6.422 |
| DW2P | 1768382.264 | 6642148.548 | 6.900 |

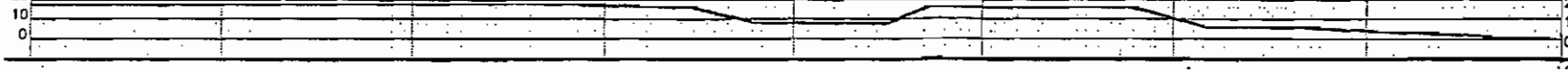
FIGURE 1

**PROFILE VIEW**

GROUND PROFILE P13-DW3




GROUND PROFILE P6-DW1




REDONDO BEACH GENERATING STATION
LOCATION OF DEWATERING & MONITORING WELLS
EDISON

NO VERTICAL EXAGERATION SHOWN
SCALE 1"=60' VERT AND HORZ.

# Location of Exploratory Borings and Monitoring Wells
## North and Boiler Chemical Cleaning Basins

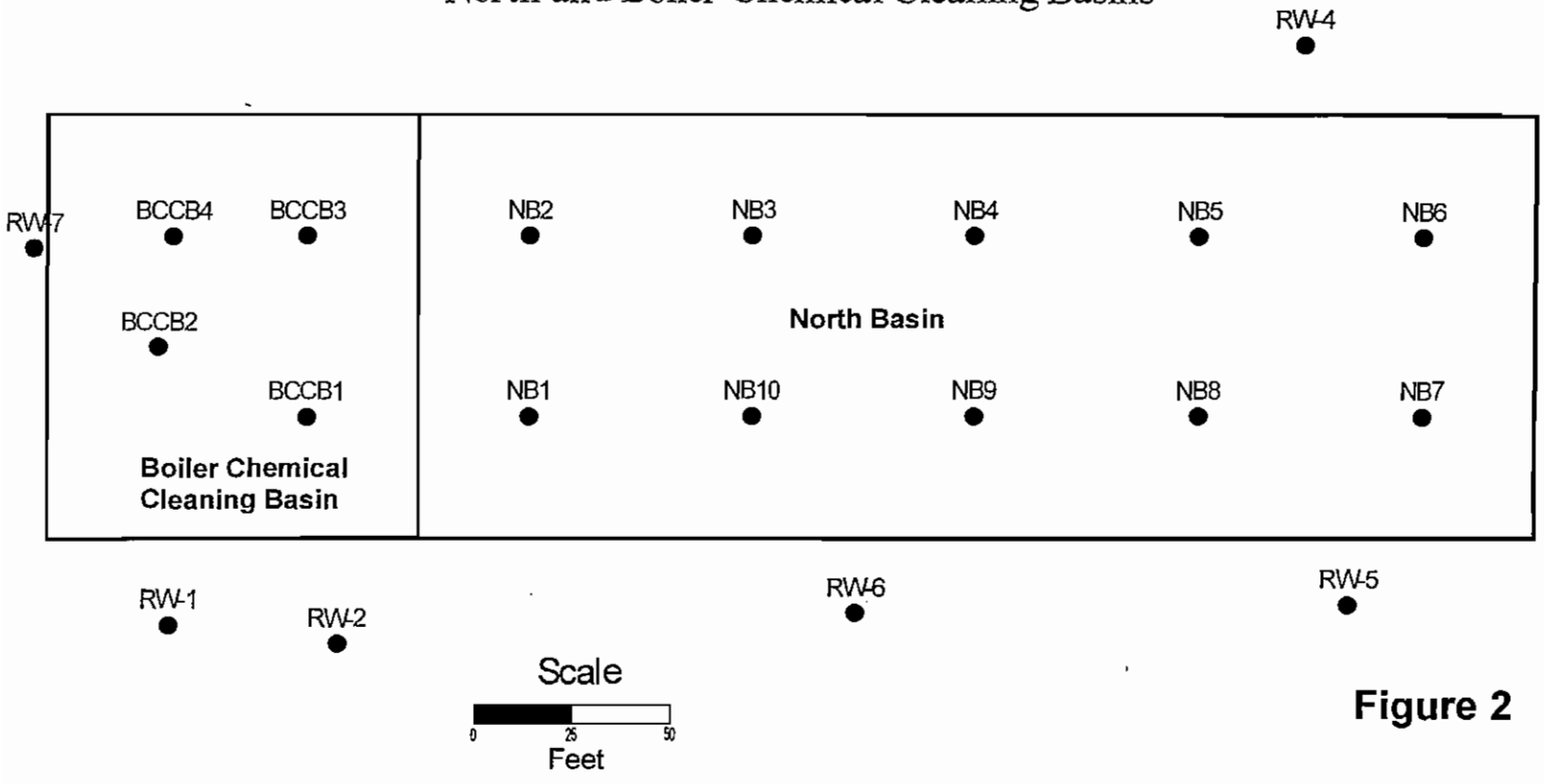
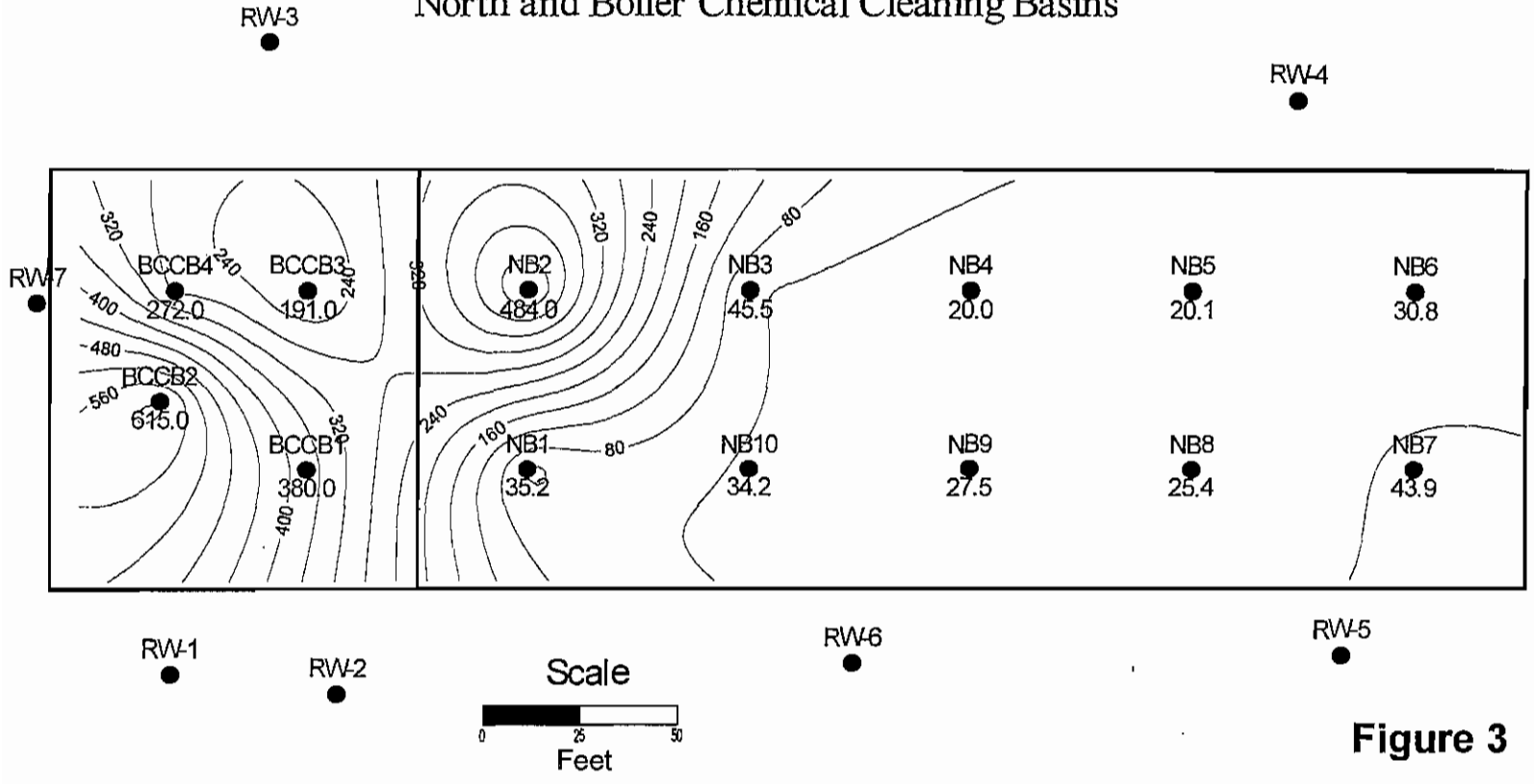



**Figure 2**

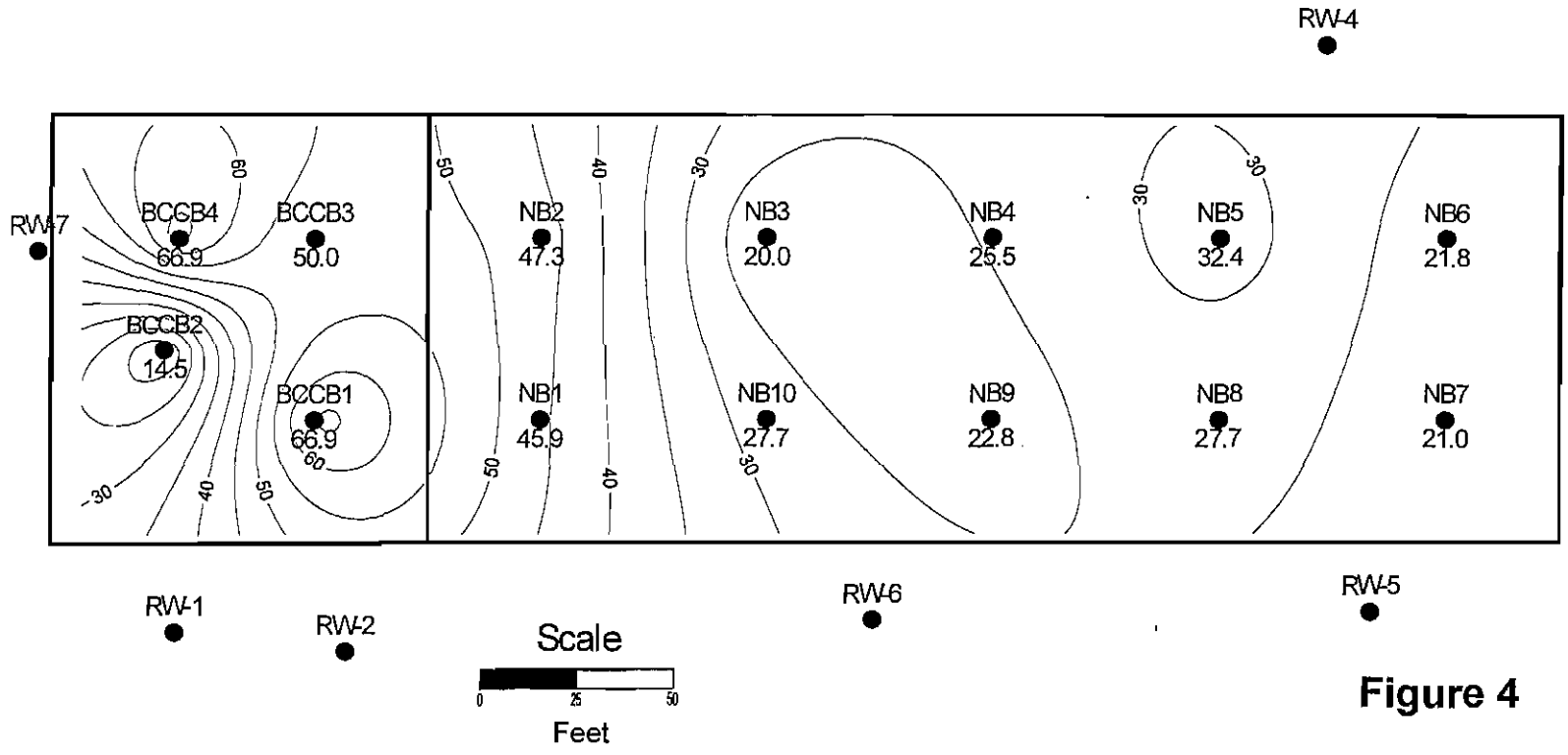
# Vanadium Concentration at the 0.5-foot Horizon
# North and Boiler Chemical Cleaning Basins




**Contour Interval = 40 mg/Kg**

**Figure 3**

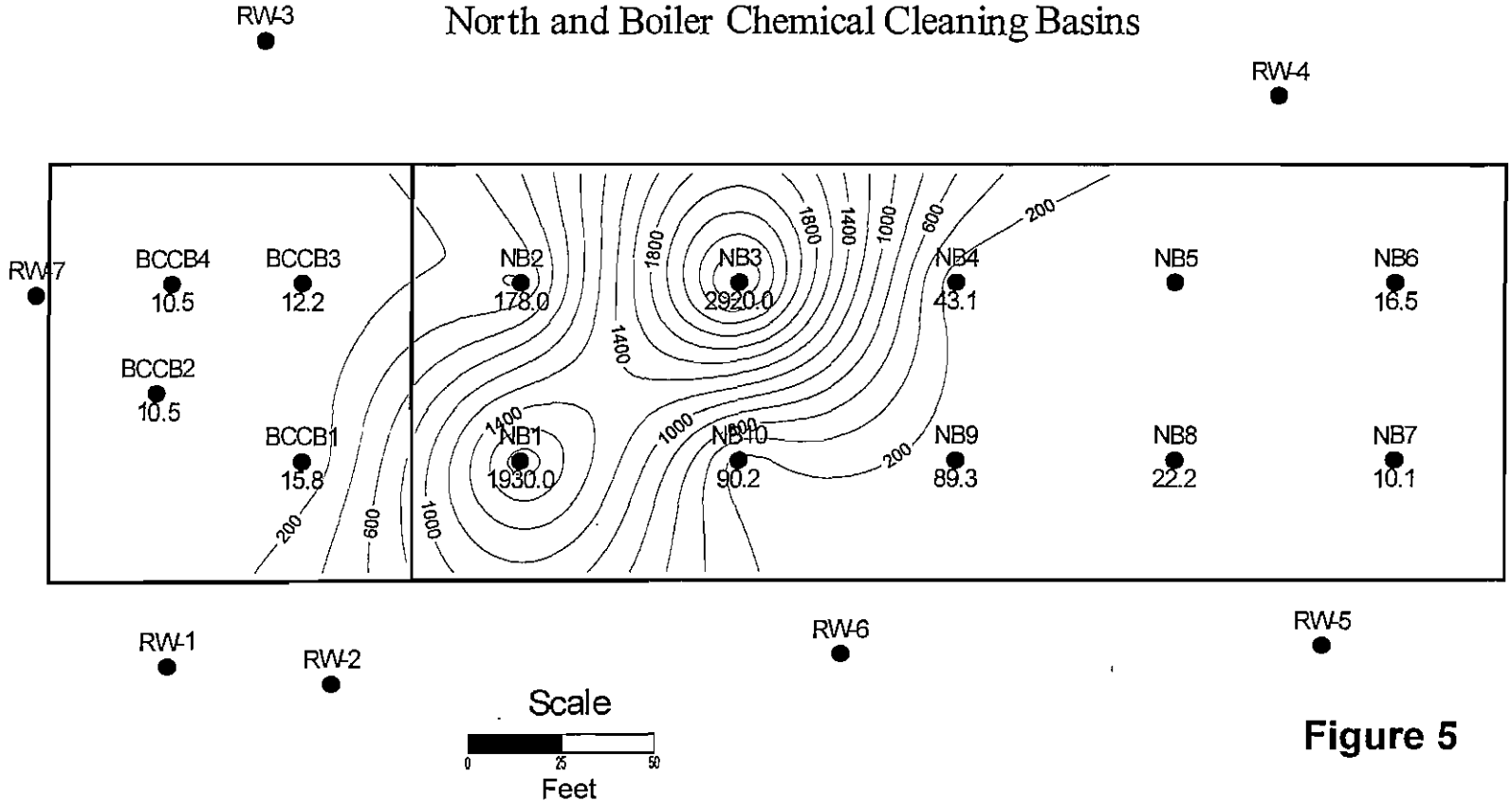
# Vanadium Concentration at the 3-foot Horizon
# North and Boiler Chemical Cleaning Basins




**Contour Interval = 5 mg/Kg**

**Figure 4**

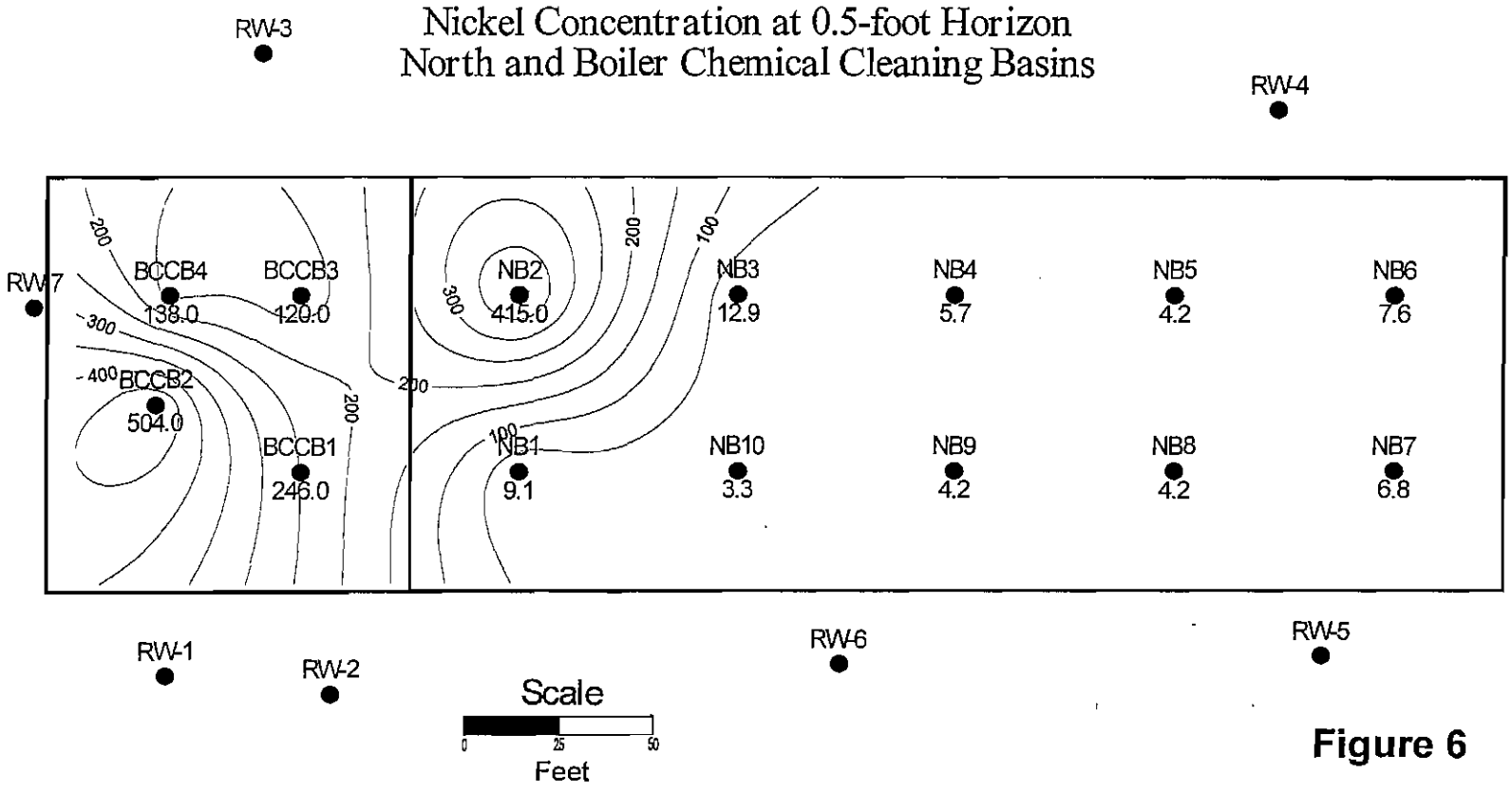
# Vanadium Concentration at the 5-foot Horizon
# North and Boiler Chemical Cleaning Basins




**Contour Interval = 200 mg/Kg**

**Figure 5**

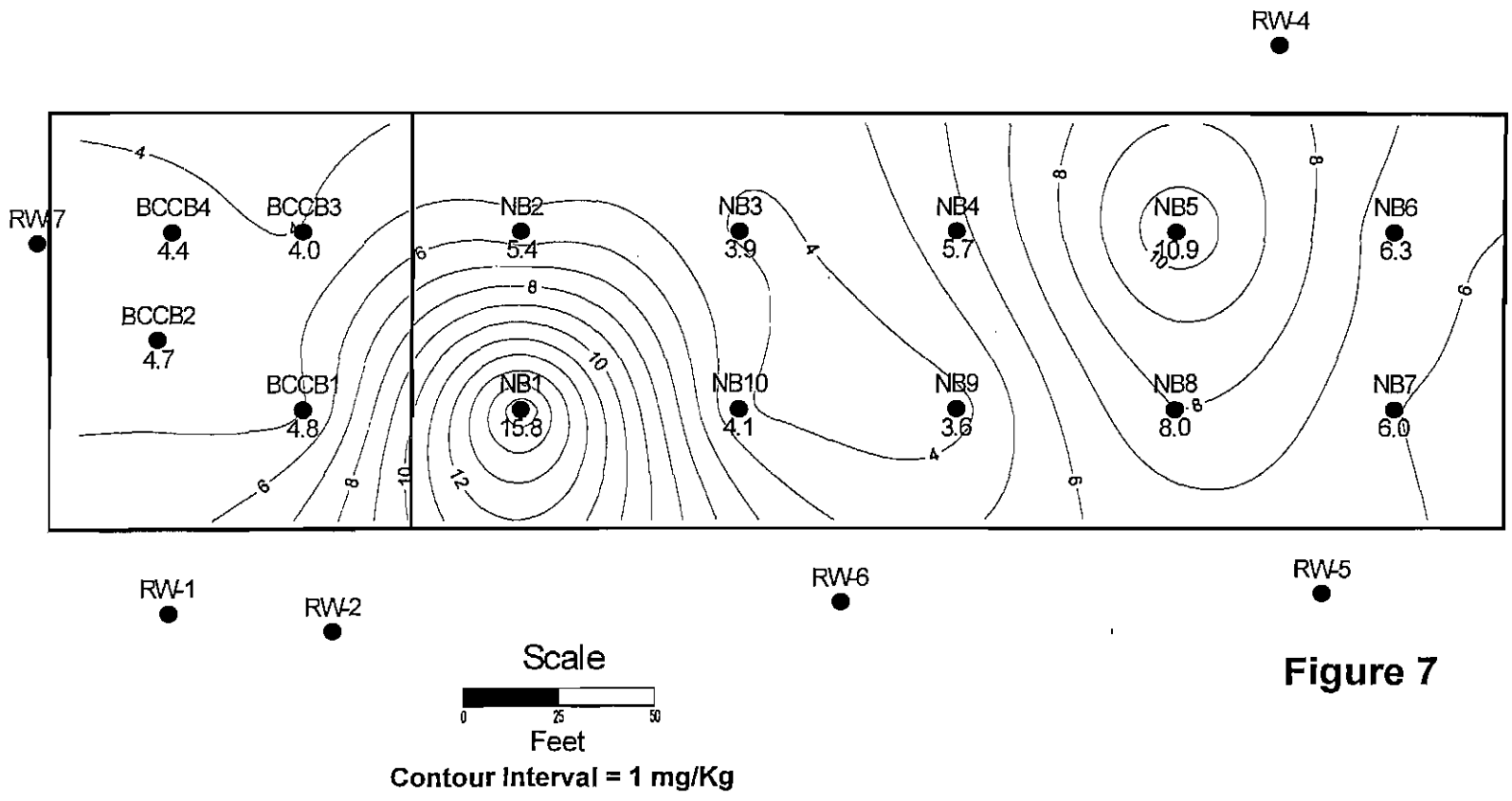
# Nickel Concentration at 0.5-foot Horizon
# North and Boiler Chemical Cleaning Basins




**Contour Interval = 50 mg/Kg**

**Figure 6**

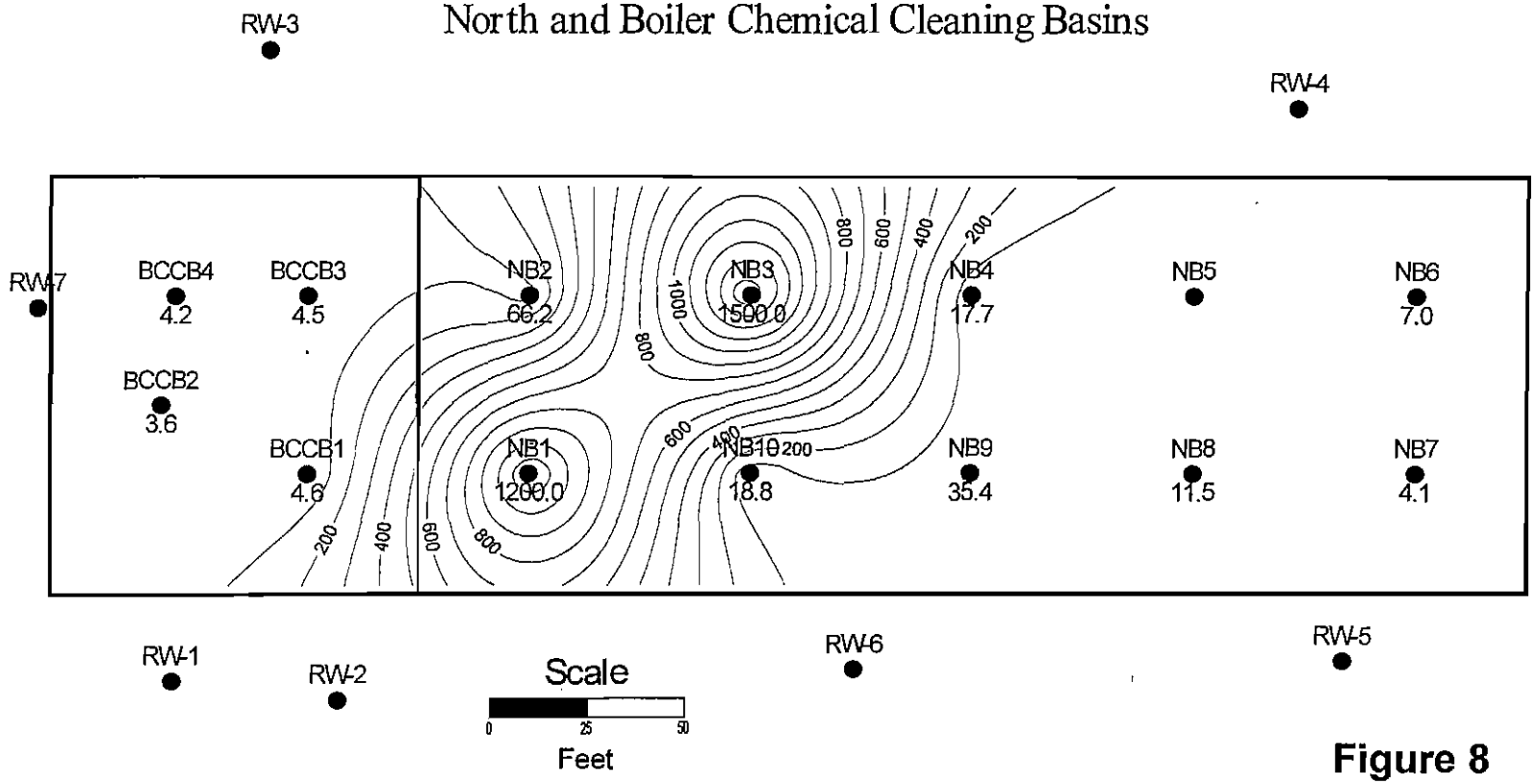
# Nickel Concentration at the 3-foot Horizon
# North and Boiler Chemical Cleaning Basins




**Contour Interval = 1 mg/Kg**

**Figure 7**

# Nickel Concentration at the 5-foot Horizon
# North and Boiler Chemical Cleaning Basins




**Contour Interval = 100 mg/Kg**

**Figure 8**

# Boring Locations with Ground Water Gradient -- 8/11/99
# Silverado and Perched Aquifers
# North Basin

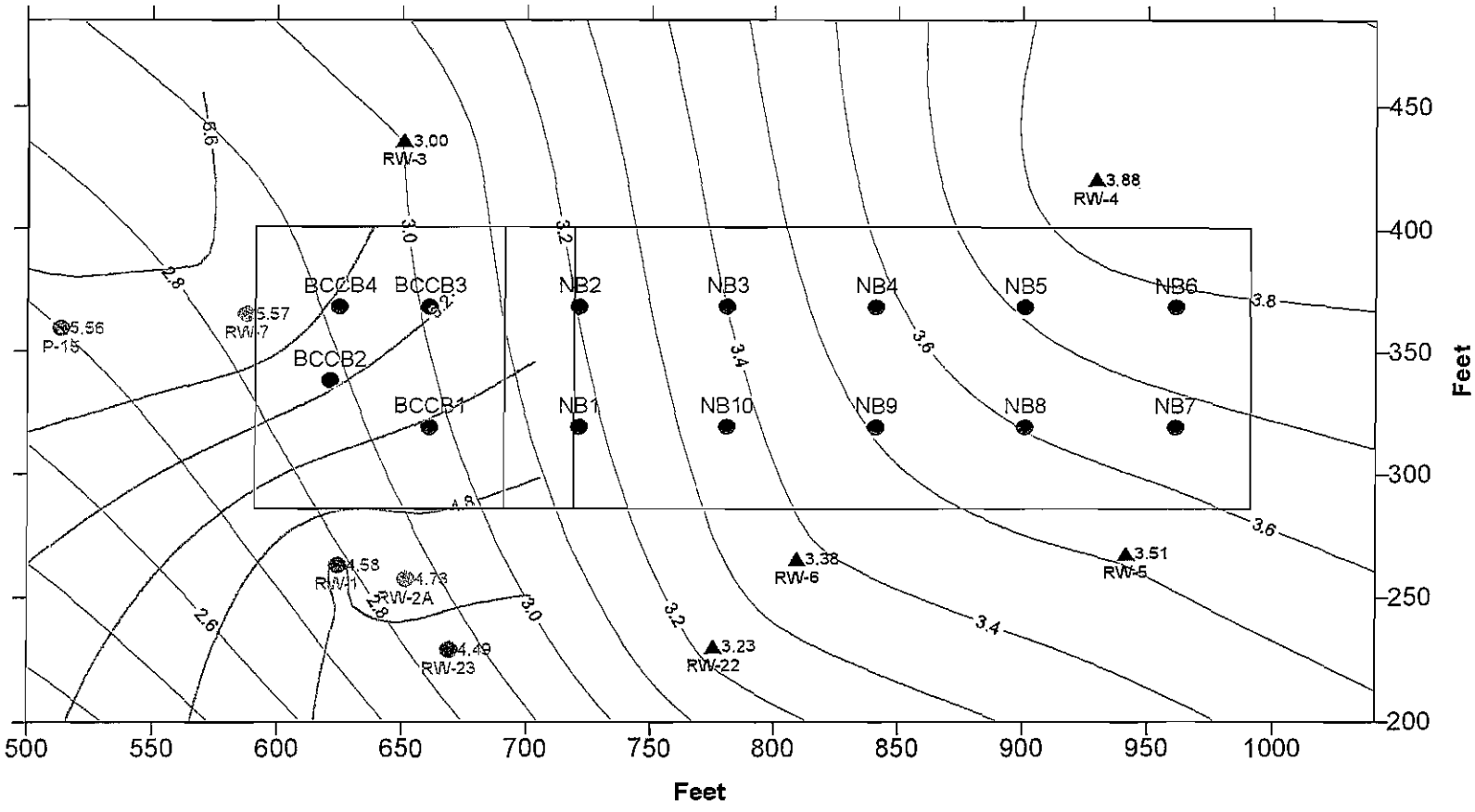



Figure 9

Location of Exploratory Borings and Monitoring Wells
South Basin

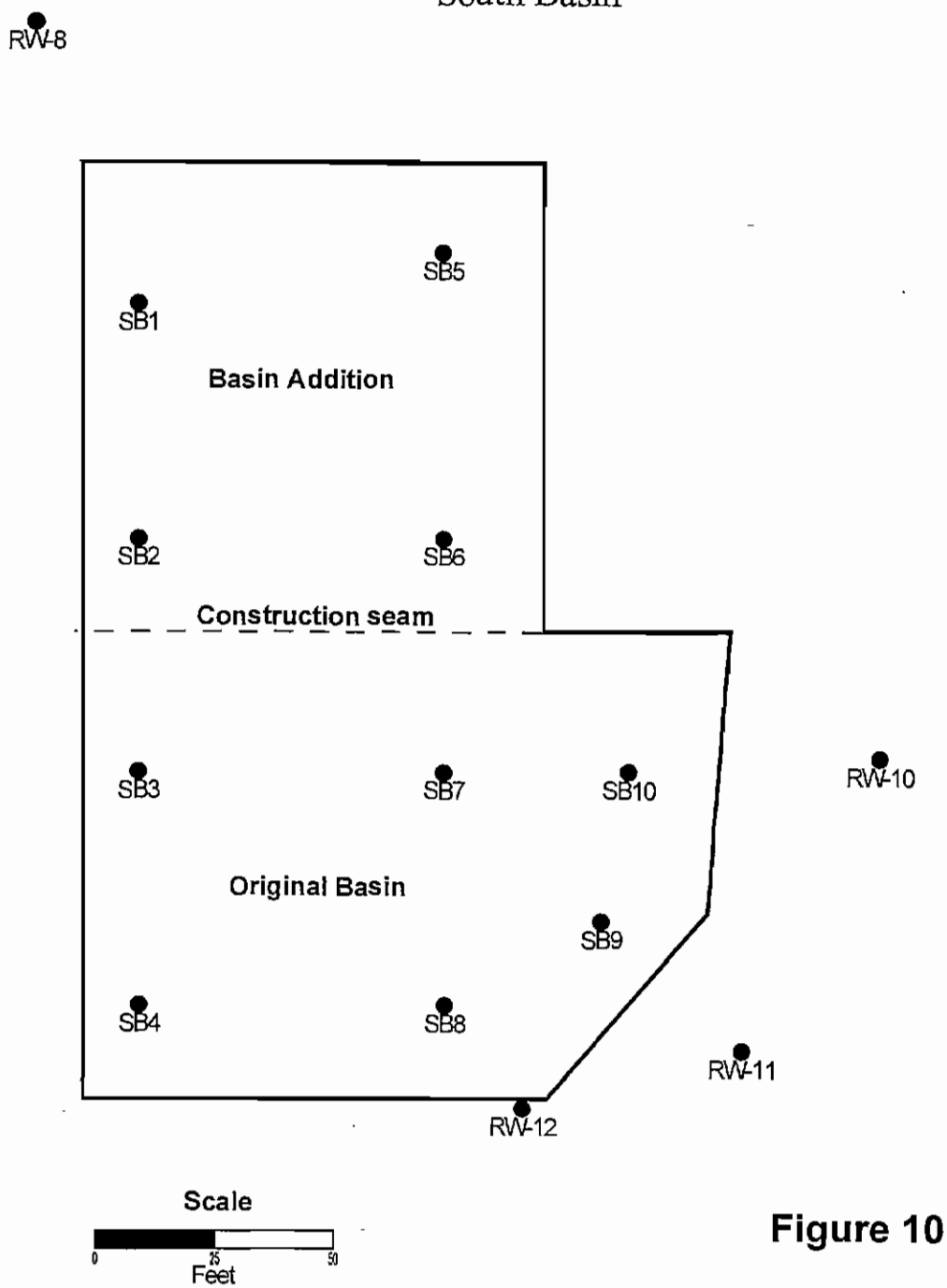



**Figure 10**

# Vanadium Concentration at 0.5-foot Horizon
## South Basin

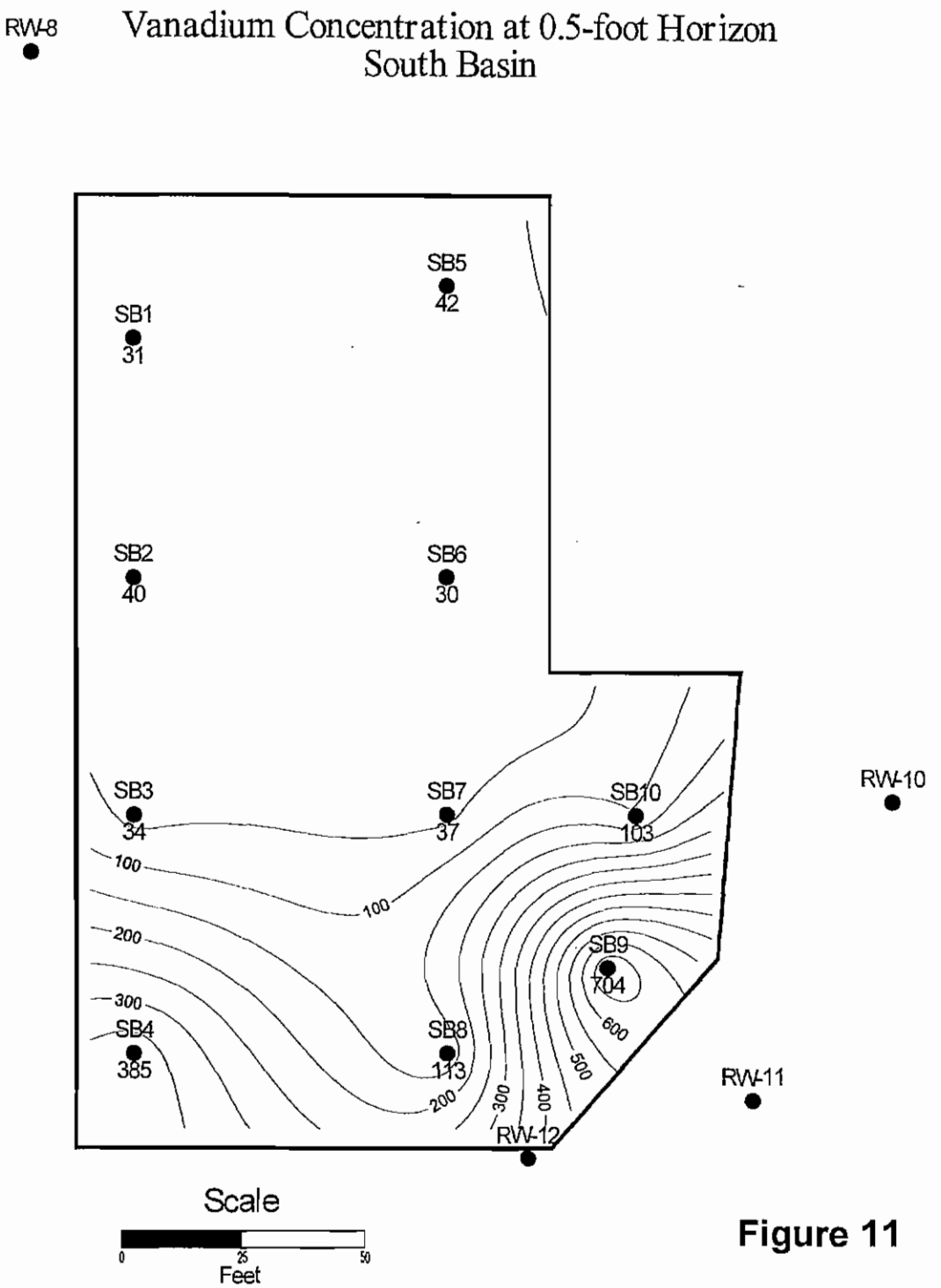



**Figure 11**

**Contour Interval = 50 mg/Kg**

# Vanadium Concentration at 3-foot Horizon
## South Basin

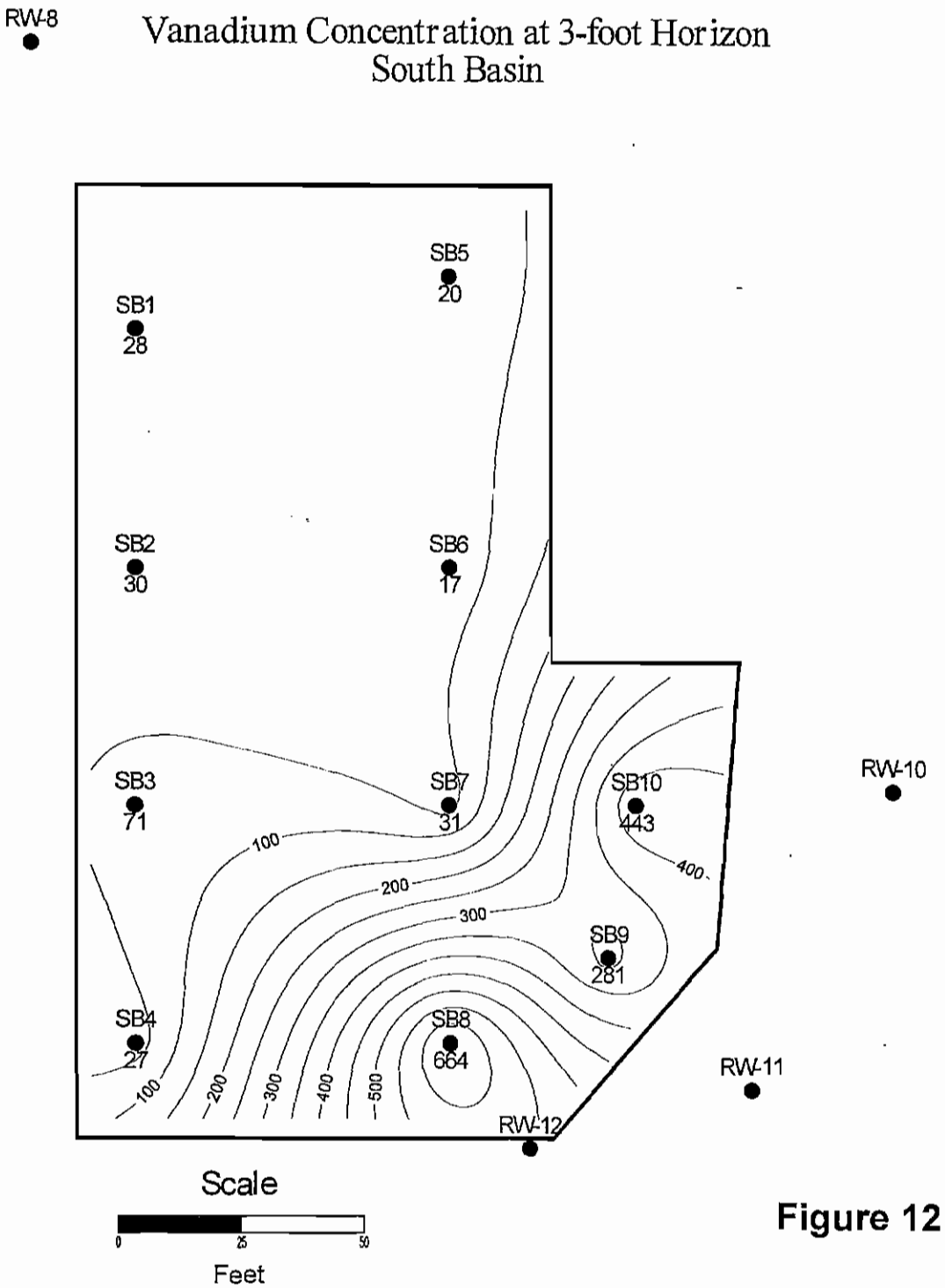



**Figure 12**

**Contour Interval = 50 mg/Kg**

# Vanadium Concentration at 5-foot Horizon
## South Basin

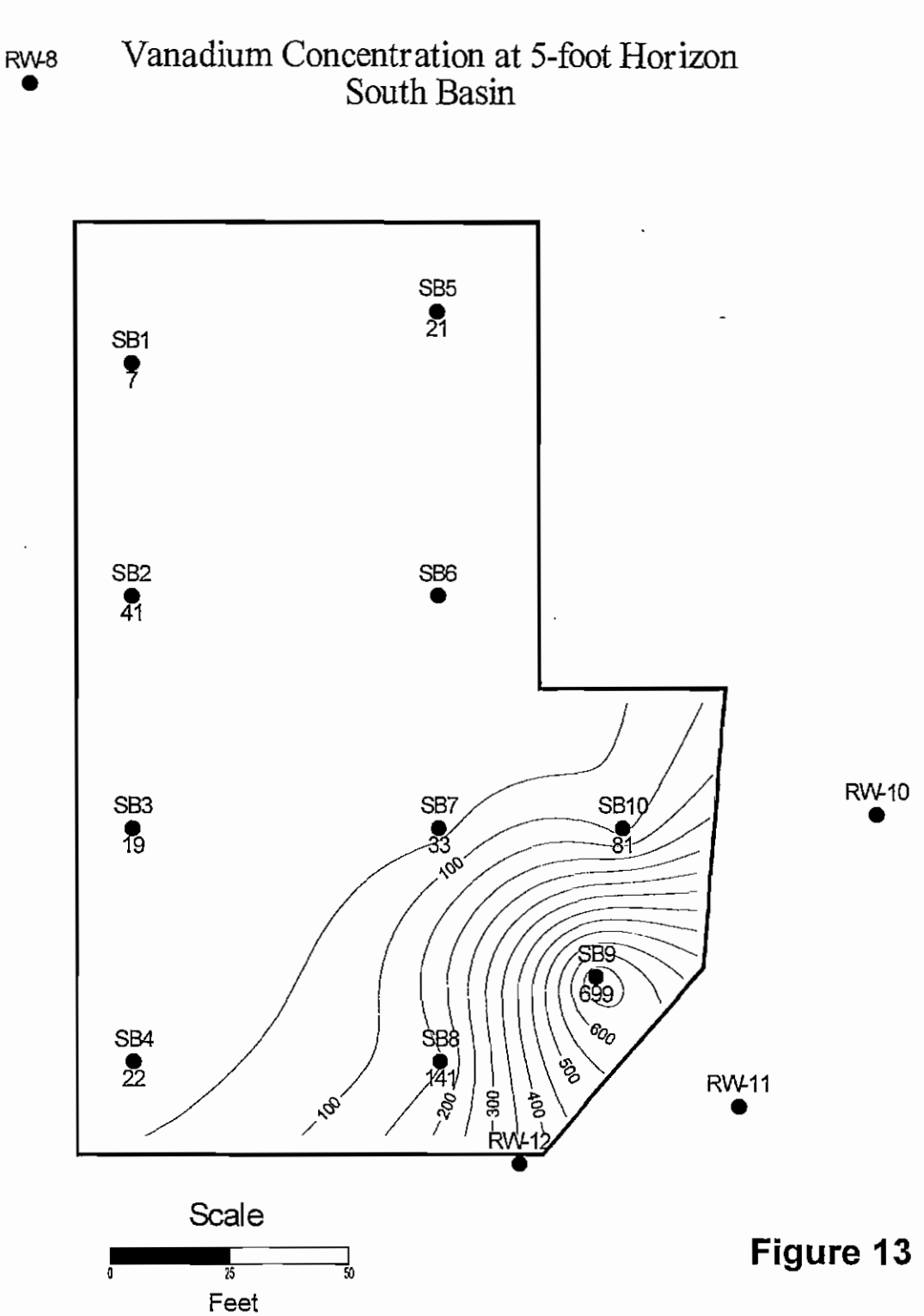



**Figure 13**

**Contour Interval = 50 mg/Kg**

# Nickel Concentration at 0.5-foot Horizon
## South Basin

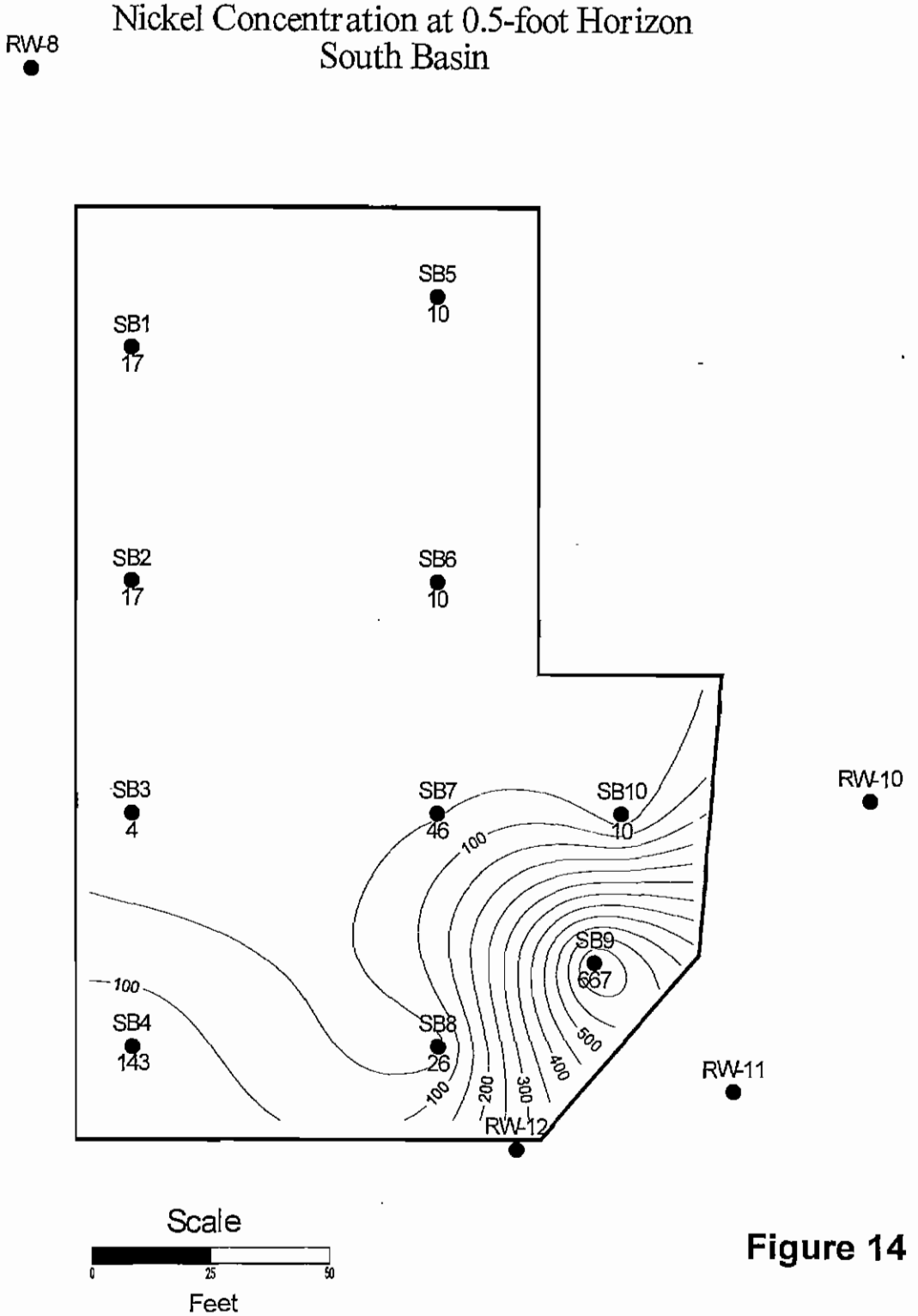



**Figure 14**

**Contour Interval = 50 mg/Kg**

# Nickel Concentration at 3-foot Horizon
## South Basin

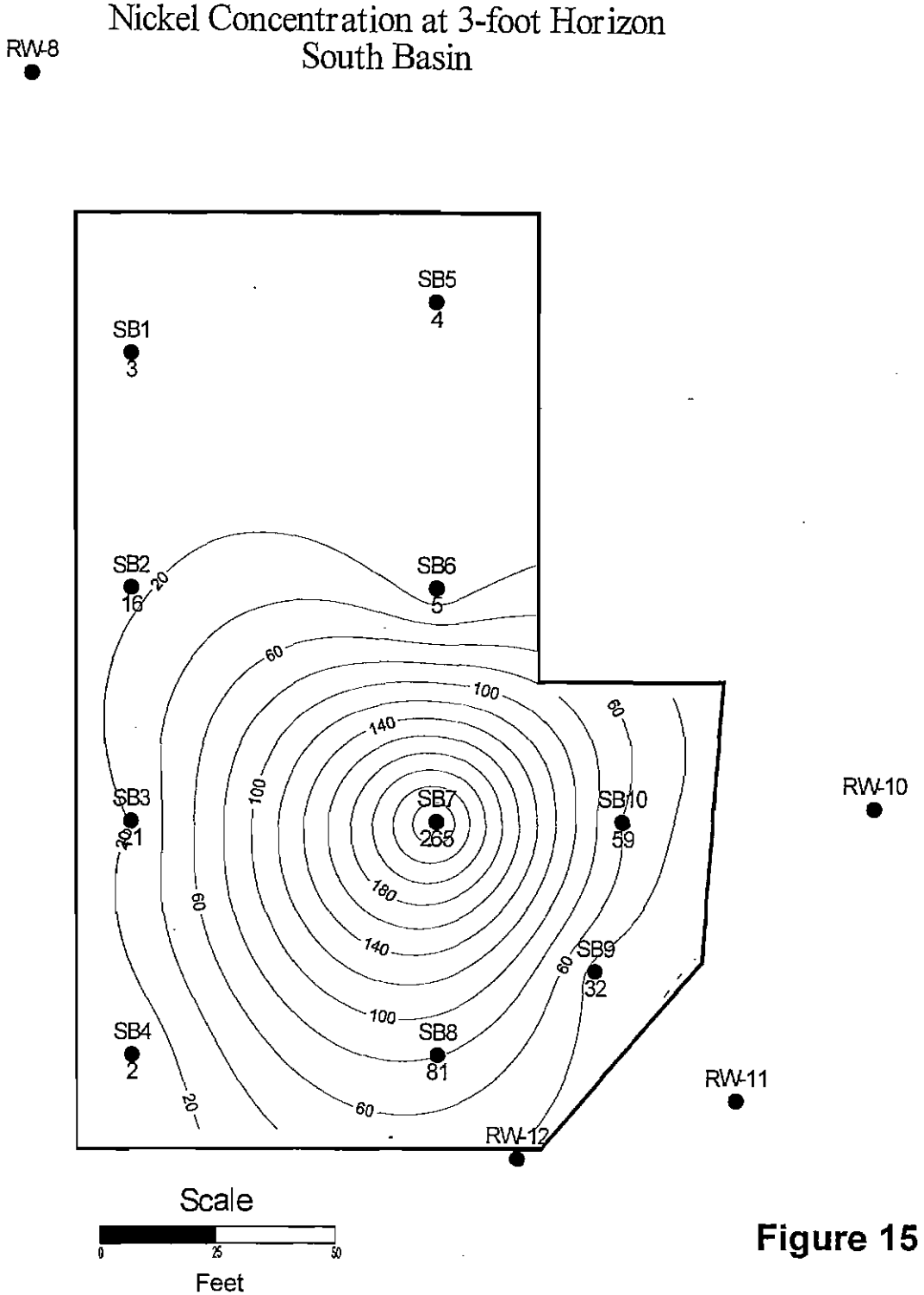



**Figure 15**

**Contour Interval = 20 mg/Kg**

# Nickel Concentration at 5-foot Horizon
## South Basin

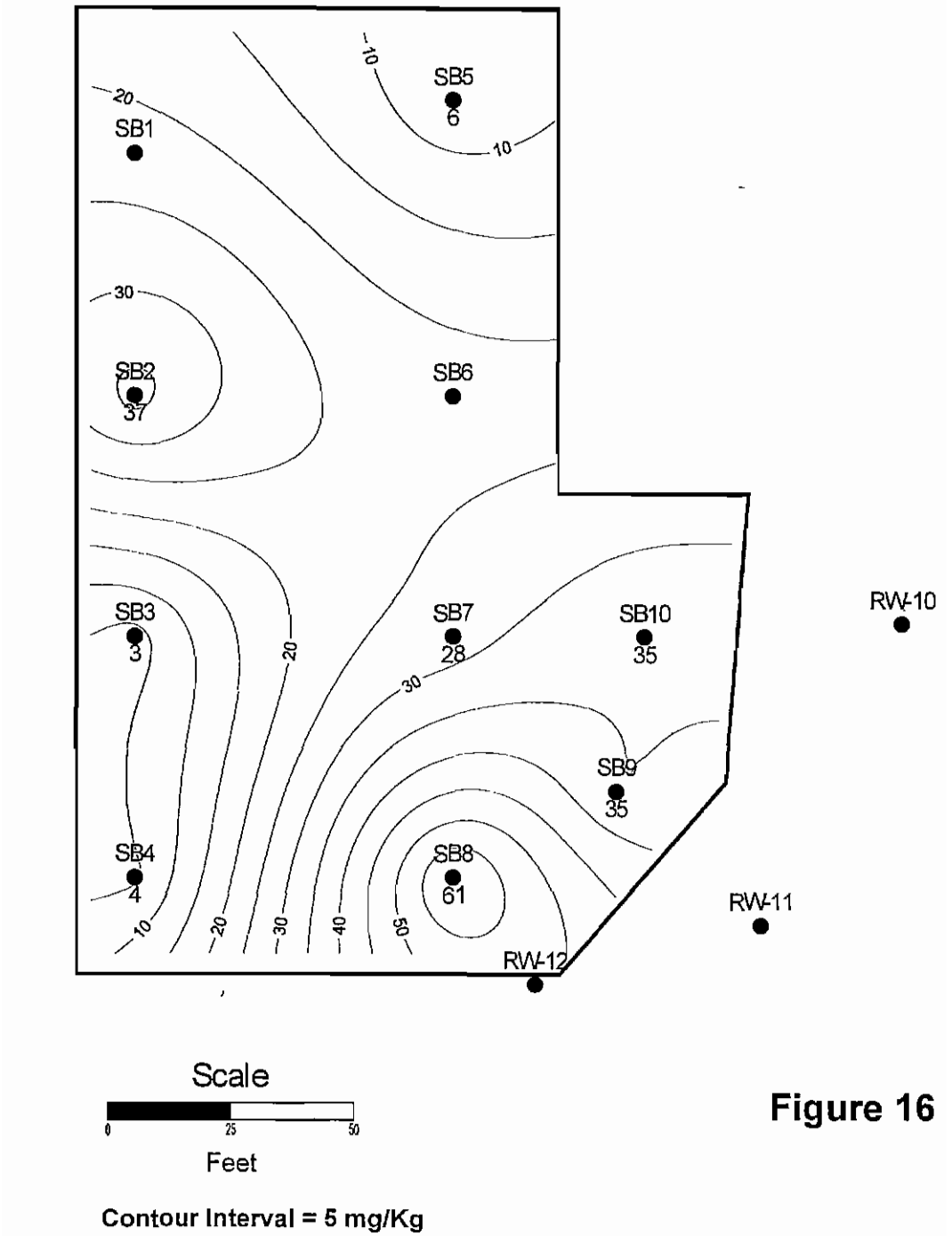



**Figure 16**

**Contour Interval = 5 mg/Kg**

# Boring Locations with Ground Water Gradient -- 8/11/99
## Perched Aquifer

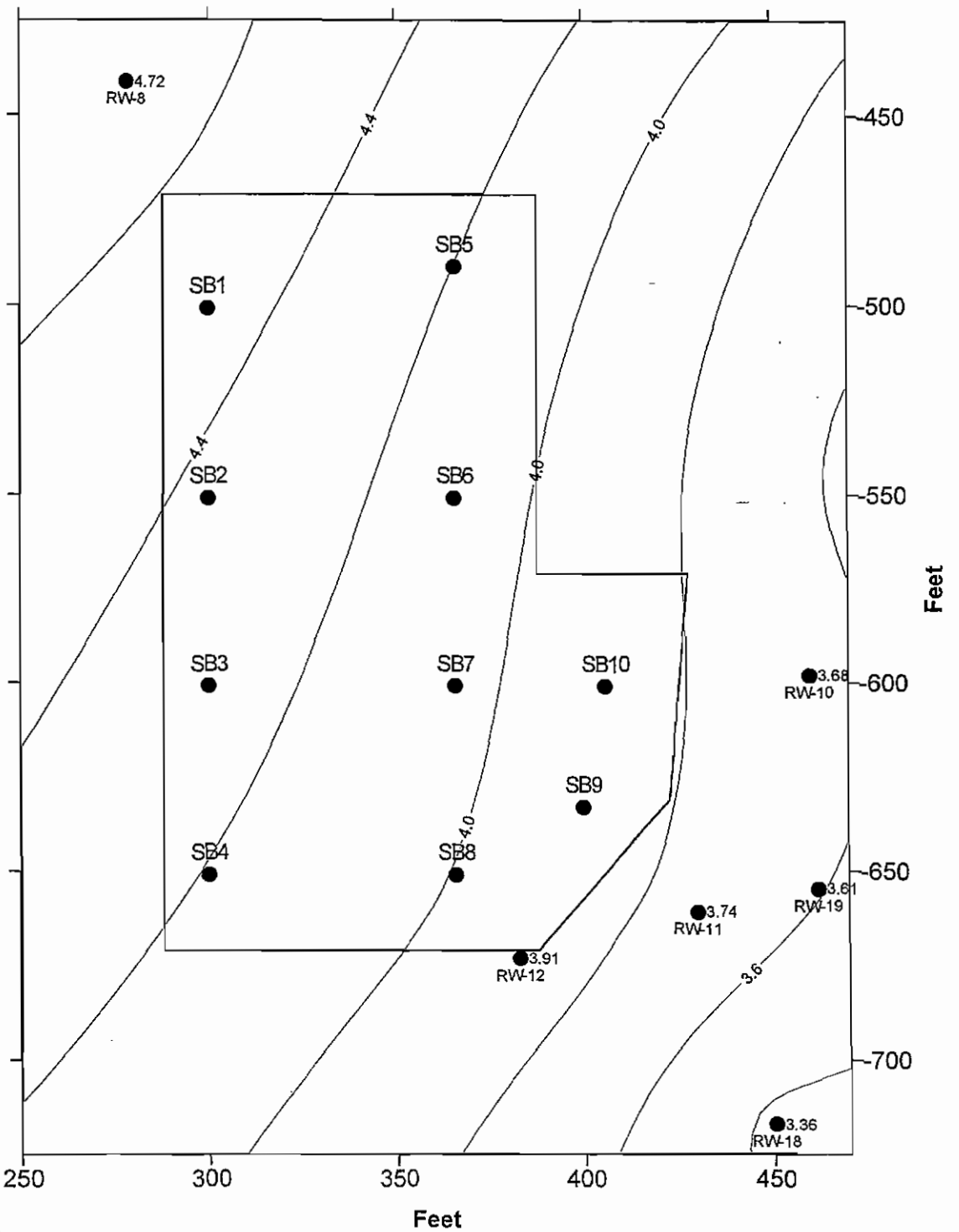



**Figure 17**

Table 1

# Summary of Soil Data -- North Basin

| Parameter | pH | Antimony | Arsenic | Barium | Beryllium |
|---|---|---|---|---|---|
| units | Units | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| All Samples | 6.82 - 8.97 | ND - 2.02 | 1.25 - 10 | 6.45 - 103 | ND - 0.38 |
| 0.5-foot Horizon | 8.18 - 8.97 | ND - 0.62 | 1.25 - 4.27 | 6.45 - 25.6 | ND - 0.2 |
| 3-foot Horizon | 7.66 - 8.74 | ND - 0.82 | 1.56 - 3.41 | 7.28 - 54.4 | ND - 0.28 |
| 5-foot Horizon | 6.82 - 8.92 | 0.21 - 2.02 | 1.35 - 10 | 14.2 - 103 | 0.11 - 0.38 |
| Maximum | 8.97 in NB4 | 2.02 in NB3 | 10 in NB3 | 103 in NB3 | 0.38 in NB6 |

| Parameter | Cadmium | Chloride | Total Chromium | Chromium IV | Copper |
|---|---|---|---|---|---|
| units | mg/Kg | mg/L | mg/Kg | mg/Kg | mg/Kg |
| All Samples | ND - 0.71 | 3.84 - 32.8 | 7.38 - 32.6 | ND | 2.15 - 37.3 |
| 0.5-foot Horizon | ND - 0.26 | 3.84 - 25.2 | 7.51 - 12.6 | ND | 2.15 - 9.92 |
| 3-foot Horizon | ND - 0.32 | 6.68 - 32.8 | 7.39 - 14.6 | ND | 2.57 - 18.9 |
| 5-foot Horizon | 0.12 - 0.71 | 4.48 - 29.7 | 7.38 - 32.6 | ND | 2.63 - 37.3 |
| Maximum | 0.71 in NB4 | 32.8 in NB5 | 32.6 in NB1 | ND | 37.3 in NB3 |

| Parameter | Cobalt | Fluoride | Lead | Mercury | Molybdenum |
|---|---|---|---|---|---|
| units | mg/Kg | mg/L | mg/Kg | mg/Kg | mg/Kg |
| All Samples | 1.41 - 45.3 | ND | 1.11 - 94.3 | ND - 0.48 | ND - 18.9 |
| 0.5-foot Horizon | 1.43 - 14 | ND | 1.11 - 18.9 | ND - 0.13 | ND - 18.9 |
| 3-foot Horizon | 1.41 - 4.32 | ND | 1.93 - 24.1 | ND | ND - 1.54 |
| 5-foot Horizon | 2.14 - 45.3 | ND | 2.09 - 94.3 | ND - 0.48 | ND - 3.42 |
| Maximum | 45.3 in NB3 | ND | 94.3 in NB3 | 0.48 in NB1 | 18.9 in NB7 |

Table 1

# Summary of Soil Data -- North Basin

| Parameter | Nickel | Selenium | Silver | Thallium | Vanadium |
|---|---|---|---|---|---|
| units | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| All Samples | 3.3 - 1500 | ND | ND - 0.45 | ND - 0.14 | 10.1 - 2920 |
| 0.5-foot Horizon | 3.3 - 415 | ND | ND - 0.27 | ND | 20 - 484 |
| 3-foot Horizon | 3.6 - 15.8 | ND | ND - 0.17 | ND - 0.17 | 20 - 47.3 |
| 5-foot Horizon | 4.12 - 1500 | ND | ND - 0.45 | ND - 0.45 | 10.1 - 2920 |
| Maximum | 1500 in NB3 | ND | 0.45 in NB3 | 0.45 in NB3 | 2920 in NB3 |

| Parameter | Zinc | TCE | | | |
|---|---|---|---|---|---|
| units | mg/Kg | ug/Kg | | | |
| All Samples | 7.95 - 99.2 | ND | | | |
| 0.5-foot Horizon | 7.95 - 34.9 | ND | | | |
| 3-foot Horizon | 10.1 - 38.6 | ND | | | |
| 5-foot Horizon | 10.5 - 99.2 | ND | | | |
| Maximum | 99.2 in NB1 | ND | | | |

Table 2

# Summary of Soil Data -- BCCB

| Parameter | pH | Antimony | Arsenic | Barium | Beryllium |
|---|---|---|---|---|---|
| units | Units | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| All Samples | 7.78 - 8.8 | ND - 1.19 | 1.4 - 5.94 | 7.44 - 189 | ND - 0.12 |
| 0.5-foot Horizon | 8.21 - 8.49 | 0.72 - 1.19 | 3.12 - 5.94 | 37.5 - 189 | ND - 0.12 |
| 3-foot Horizon | 7.94 - 8.63 | ND | 1.64 - 2.37 | 7.44 - 13.6 | ND |
| 5-foot Horizon | 7.78 - 8.8 | 0.2 - 0.32 | 1.4 - 1.89 | 8.01 - 11.3 | ND |
| Maximum | 8.8 in BCCB4 | 1.19 in BCCB2 | 5.94 in BCCB2 | 189 in BCCB3 | 0.12 in BCCB2 |

| Parameter | Cadmium | Chloride | Total Chromium | Chromium IV | Copper |
|---|---|---|---|---|---|
| units | mg/Kg | mg/L | mg/Kg | mg/Kg | mg/Kg |
| All Samples | ND - 0.31 | ND - 4.92 | 5.58 - 28.4 | ND | 3.4 - 83.2 |
| 0.5-foot Horizon | 0.21 - 0.31 | ND - 4.92 | 18.5 - 28.4 | ND | 17.5 - 83.2 |
| 3-foot Horizon | ND - 0.12 | ND - 4.12 | 5.58 - 17.2 | ND | 3.59 - 4.29 |
| 5-foot Horizon | ND | ND | 15 - 19.3 | ND | 3.4 - 3.99 |
| Maximum | 0.31 in BCCB2 | 4.92 in BCCB4 | 28.4 in BCCB2 | ND | 83.2 in BCCB1 |

| Parameter | Cobalt | Fluoride | Lead | Mercury | Molybdenum |
|---|---|---|---|---|---|
| units | mg/Kg | mg/L | mg/Kg | mg/Kg | mg/Kg |
| All Samples | 1.13 - 17.5 | ND - 1.87 | 1.27 - 48 | ND - 0.1 | ND - 2.63 |
| 0.5-foot Horizon | 5.19 - 17.5 | ND - 1.87 | 27 - 48 | ND - 0.1 | 1.29 - 2.63 |
| 3-foot Horizon | 1.13 - 2.65 | ND | 1.27 - 6.93 | ND | ND - 0.27 |
| 5-foot Horizon | 2.19 - 2.65 | ND | 1.36 - 2.3 | ND | ND - 0.43 |
| Maximum | 17.5 in BCCB2 | 1.87 in BCCB4 | 48 in BCCB2 | 0.1 in BCCB2 | 2.63 in BCCB2 |

Table 2

# Summary of Soil Data -- BCCB

| Parameter | Nickel | Selenium | Silver | Thallium | Vanadium |
|---|---|---|---|---|---|
| units | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| All Samples | 3.57 - 504 | ND | ND - 0.11 | ND | 14.5 - 615 |
| 0.5-foot Horizon | 120 - 504 | ND | ND - 0.11 | ND | 191 - 615 |
| 3-foot Horizon | 3.98 - 4.76 | ND | ND - 0.1 | ND | 14.5 - 66.9 |
| 5-foot Horizon | 3.57 - 4.64 | ND | ND | ND | 56.2 - 87 |
| Maximum | 504 in BCCB2 | ND | 0.11 in BCCB1,4 | ND | 615 in BCCB2 |

| Parameter | Zinc | TCE | | | |
|---|---|---|---|---|---|
| units | mg/Kg | ug/Kg | | | |
| All Samples | 9.61 - 77 | ND | | | |
| 0.5-foot Horizon | 52.7 - 77 | ND | | | |
| 3-foot Horizon | 9.61 - 13 | ND | | | |
| 5-foot Horizon | 10.5 - 15.8 | ND | | | |
| Maximum | 77 in BCCB2 | ND | | | |

Table 3

# North Basin Arranged by Boring

| | Boring ID | | 1-1 | 1-2 | 1-3 | | 2-1 | 2-2 | 2-3 | | 3-1 | 3-2 | 3-3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 0.5 | 3 | 5 | | 0.5 | 3 | 5 | | 0.5 | 3 | 5 |
| **Parameter** | **PQL** | **Units** | | | | | | | | | | | |
| **pH (field)** | | units | 7.85 | 7.69 | 7.56 | | 7.83 | 7.74 | 8.25 | | 8.38 | 8.31 | 8 |
| **pH (lab)** | | units | 8.62 | 8.36 | 7.67 | | 8.43 | 8.61 | 8.23 | | 8.78 | 8.68 | 7.37 |
| **TCE** | 2.5 | ug/Kg | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| **Antimony** | 0.2 | mg/Kg | 0.33 | 0.27 | 1.3 | | 0.49 | ND | 0.78 | | 0.44 | 0.41 | 2.02 |
| **Arsenic** | 0.2 | mg/Kg | 2.15 | 1.76 | 8.83 | | 4.27 | 1.97 | 2.77 | | 1.89 | 1.81 | 10 |
| **Barium** | 1 | mg/Kg | 23.2 | 36.8 | 49.2 | | 25.6 | 9.69 | 25.7 | | 18.7 | 7.28 | 103 |
| **Beryllium** | 0.1 | mg/Kg | 0.11 | 0.11 | 0.17 | | 0.12 | ND | 0.11 | | ND | ND | 0.3 |
| **Cadmium** | 0.1 | mg/Kg | ND | 0.32 | 0.33 | | 0.21 | ND | 0.21 | | 0.12 | ND | 0.63 |
| **Chloride** | 2 | mg/L | 15.8 | 16.6 | 20.8 | | 25.2 | 7.09 | 16.1 | | 12.7 | 9.07 | 29.7 |
| **Chromium, Total** | 0.5 | mg/Kg | 8.04 | 14.6 | 32.6 | | 12.6 | 8.59 | 14.8 | | 9.99 | 7.39 | 30.5 |
| **Chromium 6** | 0.5 | mg/Kg | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| **Copper** | 0.5 | mg/Kg | 5.21 | 6.01 | 23.4 | | 9.92 | 2.82 | 8.55 | | 5.51 | 3.66 | 37.3 |
| **Cobalt** | 0.1 | mg/Kg | 2.32 | 3.04 | 34.8 | | 14 | 1.49 | 4.04 | | 2.28 | 1.41 | 45.3 |
| **Fluoride** | 1 | mg/L | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| **Lead** | 0.5 | mg/Kg | 9.65 | 5.04 | 73.9 | | 18.9 | 9.11 | 12 | | 9.64 | 7.06 | 94.3 |
| **Mercury** | 0.06 | mg/Kg | ND | ND | 0.48 | | 0.13 | ND | 0.07 | | ND | ND | 0.22 |
| **Molybdenum** | 0.2 | mg/Kg | 0.25 | 1.54 | 2.19 | | 0.56 | ND | 0.76 | | 0.22 | ND | 3.42 |
| **Nickel** | 0.5 | mg/Kg | 9.15 | 15.8 | 1200 | | 415 | 5.37 | 66.2 | | 12.9 | 3.86 | 1500 |
| **Selenium** | 0.5 | mg/Kg | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| **Silver** | 0.1 | mg/Kg | 0.16 | ND | 0.29 | | ND | ND | ND | | 0.27 | ND | 0.45 |
| **Thallium** | 0.1 | mg/Kg | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| **Vanadium** | 5 | mg/Kg | 35.2 | 45.9 | 1930 | | 484 | 47.3 | 178 | | 45.5 | 20 | 2920 |
| **Zinc** | 0.5 | mg/Kg | 17.8 | 17.8 | 99.2 | | 34.9 | 11.4 | 26.3 | | 21 | 13.2 | 85.4 |

Table 3

# North Basin Arranged by Boring

| | Boring ID | | 4-1 | 4-2 | 4-3 | | 5-1 | 5-2 | | 6-1 | 6-2 | 6-3 | | 7-1 | 7-2 | 7-3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 0.5 | 3 | 5 | | 0.5 | 3 | | 0.5 | 3 | 5 | | 0.5 | 3 | 5 |
| Parameter | PQL | Units | | | | | | | | | | | | | | |
| pH (field) | | units | 8.64 | 8.63 | 7.84 | | 8.77 | 8.04 | | 8.09 | 7.74 | 7.11 | | 8.12 | 7.59 | 7.31 |
| pH (lab) | | units | 8.97 | 8.74 | 7.63 | | 8.82 | 7.91 | | 8.68 | 7.66 | 6.82 | | 8.18 | 7.81 | 7.59 |
| TCE | 2.5 | ug/Kg | ND | ND | ND | | ND | ND | | ND | ND | ND | | ND | ND | ND |
| Antimony | 0.2 | mg/Kg | 0.62 | ND | 0.38 | | ND | 0.44 | | 0.22 | 0.82 | ND | | 0.46 | 0.25 | 0.21 |
| Arsenic | 0.2 | mg/Kg | 1.34 | 2.09 | 2.03 | | 1.82 | 3.41 | | 1.89 | 1.73 | 2.25 | | 1.76 | 2.04 | 1.35 |
| Barium | 1 | mg/Kg | 8.27 | 8.96 | 76.5 | | 6.45 | 54.4 | | 12.7 | 48.8 | 47.8 | | 10.6 | 43.3 | 20.5 |
| Beryllium | 0.1 | mg/Kg | ND | ND | 0.13 | | ND | 0.24 | | ND | 0.28 | 0.38 | | 0.2 | 0.24 | 0.18 |
| Cadmium | 0.1 | mg/Kg | 0.11 | 0.11 | 0.71 | | ND | 0.23 | | 0.11 | 0.13 | 0.12 | | 0.26 | ND | 0.12 |
| Chloride | 2 | mg/L | 13.9 | 11.9 | 25.1 | | 4.51 | 32.8 | | 10.5 | 19.3 | 24.1 | | 3.84 | 10.7 | 4.48 |
| Chromium, Total | 0.5 | mg/Kg | 7.61 | 8.32 | 15.9 | | 7.51 | 13.5 | | 9.19 | 11.5 | 10.7 | | 11.5 | 11.1 | 7.38 |
| Chromium 6 | 0.5 | mg/Kg | ND | ND | ND | | ND | ND | | ND | ND | ND | | ND | ND | ND |
| Copper | 0.5 | mg/Kg | 5 | 3.31 | 8.12 | | 2.56 | 18.9 | | 4.04 | 6.83 | 5.23 | | 4.69 | 5.11 | 2.63 |
| Cobalt | 0.1 | mg/Kg | 1.75 | 1.62 | 5.52 | | 1.43 | 3.8 | | 1.98 | 4.32 | 2.86 | | 2.3 | 3.35 | 2.14 |
| Fluoride | 1 | mg/L | ND | ND | ND | | ND | ND | | ND | ND | ND | | ND | ND | ND |
| Lead | 0.5 | mg/Kg | 5.94 | 8 | 13.4 | | 1.19 | 24.1 | | 5.63 | 3.62 | 3.67 | | 8.5 | 3.26 | 2.09 |
| Mercury | 0.06 | mg/Kg | ND | ND | ND | | ND | ND | | ND | ND | ND | | ND | ND | 0.11 |
| Molybdenum | 0.2 | mg/Kg | ND | ND | 1.6 | | ND | 0.78 | | 0.2 | 0.35 | 0.32 | | 18.9 | 0.33 | ND |
| Nickel | 0.5 | mg/Kg | 5.74 | 5.74 | 17.7 | | 4.24 | 10.9 | | 7.62 | 6.33 | 7 | | 6.84 | 6.01 | 4.12 |
| Selenium | 0.5 | mg/Kg | ND | ND | ND | | ND | ND | | ND | ND | ND | | ND | ND | ND |
| Silver | 0.1 | mg/Kg | ND | ND | ND | | ND | ND | | ND | 0.17 | ND | | ND | ND | ND |
| Thallium | 0.1 | mg/Kg | ND | ND | 0.12 | | ND | ND | | ND | ND | ND | | ND | ND | ND |
| Vanadium | 5 | mg/Kg | 20 | 25.5 | 43.1 | | 20.1 | 32.4 | | 30.8 | 21.8 | 16.5 | | 43.9 | 21 | 10.1 |
| Zinc | 0.5 | mg/Kg | 13.4 | 36.6 | 31.8 | | 9.2 | 38.6 | | 32.1 | 30.8 | 18 | | 21.2 | 20.5 | 10.5 |

Table 3

# North Basin Arranged by Boring

| | Boring ID | | 8-1 | 8-2 | 8-3 | | 9-1 | 9-2 | 9-3 | | 10-1 | 10-2 | 10-3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 0.5 | 3 | 5 | | 0.5 | 3 | 5 | | 0.5 | 3 | 5 |
| Parameter | PQL | Units | | | | | | | | | | | |
| pH (field) | | units | 8.09 | 8.01 | 7.19 | | 8.55 | 8.19 | 6.95 | | 8.25 | 8.13 | 8.57 |
| pH (lab) | | units | 8.42 | 8.52 | 7.4 | | 8.67 | 8.56 | 7.44 | | 8.33 | 8.33 | 8.92 |
| TCE | 2.5 | ug/Kg | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| Antimony | 0.2 | mg/Kg | 0.24 | 0.3 | 0.43 | | ND | ND | 0.45 | | 0.26 | 0.41 | 0.26 |
| Arsenic | 0.2 | mg/Kg | 1.77 | 2.35 | 2.02 | | 1.25 | 1.56 | 1.9 | | 2.36 | 1.6 | 1.73 |
| Barium | 1 | mg/Kg | 9.21 | 36 | 36.5 | | 7.86 | 8.22 | 50.8 | | 11.6 | 9.71 | 14.2 |
| Beryllium | 0.1 | mg/Kg | ND | ND | 0.2 | | ND | ND | 0.26 | | 0.1 | ND | ND |
| Cadmium | 0.1 | mg/Kg | ND | 0.26 | 0.15 | | ND | ND | 0.26 | | ND | 0.12 | 0.21 |
| Chloride | 2 | mg/L | 9.28 | 10.5 | 14.1 | | 14.6 | 6.68 | 8.33 | | 15.9 | 13.2 | 14 |
| Chromium, Total | 0.5 | mg/Kg | 8.62 | 10.5 | 9.95 | | 8.79 | 7.57 | 13.3 | | 9.29 | 8.71 | 11 |
| Chromium 6 | 0.5 | mg/Kg | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| Copper | 0.5 | mg/Kg | 3.3 | 6.52 | 7.03 | | 2.15 | 2.57 | 10.7 | | 3.37 | 3.78 | 4.94 |
| Cobalt | 0.1 | mg/Kg | 1.62 | 3.05 | 4.23 | | 1.48 | 1.51 | 5.39 | | 2.23 | 1.81 | 2.89 |
| Fluoride | 1 | mg/L | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| Lead | 0.5 | mg/Kg | 4.16 | 6.75 | 7.29 | | 1.11 | 1.93 | 25.6 | | 2.03 | 6.51 | 4.2 |
| Mercury | 0.06 | mg/Kg | ND | ND | ND | | ND | ND | 0.1 | | ND | ND | ND |
| Molybdenum | 0.2 | mg/Kg | ND | 0.66 | 0.27 | | ND | ND | 0.36 | | 0.24 | ND | 0.35 |
| Nickel | 0.5 | mg/Kg | 4.2 | 7.99 | 11.8 | | 4.2 | 3.6 | 35.4 | | 3.3 | 4.08 | 18.8 |
| Selenium | 0.5 | mg/Kg | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| Silver | 0.1 | mg/Kg | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| Thallium | 0.1 | mg/Kg | ND | ND | ND | | ND | ND | ND | | 0.14 | ND | ND |
| Vanadium | 5 | mg/Kg | 25.4 | 27.7 | 22.2 | | 27.5 | 22.8 | 89.3 | | 34.2 | 27.7 | 90.2 |
| Zinc | 0.5 | mg/Kg | 12.5 | 22.5 | 21.5 | | 7.95 | 10.1 | 65 | | 23.6 | 18.7 | 19.3 |

Table 4

# North Basin Arranged by Depth

| | Boring ID | | 1-1 | 2-1 | 3-1 | 4-1 | 5-1 | 6-1 | 7-1 | 8-1 | 9-1 | 10-1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 0.5 | | | | | | | | | |
| Parameter | PQL | Units | | | | | | | | | | |
| pH (field) | | units | 7.85 | 7.83 | 8.38 | 8.64 | 8.77 | 8.09 | 8.12 | 8.09 | 8.55 | 8.25 |
| pH (lab) | | units | 8.62 | 8.43 | 8.78 | 8.97 | 8.82 | 8.68 | 8.18 | 8.42 | 8.67 | 8.33 |
| TCE | 2.5 | ug/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Antimony | 0.2 | mg/Kg | 0.33 | 0.49 | 0.44 | 0.62 | ND | 0.22 | 0.46 | 0.24 | ND | 0.26 |
| Arsenic | 0.2 | mg/Kg | 2.15 | 4.27 | 1.89 | 1.34 | 1.82 | 1.89 | 1.76 | 1.77 | 1.25 | 2.36 |
| Barium | 1 | mg/Kg | 23.2 | 25.6 | 18.7 | 8.27 | 6.45 | 12.7 | 10.6 | 9.21 | 7.86 | 11.6 |
| Beryllium | 0.1 | mg/Kg | 0.11 | 0.12 | ND | ND | ND | ND | 0.2 | ND | ND | 0.1 |
| Cadmium | 0.1 | mg/Kg | ND | 0.21 | 0.12 | 0.11 | ND | 0.11 | 0.26 | ND | ND | ND |
| Chloride | 2 | mg/L | 15.8 | 25.2 | 12.7 | 13.9 | 4.51 | 10.5 | 3.84 | 9.28 | 14.6 | 15.9 |
| Chromium, Total | 0.5 | mg/Kg | 8.04 | 12.6 | 9.99 | 7.61 | 7.51 | 9.19 | 11.5 | 8.62 | 8.79 | 9.29 |
| Chromium 6 | 0.5 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Copper | 0.5 | mg/Kg | 5.21 | 9.92 | 5.51 | 5 | 2.56 | 4.04 | 4.69 | 3.3 | 2.15 | 3.37 |
| Cobalt | 0.1 | mg/Kg | 2.32 | 14 | 2.28 | 1.75 | 1.43 | 1.98 | 2.3 | 1.62 | 1.48 | 2.23 |
| Fluoride | 1 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Lead | 0.5 | mg/Kg | 9.65 | 18.9 | 9.64 | 5.94 | 1.19 | 5.63 | 8.5 | 4.16 | 1.11 | 2.03 |
| Mercury | 0.06 | mg/Kg | ND | 0.13 | ND | ND | ND | ND | ND | ND | ND | ND |
| Molybdenum | 0.2 | mg/Kg | 0.25 | 0.56 | 0.22 | ND | ND | 0.2 | 18.9 | ND | ND | 0.24 |
| Nickel | 0.5 | mg/Kg | 9.15 | 415 | 12.9 | 5.74 | 4.24 | 7.62 | 6.84 | 4.2 | 4.2 | 3.3 |
| Selenium | 0.5 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Silver | 0.1 | mg/Kg | 0.16 | ND | 0.27 | ND | ND | ND | ND | ND | ND | ND |
| Thallium | 0.1 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.14 |
| Vanadium | 5 | mg/Kg | 35.2 | 484 | 45.5 | 20 | 20.1 | 30.8 | 43.9 | 25.4 | 27.5 | 34.2 |
| Zinc | 0.5 | mg/Kg | 17.8 | 34.9 | 21 | 13.4 | 9.2 | 32.1 | 21.2 | 12.5 | 7.95 | 23.6 |

Table 4

# North Basin Arranged by Depth

| | Boring ID | | 1-2 | 2-2 | 3-2 | 4-2 | 5-2 | 6-2 | 7-2 | 8-2 | 9-2 | 10-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 3 | | | | | | | | | |
| Parameter | PQL | Units | | | | | | | | | | |
| pH (field) | | units | 7.69 | 7.74 | 8.31 | 8.63 | 8.04 | 7.74 | 7.59 | 8.01 | 8.19 | 8.13 |
| pH (lab) | | units | 8.36 | 8.61 | 8.68 | 8.74 | 7.91 | 7.66 | 7.81 | 8.52 | 8.56 | 8.33 |
| TCE | 2.5 | ug/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Antimony | 0.2 | mg/Kg | 0.27 | ND | 0.41 | ND | 0.44 | 0.82 | 0.25 | 0.3 | ND | 0.41 |
| Arsenic | 0.2 | mg/Kg | 1.76 | 1.97 | 1.81 | 2.09 | 3.41 | 1.73 | 2.04 | 2.35 | 1.56 | 1.6 |
| Barium | 1 | mg/Kg | 36.8 | 9.69 | 7.28 | 8.96 | 54.4 | 48.8 | 43.3 | 36 | 8.22 | 9.71 |
| Beryllium | 0.1 | mg/Kg | 0.11 | ND | ND | ND | 0.24 | 0.28 | 0.24 | ND | ND | ND |
| Cadmium | 0.1 | mg/Kg | 0.32 | ND | ND | 0.11 | 0.23 | 0.13 | ND | 0.26 | ND | 0.12 |
| Chloride | 2 | mg/L | 16.6 | 7.09 | 9.07 | 11.9 | 32.8 | 19.3 | 10.7 | 10.5 | 6.68 | 13.2 |
| Chromium, Total | 0.5 | mg/Kg | 14.6 | 8.59 | 7.39 | 8.32 | 13.5 | 11.5 | 11.1 | 10.5 | 7.57 | 8.71 |
| Chromium 6 | 0.5 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Copper | 0.5 | mg/Kg | 6.01 | 2.82 | 3.66 | 3.31 | 18.9 | 6.83 | 5.11 | 6.52 | 2.57 | 3.78 |
| Cobalt | 0.1 | mg/Kg | 3.04 | 1.49 | 1.41 | 1.62 | 3.8 | 4.32 | 3.35 | 3.05 | 1.51 | 1.81 |
| Fluoride | 1 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Lead | 0.5 | mg/Kg | 5.04 | 9.11 | 7.06 | 8 | 24.1 | 3.62 | 3.26 | 6.75 | 1.93 | 6.51 |
| Mercury | 0.06 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Molybdenum | 0.2 | mg/Kg | 1.54 | ND | ND | ND | 0.78 | 0.35 | 0.33 | 0.66 | ND | ND |
| Nickel | 0.5 | mg/Kg | 15.8 | 5.37 | 3.86 | 5.74 | 10.9 | 6.33 | 6.01 | 7.99 | 3.6 | 4.08 |
| Selenium | 0.5 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Silver | 0.1 | mg/Kg | ND | ND | ND | ND | ND | 0.17 | ND | ND | ND | ND |
| Thallium | 0.1 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vanadium | 5 | mg/Kg | 45.9 | 47.3 | 20 | 25.5 | 32.4 | 21.8 | 21 | 27.7 | 22.8 | 27.7 |
| Zinc | 0.5 | mg/Kg | 17.8 | 11.4 | 13.2 | 36.6 | 38.6 | 30.8 | 20.5 | 22.5 | 10.1 | 18.7 |

Table 4

# North Basin Arranged by Depth

| | Boring ID | | 1-3 | 2-3 | 3-3 | 4-3 | 6-3 | 7-3 | 8-3 | 9-3 | 10-3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 5 | | | | | | | | |
| Parameter | PQL | Units | | | | | | | | | |
| pH (field) | | units | 7.56 | 8.25 | 8 | 7.84 | 7.11 | 7.31 | 7.19 | 6.95 | 8.57 |
| pH (lab) | | units | 7.67 | 8.23 | 7.37 | 7.63 | 6.82 | 7.59 | 7.4 | 7.44 | 8.92 |
| TCE | 2.5 | ug/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Antimony | 0.2 | mg/Kg | 1.3 | 0.78 | 2.02 | 0.38 | ND | 0.21 | 0.43 | 0.45 | 0.26 |
| Arsenic | 0.2 | mg/Kg | 8.83 | 2.77 | 10 | 2.03 | 2.25 | 1.35 | 2.02 | 1.9 | 1.73 |
| Barium | 1 | mg/Kg | 49.2 | 25.7 | 103 | 76.5 | 47.8 | 20.5 | 36.5 | 50.8 | 14.2 |
| Beryllium | 0.1 | mg/Kg | 0.17 | 0.11 | 0.3 | 0.13 | 0.38 | 0.18 | 0.2 | 0.26 | ND |
| Cadmium | 0.1 | mg/Kg | 0.33 | 0.21 | 0.63 | 0.71 | 0.12 | 0.12 | 0.15 | 0.26 | 0.21 |
| Chloride | 2 | mg/L | 20.8 | 16.1 | 29.7 | 25.1 | 24.1 | 4.48 | 14.1 | 8.33 | 14 |
| Chromium, Total | 0.5 | mg/Kg | 32.6 | 14.8 | 30.5 | 15.9 | 10.7 | 7.38 | 9.95 | 13.3 | 11 |
| Chromium 6 | 0.5 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Copper | 0.5 | mg/Kg | 23.4 | 8.55 | 37.3 | 8.12 | 5.23 | 2.63 | 7.03 | 10.7 | 4.94 |
| Cobalt | 0.1 | mg/Kg | 34.8 | 4.04 | 45.3 | 5.52 | 2.86 | 2.14 | 4.23 | 5.39 | 2.89 |
| Fluoride | 1 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Lead | 0.5 | mg/Kg | 73.9 | 12 | 94.3 | 13.4 | 3.67 | 2.09 | 7.29 | 25.6 | 4.2 |
| Mercury | 0.06 | mg/Kg | 0.48 | 0.07 | 0.22 | ND | ND | 0.11 | ND | 0.1 | ND |
| Molybdenum | 0.2 | mg/Kg | 2.19 | 0.76 | 3.42 | 1.6 | 0.32 | ND | 0.27 | 0.36 | 0.35 |
| Nickel | 0.5 | mg/Kg | 1200 | 66.2 | 1500 | 17.7 | 7 | 4.12 | 11.8 | 35.4 | 18.8 |
| Selenium | 0.5 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Silver | 0.1 | mg/Kg | 0.29 | ND | 0.45 | ND | ND | ND | ND | ND | ND |
| Thallium | 0.1 | mg/Kg | ND | ND | ND | 0.12 | ND | ND | ND | ND | ND |
| Vanadium | 5 | mg/Kg | 1930 | 178 | 2920 | 43.1 | 16.5 | 10.1 | 22.2 | 89.3 | 90.2 |
| Zinc | 0.5 | mg/Kg | 99.2 | 26.3 | 85.4 | 31.8 | 18 | 10.5 | 21.5 | 65 | 19.3 |

Table 5

# BCCB Arranged by Boring

| | Boring ID | | 1-1 | 1-2 | 1-3 | 2-1 | 2-2 | 2-3 | 3-1 | 3-2 | 3-3 | 4-1 | 4-2 | 4-3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 0.5 | 3 | 5 | 0.5 | 3 | 5 | 0.5 | 3 | 5 | 0.5 | 3 | 5 |
| Parameter | PQL | Units | | | | | | | | | | | | |
| pH (field) | | units | 7.77 | 7.34 | 8.23 | 7.89 | 7.78 | 7.77 | 8.45 | 8.03 | 7.91 | 8.49 | 8.39 | 8.5 |
| pH (lab) | | units | 8.38 | 8.24 | 8.74 | 8.21 | 8.33 | 7.78 | 8.49 | 7.94 | 8.12 | 8.31 | 8.63 | 8.8 |
| TCE | 2.5 | ug/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Antimony | 0.2 | mg/Kg | 0.97 | ND | 0.2 | 1.19 | ND | 0.3 | 0.91 | ND | 0.32 | 0.72 | ND | 0.21 |
| Arsenic | 0.2 | mg/Kg | 3.64 | 2.37 | 1.85 | 5.94 | 1.67 | 1.4 | 3.12 | 1.67 | 1.55 | 3.13 | 1.64 | 1.89 |
| Barium | 1 | mg/Kg | 48.7 | 13.6 | 11.3 | 51.6 | 10.9 | 8.86 | 189 | 7.44 | 8.01 | 37.5 | 7.78 | 8.16 |
| Beryllium | 0.1 | mg/Kg | 0.1 | ND | ND | 0.12 | ND | ND | ND | ND | ND | ND | ND | ND |
| Cadmium | 0.1 | mg/Kg | 0.23 | 0.11 | ND | 0.31 | ND | ND | 0.28 | ND | ND | 0.21 | 0.12 | ND |
| Chloride | 2 | mg/L | 2.99 | 4.12 | ND | 2.98 | ND | ND | ND | ND | ND | 4.92 | ND | ND |
| Chromium, Total | 0.5 | mg/Kg | 27.3 | 13.4 | 19.3 | 28.4 | 5.58 | 15 | 18.5 | 14 | 17.7 | 21.2 | 17.2 | 15 |
| Chromium 6 | 0.5 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Copper | 0.5 | mg/Kg | 83.2 | 4.11 | 3.99 | 29.7 | 4.29 | 3.4 | 22.2 | 3.59 | 3.48 | 17.5 | 3.97 | 3.74 |
| Cobalt | 0.1 | mg/Kg | 9.09 | 1.96 | 2.65 | 17.5 | 1.13 | 2.19 | 5.19 | 2.14 | 2.57 | 6.55 | 2.65 | 2.28 |
| Fluoride | 1 | mg/L | ND | ND | ND | ND | ND | ND | ND | ND | ND | 1.87 | ND | ND |
| Lead | 0.5 | mg/Kg | 36.3 | 3.32 | 2.3 | 48 | 6.93 | 1.36 | 27 | 1.51 | 1.52 | 35.1 | 1.27 | 1.39 |
| Mercury | 0.06 | mg/Kg | 0.09 | ND | ND | 0.1 | ND | ND | ND | ND | ND | 0.09 | ND | ND |
| Molybdenum | 0.2 | mg/Kg | 1.95 | 0.26 | 0.43 | 2.63 | 0.27 | ND | 1.29 | ND | ND | 1.42 | ND | ND |
| Nickel | 0.5 | mg/Kg | 246 | 4.76 | 4.64 | 504 | 4.67 | 3.57 | 120 | 3.98 | 4.52 | 138 | 4.36 | 4.16 |
| Selenium | 0.5 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Silver | 0.1 | mg/Kg | 0.11 | ND | ND | ND | 0.1 | ND | ND | ND | ND | 0.11 | ND | ND |
| Thallium | 0.1 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vanadium | 5 | mg/Kg | 380 | 66.9 | 87 | 615 | 14.5 | 56.2 | 191 | 50 | 69.2 | 272 | 66.9 | 58 |
| Zinc | 0.5 | mg/Kg | 58.1 | 13 | 15.8 | 77 | 13 | 10.5 | 58.9 | 9.61 | 12.2 | 52.7 | 10.9 | 10.5 |

Table 6

# BCCB Arranged by Depth

| | Boring ID | | 1-1 | 2-1 | 3-1 | 4-1 | | 1-2 | 2-2 | 3-2 | 4-2 | | 1-3 | 2-3 | 3-3 | 4-3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 0.5 | | | | | 3 | | | | | 5 | | | |
| Parameter | PQL | Units | | | | | | | | | | | | | | |
| pH (field) | | units | 7.77 | 7.89 | 8.45 | 8.49 | | 7.34 | 7.78 | 8.03 | 8.39 | | 8.23 | 7.77 | 7.91 | 8.5 |
| pH (lab) | | units | 8.38 | 8.21 | 8.49 | 8.31 | | 8.24 | 8.33 | 7.94 | 8.63 | | 8.74 | 7.78 | 8.12 | 8.8 |
| TCE | 2.5 | ug/Kg | ND | ND | ND | ND | | ND | ND | ND | ND | | ND | ND | ND | ND |
| Antimony | 0.2 | mg/Kg | 0.97 | 1.19 | 0.91 | 0.72 | | ND | ND | ND | ND | | 0.2 | 0.3 | 0.32 | 0.21 |
| Arsenic | 0.2 | mg/Kg | 3.64 | 5.94 | 3.12 | 3.13 | | 2.37 | 1.67 | 1.67 | 1.64 | | 1.85 | 1.4 | 1.55 | 1.89 |
| Barium | 1 | mg/Kg | 48.7 | 51.6 | 189 | 37.5 | | 13.6 | 10.9 | 7.44 | 7.78 | | 11.3 | 8.86 | 8.01 | 8.16 |
| Beryllium | 0.1 | mg/Kg | 0.1 | 0.12 | ND | ND | | ND | ND | ND | ND | | ND | ND | ND | ND |
| Cadmium | 0.1 | mg/Kg | 0.23 | 0.31 | 0.28 | 0.21 | | 0.11 | ND | ND | 0.12 | | ND | ND | ND | ND |
| Chloride | 2 | mg/L | 2.99 | 2.98 | ND | 4.92 | | 4.12 | ND | ND | ND | | ND | ND | ND | ND |
| Chromium, Total | 0.5 | mg/Kg | 27.3 | 28.4 | 18.5 | 21.2 | | 13.4 | 5.58 | 14 | 17.2 | | 19.3 | 15 | 17.7 | 15 |
| Chromium 6 | 0.5 | mg/Kg | ND | ND | ND | ND | | ND | ND | ND | ND | | ND | ND | ND | ND |
| Copper | 0.5 | mg/Kg | 83.2 | 29.7 | 22.2 | 17.5 | | 4.11 | 4.29 | 3.59 | 3.97 | | 3.99 | 3.4 | 3.48 | 3.74 |
| Cobalt | 0.1 | mg/Kg | 9.09 | 17.5 | 5.19 | 6.55 | | 1.96 | 1.13 | 2.14 | 2.65 | | 2.65 | 2.19 | 2.57 | 2.28 |
| Fluoride | 1 | mg/L | ND | ND | ND | 1.87 | | ND | ND | ND | ND | | ND | ND | ND | ND |
| Lead | 0.5 | mg/Kg | 36.3 | 48 | 27 | 35.1 | | 3.32 | 6.93 | 1.51 | 1.27 | | 2.3 | 1.36 | 1.52 | 1.39 |
| Mercury | 0.06 | mg/Kg | 0.09 | 0.1 | ND | 0.09 | | ND | ND | ND | ND | | ND | ND | ND | ND |
| Molybdenum | 0.2 | mg/Kg | 1.95 | 2.63 | 1.29 | 1.42 | | 0.26 | 0.27 | ND | ND | | 0.43 | ND | ND | ND |
| Nickel | 0.5 | mg/Kg | 246 | 504 | 120 | 138 | | 4.76 | 4.67 | 3.98 | 4.36 | | 4.64 | 3.57 | 4.52 | 4.16 |
| Selenium | 0.5 | mg/Kg | ND | ND | ND | ND | | ND | ND | ND | ND | | ND | ND | ND | ND |
| Silver | 0.1 | mg/Kg | 0.11 | ND | ND | 0.11 | | ND | 0.1 | ND | ND | | ND | ND | ND | ND |
| Thallium | 0.1 | mg/Kg | ND | ND | ND | ND | | ND | ND | ND | ND | | ND | ND | ND | ND |
| Vanadium | 5 | mg/Kg | 380 | 615 | 191 | 272 | | 66.9 | 14.5 | 50 | 66.9 | | 87 | 56.2 | 69.2 | 58 |
| Zinc | 0.5 | mg/Kg | 58.1 | 77 | 58.9 | 52.7 | | 13 | 13 | 9.61 | 10.9 | | 15.8 | 10.5 | 12.2 | 10.5 |

Table 7

# Summary of Soil Data -- South Basin

| Parameter | pH | Antimony | Arsenic | Barium | Beryllium |
|---|---|---|---|---|---|
| units | Units | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| All Samples | 4.08 - 9.87 | ND - 7.27 | 0.53 - 8.61 | 4.64 - 198 | ND - 1.45 |
| 0.5-foot Horizon | 4.08 - 9.87 | 0.24 - 0.91 | 2.05 - 8.61 | 18.8 - 198 | ND - 1.45 |
| 3-foot Horizon | 6.55 - 9.01 | ND - 1.01 | 0.53 - 6.77 | 4.64 - 44.5 | ND - 0.26 |
| 5-foot Horizon | 6 - 8.13 | ND - 7.27 | 0.7 - 3.2 | 5.73 - 63.3 | ND - 0.16 |
| Maximum | 9.87 in SB2 | 7.27 in SB7 | 8.61 in SB2 | 198 in SB6 | 1.45 in SB9 |

| Parameter | Cadmium | Chloride | Total Chromium | Chromium IV | Copper |
|---|---|---|---|---|---|
| units | mg/Kg | mg/L | mg/Kg | mg/Kg | mg/Kg |
| All Samples | ND - 0.81 | 2.3 - 66.5 | 0.53 - 78.4 | ND | 0.5 - 175 |
| 0.5-foot Horizon | ND - 0.51 | 18.5 - 66.5 | 7.67 - 78.4 | ND | 4.89 - 175 |
| 3-foot Horizon | ND - 0.18 | 2.3 - 55.1 | 5.22 - 57.8 | ND | 1.4 - 35.3 |
| 5-foot Horizon | ND - 0.81 | 3.61 - 46.1 | 3.89 - 44.1 | ND | 1.49 - 14 |
| Maximum | 0.81 in SB8 | 66.5 in SB6 | 78.4 in SB9 | ND | 175 in SB9 |

| Parameter | Cobalt | Fluoride | Lead | Mercury | Molybdenum |
|---|---|---|---|---|---|
| units | mg/Kg | mg/L | mg/Kg | mg/Kg | mg/Kg |
| All Samples | 0.61 - 54.9 | ND - 2.84 | 1.05 - 21 | ND - 0.44 | 0.2 - 12.1 |
| 0.5-foot Horizon | 0.96 - 54.9 | ND - 2.84 | 3.49 - 13.6 | ND | 0.22 - 6.81 |
| 3-foot Horizon | 0.67 - 10.8 | ND - 2.1 | 1.05 - 21 | ND - 0.44 | 0.2 - 12.1 |
| 5-foot Horizon | 0.61 - 4.79 | ND - 1.4 | 1.4 - 16.8 | ND - .21 | 0.22 - 3.55 |
| Maximum | 54.9 in SB9 | 2.84 in SB2 | 21 in SB8 | 0.44 in SB8 | 12.1 in SB1 |

Table 7

# Summary of Soil Data -- South Basin

| Parameter | Nickel | Selenium | Silver | Thallium | Vanadium |
|---|---|---|---|---|---|
| units | mg/Kg | mg/Kg | mg/Kg | mg/Kg | mg/Kg |
| All Samples | ND - 667 | ND - 0.63 | ND - 2.27 | ND - 0.29 | 7.43 - 704 |
| 0.5-foot Horizon | 3.72 - 667 | ND - 0.63 | ND - 2.27 | ND - 0.29 | 30.1 - 704 |
| 3-foot Horizon | 1.95 - 265 | ND | ND - 0.13 | ND - 0.18 | 17.4 - 664 |
| 5-foot Horizon | ND - 60.7 | ND | ND - 0.28 | ND | 7.43 - 699 |
| Maximum | 667 in SB9 | 0.63 in SB9 | 2.27 in SB7 | 0.29 in SB1 | 704 in SB9 |

| Parameter | Zinc | Aluminum | Iron | TCE | |
|---|---|---|---|---|---|
| units | mg/Kg | mg/Kg | mg/Kg | ug/Kg | |
| All Samples | 0.84 - 205 | 482 - 8,600 | 3,720 - 35,400 | ND | |
| 0.5-foot Horizon | 10.4 - 205 | 3,390 - 8,600 | 10,800 - 35,400 | ND | |
| 3-foot Horizon | 4.48 - 45.6 | 794 - 3,760 | 8,760 - 31,900 | ND | |
| 5-foot Horizon | 3.97 - 30.8 | 482 - 8,060 | 3,720 - 17,300 | ND | |
| Maximum | 205 in SB9 | 8,600 in SB3 | 35,400 in SB10 | ND | |

# South Basin Arranged by Boring

**Table 8**

| | Boring ID | | 1-1 | 1-2 | 1-3 | | 2-1 | 2-2 | 2-3 | | 3-1 | 3-2 | 3-3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 0.5 | 3 | 5 | | 0.5 | 3 | 5 | | 0.5 | 3 | 5 |
| **Parameter** | **PQL** | **Units** | | | | | | | | | | | |
| **pH (field)** | | units | 9.95 | 7.12 | 7.35 | | 9.84 | 7.5 | 7.33 | | 3.94 | 7.16 | 7.99 |
| **pH (lab)** | | units | 8.76 | 7.8 | 7.83 | | 9.87 | 7.87 | 8.13 | | 4.08 | 6.78 | 7.63 |
| **TCE** | 2.5 | ug/Kg | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| **Antimony** | 0.2 | mg/Kg | 0.54 | 0.49 | ND | | 0.69 | 0.22 | ND | | 0.48 | 0.46 | ND |
| **Arsenic** | 0.2 | mg/Kg | 6.72 | 5.43 | 3.2 | | 8.61 | 3.9 | 2.52 | | 3.86 | 3.38 | 0.84 |
| **Barium** | 1 | mg/Kg | 169 | 29.1 | 63.3 | | 168 | 29.8 | 32.2 | | 49.2 | 44.5 | 7.98 |
| **Beryllium** | 0.1 | mg/Kg | 0.25 | ND | ND | | 0.37 | 0.12 | 0.16 | | ND | ND | ND |
| **Cadmium** | 0.1 | mg/Kg | 0.25 | 0.18 | 0.11 | | 0.3 | 0.18 | ND | | ND | 0.1 | ND |
| **Chloride** | 2 | mg/L | 35 | 55.1 | 46.1 | | 28.2 | 19.7 | 3.61 | | 25.5 | 3.61 | 6.57 |
| **Chromium, Total** | 0.5 | mg/Kg | 16.3 | 9.47 | 3.89 | | 17 | 11.2 | 7.97 | | 7.67 | 11.8 | 3.96 |
| **Chromium 6** | 0.5 | mg/Kg | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| **Copper** | 0.5 | mg/Kg | 10.3 | 4.95 | 3.37 | | 14.6 | 3.63 | 3.25 | | 4.89 | 3.9 | 1.49 |
| **Cobalt** | 0.1 | mg/Kg | 6.37 | 2 | 0.86 | | 6.86 | 2.65 | 1.97 | | 0.96 | 2.1 | 0.67 |
| **Fluoride** | 1 | mg/L | 1.37 | 2.1 | 1.4 | | 2.84 | ND | 1.37 | | ND | ND | ND |
| **Lead** | 0.5 | mg/Kg | 4.31 | 1.45 | 1.4 | | 4.79 | 1.53 | 2.33 | | 9.97 | 13 | 1.82 |
| **Mercury** | 0.06 | mg/Kg | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| **Molybdenum** | 0.2 | mg/Kg | 0.99 | 12.1 | 3.55 | | 1.24 | 1.82 | 0.42 | | 3.92 | 0.36 | 0.45 |
| **Nickel** | 0.5 | mg/Kg | 16.6 | 3.45 | ND | | 17.2 | 16.4 | 36.8 | | 3.72 | 20.9 | 3.29 |
| **Selenium** | 0.5 | mg/Kg | ND | ND | ND | | ND | ND | ND | | ND | ND | ND |
| **Silver** | 0.1 | mg/Kg | ND | ND | ND | | ND | 0.1 | ND | | ND | ND | ND |
| **Thallium** | 0.1 | mg/Kg | 0.29 | 0.13 | ND | | 0.24 | 0.12 | ND | | ND | 0.18 | ND |
| **Vanadium** | 5 | mg/Kg | 31.1 | 28.2 | 7.43 | | 39.5 | 30.1 | 40.7 | | 33.5 | 70.9 | 18.5 |
| **Zinc** | 0.5 | mg/Kg | 39.1 | 16.5 | 20.1 | | 53.2 | 14.9 | 30.8 | | 10.4 | 11.2 | 3.97 |
| **Iron** | 100 | mg/Kg | 16,300 | 10,100 | 3,720 | | 19,800 | 9,810 | 8,600 | | 14,900 | 15,800 | 7,570 |
| **Aluminum** | 3 | mg/Kg | 7,080 | 2,660 | 1,310 | | 8,600 | 3,760 | 8,060 | | 3,390 | 2,040 | 482 |

# South Basin Arranged by Boring

**Table 8**

| | Boring ID | | 4-1A | 4-1 | 4-2 | 4-3 | | 5-1 | 5-2 | 5-3 | 5-4 | | 6-1 | 6-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 0.1 | 0.5 | 3 | 5 | | 0.5 | 1 | 3 | 5 | | 0.5 | 3 |
| **Parameter** | **PQL** | **Units** | | | | | | | | | | | | |
| **pH (field)** | | units | 7.94 | 6.67 | 7.96 | 7.01 | | 9.2 | 6.57 | 5.2 | 5.59 | | 9.27 | 10.17 |
| **pH (lab)** | | units | 8.25 | 6.52 | 7.5 | 7.51 | | 7.1 | 7.06 | 6.55 | 6 | | 9.35 | 9.01 |
| **TCE** | 2.5 | ug/Kg | ND | ND | ND | ND | | ND | ND | ND | ND | | ND | ND |
| **Antimony** | 0.2 | mg/Kg | ND | 0.24 | 0.23 | 0.23 | | 0.82 | 0.25 | ND | ND | | 0.39 | 0.23 |
| **Arsenic** | 0.2 | mg/Kg | ND | 2.05 | 0.53 | 0.7 | | 4.21 | 2.52 | 1.27 | 1.88 | | 5.36 | 2.16 |
| **Barium** | 1 | mg/Kg | 43.6 | 18.8 | 13.7 | 10.6 | | 176 | 23.5 | 4.64 | 5.73 | | 198 | 21.2 |
| **Beryllium** | 0.1 | mg/Kg | ND | 0.14 | ND | ND | | 0.17 | 0.11 | ND | ND | | 0.23 | ND |
| **Cadmium** | 0.1 | mg/Kg | ND | ND | ND | ND | | ND | 0.12 | ND | ND | | 0.42 | ND |
| **Chloride** | 2 | mg/L | 16.2 | 24.7 | 2.3 | 4.51 | | 37.3 | 51.9 | 4.33 | 19.9 | | 66.5 | 35.4 |
| **Chromium, Total** | 0.5 | mg/Kg | 0.53 | 60.3 | 5.22 | 8.99 | | 17.6 | 12.1 | 6.06 | 6.92 | | 15.4 | 8.11 |
| **Chromium 6** | 0.5 | mg/Kg | ND | ND | ND | ND | | ND | ND | ND | ND | | ND | ND |
| **Copper** | 0.5 | mg/Kg | 0.5 | 75.9 | 1.4 | 4.29 | | 12.8 | 9.8 | 3.44 | 6.03 | | 8.32 | 9.01 |
| **Cobalt** | 0.1 | mg/Kg | ND | 7.03 | 0.67 | 0.61 | | 2.68 | 2.21 | 1.67 | 1.36 | | 4.54 | 1.87 |
| **Fluoride** | 1 | mg/L | ND | ND | ND | ND | | ND | ND | ND | ND | | 2.05 | ND |
| **Lead** | 0.5 | mg/Kg | 1.6 | 10.1 | 1.05 | 3.03 | | 13.6 | 3.45 | 2.05 | 2.99 | | 3.49 | 13.6 |
| **Mercury** | 0.06 | mg/Kg | ND | ND | ND | ND | | ND | ND | ND | 0.07 | | ND | ND |
| **Molybdenum** | 0.2 | mg/Kg | 0.43 | 0.98 | 0.67 | 1.13 | | 0.99 | 1.23 | 0.2 | 0.22 | | 0.76 | 0.26 |
| **Nickel** | 0.5 | mg/Kg | 0.58 | 143 | 1.95 | 4.2 | | 10.4 | 16.1 | 4.38 | 6.4 | | 10.4 | 4.75 |
| **Selenium** | 0.5 | mg/Kg | ND | ND | ND | ND | | ND | ND | ND | ND | | ND | ND |
| **Silver** | 0.1 | mg/Kg | ND | ND | ND | 0.11 | | ND | ND | ND | ND | | ND | ND |
| **Thallium** | 0.1 | mg/Kg | ND | ND | ND | ND | | 0.14 | 0.11 | ND | ND | | 0.14 | ND |
| **Vanadium** | 5 | mg/Kg | ND | 385 | 27.4 | 21.5 | | 41.9 | 47.6 | 20.2 | 21.1 | | 30.1 | 17.4 |
| **Zinc** | 0.5 | mg/Kg | 0.84 | 19.3 | 4.48 | 4.55 | | 35.3 | 18.3 | 12.8 | 9.63 | | 33.4 | 25.3 |
| **Iron** | 100 | mg/Kg | 118 | 11,400 | 8,760 | 8,090 | | 17,000 | 12,900 | 10,700 | 10,100 | | 10,800 | 8,780 |
| **Aluminum** | 3 | mg/Kg | 327 | 4,450 | 794 | 719 | | 5,680 | 3,170 | 1,270 | 1,530 | | 6,680 | 2,490 |

# South Basin Arranged by Boring

**Table 8**

| | Boring ID | | 7-1 | 7-2 | 7-3 | 8-1 | 8-2 | 8-3 | 9-1 | 9-2 | 9-3 | 10-1 | 10-2 | 10-3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 0.5 | 3 | 5 | 0.5 | 3 | 5 | 0.5 | 3 | 5 | 0.5 | 3 | 5 |
| Parameter | PQL | Units | | | | | | | | | | | | |
| pH (field) | | units | 8.19 | 7.04 | 7.21 | 5.31 | 7.46 | 7.11 | 6.09 | 7.8 | 7.17 | 6.93 | 7.95 | 7 |
| pH (lab) | | units | 8.12 | 7.76 | 8.05 | 4.47 | 6.68 | 7.37 | 7.34 | 8.07 | 7.97 | 7.1 | 7.66 | 7.69 |
| TCE | 2.5 | ug/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Antimony | 0.2 | mg/Kg | 0.51 | ND | 7.27 | 0.57 | 1.01 | 0.52 | 0.47 | 0.39 | 0.29 | 0.91 | 0.33 | ND |
| Arsenic | 0.2 | mg/Kg | 2.38 | 1.97 | 2.26 | 2.15 | 6.77 | 2.08 | 4.36 | 2.32 | 2.84 | 4.27 | 3.99 | 2.1 |
| Barium | 1 | mg/Kg | 47.7 | 9.24 | 9.26 | 44.8 | 21 | 14.8 | 40.6 | 10.1 | 13.6 | 41.3 | 36.7 | 11.9 |
| Beryllium | 0.1 | mg/Kg | 0.26 | ND | ND | ND | 0.15 | ND | 1.45 | ND | 0.11 | 0.14 | 0.26 | ND |
| Cadmium | 0.1 | mg/Kg | 0.1 | ND | ND | ND | 0.16 | 0.81 | 0.51 | ND | ND | ND | ND | ND |
| Chloride | 2 | mg/L | 26.7 | 6.8 | 19.8 | 18.5 | 3.87 | 5 | 37.1 | 10.6 | 5.42 | 26.8 | 6.89 | 8.26 |
| Chromium, Total | 0.5 | mg/Kg | 10.8 | 6.67 | 7.44 | 11.1 | 12.2 | 12.5 | 78.4 | 34.2 | 44.1 | 17 | 57.8 | 17.1 |
| Chromium 6 | 0.5 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Copper | 0.5 | mg/Kg | 20.3 | 2.77 | 4.21 | 16.7 | 18.3 | 9.95 | 175 | 6.72 | 14 | 22.5 | 35.3 | 13.6 |
| Cobalt | 0.1 | mg/Kg | 5.07 | 10.8 | 1.91 | 2.88 | 4.86 | 4.79 | 54.9 | 2.21 | 2.19 | 1.85 | 3.16 | 2.14 |
| Fluoride | 1 | mg/L | 1.99 | ND | ND | ND | ND | ND | 2 | 1.36 | ND | 2.02 | ND | ND |
| Lead | 0.5 | mg/Kg | 3.5 | 7.75 | 16.8 | 6.15 | 21 | 16.1 | 13.4 | 4.25 | 3.68 | 9.37 | 16.6 | 3.53 |
| Mercury | 0.06 | mg/Kg | ND | ND | ND | ND | 0.44 | 0.21 | ND | ND | ND | ND | ND | ND |
| Molybdenum | 0.2 | mg/Kg | 0.22 | 0.47 | 0.26 | 0.3 | 8.71 | 1.99 | 3.35 | 1.59 | 1.7 | 6.81 | 0.45 | 0.53 |
| Nickel | 0.5 | mg/Kg | 45.9 | 265 | 27.5 | 25.9 | 80.7 | 60.7 | 667 | 32.3 | 35.1 | 9.52 | 58.5 | 34.6 |
| Selenium | 0.5 | mg/Kg | ND | ND | ND | ND | ND | ND | 0.63 | ND | ND | ND | ND | ND |
| Silver | 0.1 | mg/Kg | 2.27 | ND | ND | ND | ND | ND | 0.4 | ND | 0.28 | ND | 0.13 | ND |
| Thallium | 0.1 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | 0.15 | ND |
| Vanadium | 5 | mg/Kg | 37 | 30.6 | 33.3 | 113 | 664 | 141 | 704 | 281 | 699 | 103 | 443 | 81.4 |
| Zinc | 0.5 | mg/Kg | 30.3 | 13.3 | 28.3 | 18 | 45.6 | 28.3 | 205 | 12 | 14.2 | 15.2 | 21.3 | 12.4 |
| Iron | 100 | mg/Kg | 13,200 | 9,310 | 9,340 | 10,800 | 31,900 | 11,300 | 35,400 | 16,100 | 17,300 | 12,100 | 13,400 | 11,600 |
| Aluminum | 3 | mg/Kg | 6,210 | 1,570 | 1,560 | 5,950 | 2,170 | 2,120 | 6,750 | 2,300 | 1,860 | 4,440 | 2,970 | 1,980 |

# South Basin Arranged by Depth

**Table 9**

| | Boring ID | | 4-1A | | 1-1 | 2-1 | 3-1 | 4-1 | 5-1 | 6-1 | 7-1 | 8-1 | 9-1 | 10-1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 0.1 | | 0.5 | | | | | | | | | |
| Parameter | PQL | Units | | | | | | | | | | | | |
| pH (field) | | units | 7.94 | | 9.95 | 9.84 | 3.94 | 6.67 | 9.2 | 9.27 | 8.19 | 5.31 | 6.09 | 6.93 |
| pH (lab) | | units | 8.25 | | 8.76 | 9.87 | 4.08 | 6.52 | 7.1 | 9.35 | 8.12 | 4.47 | 7.34 | 7.1 |
| TCE | 2.5 | ug/Kg | ND | | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Antimony | 0.2 | mg/Kg | ND | | 0.54 | 0.69 | 0.48 | 0.24 | 0.82 | 0.39 | 0.51 | 0.57 | 0.47 | 0.91 |
| Arsenic | 0.2 | mg/Kg | ND | | 6.72 | 8.61 | 3.86 | 2.05 | 4.21 | 5.36 | 2.38 | 2.15 | 4.36 | 4.27 |
| Barium | 1 | mg/Kg | 43.6 | | 169 | 168 | 49.2 | 18.8 | 176 | 198 | 47.7 | 44.8 | 40.6 | 41.3 |
| Beryllium | 0.1 | mg/Kg | ND | | 0.25 | 0.37 | ND | 0.14 | 0.17 | 0.23 | 0.26 | ND | 1.45 | 0.14 |
| Cadmium | 0.1 | mg/Kg | ND | | 0.25 | 0.3 | ND | ND | ND | 0.42 | 0.1 | ND | 0.51 | ND |
| Chloride | 2 | mg/L | 16.2 | | 35 | 28.2 | 25.5 | 24.7 | 37.3 | 66.5 | 26.7 | 18.5 | 37.1 | 26.8 |
| Chromium, Total | 0.5 | mg/Kg | 0.53 | | 16.3 | 17 | 7.67 | 60.3 | 17.6 | 15.4 | 10.8 | 11.1 | 78.4 | 17 |
| Chromium 6 | 0.5 | mg/Kg | ND | | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Copper | 0.5 | mg/Kg | 0.5 | | 10.3 | 14.6 | 4.89 | 75.9 | 12.8 | 8.32 | 20.3 | 16.7 | 175 | 22.5 |
| Cobalt | 0.1 | mg/Kg | ND | | 6.37 | 6.86 | 0.96 | 7.03 | 2.68 | 4.54 | 5.07 | 2.88 | 54.9 | 1.85 |
| Fluoride | 1 | mg/L | ND | | 1.37 | 2.84 | ND | ND | ND | 2.05 | 1.99 | ND | 2 | 2.02 |
| Lead | 0.5 | mg/Kg | 1.6 | | 4.31 | 4.79 | 9.97 | 10.1 | 13.6 | 3.49 | 3.5 | 6.15 | 13.4 | 9.37 |
| Mercury | 0.06 | mg/Kg | ND | | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Molybdenum | 0.2 | mg/Kg | 0.43 | | 0.99 | 1.24 | 3.92 | 0.98 | 0.99 | 0.76 | 0.22 | 0.3 | 3.35 | 6.81 |
| Nickel | 0.5 | mg/Kg | 0.58 | | 16.6 | 17.2 | 3.72 | 143 | 10.4 | 10.4 | 45.9 | 25.9 | 667 | 9.52 |
| Selenium | 0.5 | mg/Kg | ND | | ND | ND | ND | ND | ND | ND | ND | ND | 0.63 | ND |
| Silver | 0.1 | mg/Kg | ND | | ND | ND | ND | ND | ND | ND | 2.27 | ND | 0.4 | ND |
| Thallium | 0.1 | mg/Kg | ND | | 0.29 | 0.24 | ND | ND | 0.14 | 0.14 | ND | ND | ND | ND |
| Vanadium | 5 | mg/Kg | ND | | 31.1 | 39.5 | 33.5 | 385 | 41.9 | 30.1 | 37 | 113 | 704 | 103 |
| Zinc | 0.5 | mg/Kg | 0.84 | | 39.1 | 53.2 | 10.4 | 19.3 | 35.3 | 33.4 | 30.3 | 18 | 205 | 15.2 |
| Iron | 100 | mg/Kg | 118 | | 12,100 | 16,300 | 19,800 | 14,900 | 11,400 | 17,000 | 10,800 | 13,200 | 10,800 | 35,400 |
| Aluminum | 3 | mg/Kg | 327 | | 4,440 | 7,080 | 8,600 | 3,390 | 4,450 | 5,680 | 6,680 | 6,210 | 5,950 | 6,750 |

# South Basin Arranged by Depth

**Table 9**

| | Boring ID | | 5-2 | | 1-2 | 2-2 | 3-2 | 4-2 | 5-3 | 6-2 | 7-2 | 8-2 | 9-2 | 10-2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 1 | | 3 | | | | | | | | | |
| Parameter | PQL | Units | | | | | | | | | | | | |
| pH (field) | | units | 6.57 | | 7.12 | 7.5 | 7.16 | 7.96 | 5.2 | 10.17 | 7.04 | 7.46 | 7.8 | 7.95 |
| pH (lab) | | units | 7.06 | | 7.8 | 7.87 | 6.78 | 7.5 | 6.55 | 9.01 | 7.76 | 6.68 | 8.07 | 7.66 |
| TCE | 2.5 | ug/Kg | ND | | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Antimony | 0.2 | mg/Kg | 0.25 | | 0.49 | 0.22 | 0.46 | 0.23 | ND | 0.23 | ND | 1.01 | 0.39 | 0.33 |
| Arsenic | 0.2 | mg/Kg | 2.52 | | 5.43 | 3.9 | 3.38 | 0.53 | 1.27 | 2.16 | 1.97 | 6.77 | 2.32 | 3.99 |
| Barium | 1 | mg/Kg | 23.5 | | 29.1 | 29.8 | 44.5 | 13.7 | 4.64 | 21.2 | 9.24 | 21 | 10.1 | 36.7 |
| Beryllium | 0.1 | mg/Kg | 0.11 | | ND | 0.12 | ND | ND | ND | ND | ND | 0.15 | ND | 0.26 |
| Cadmium | 0.1 | mg/Kg | 0.12 | | 0.18 | 0.18 | 0.1 | ND | ND | ND | ND | 0.16 | ND | ND |
| Chloride | 2 | mg/L | 51.9 | | 55.1 | 19.7 | 3.61 | 2.3 | 4.33 | 35.4 | 6.8 | 3.87 | 10.6 | 6.89 |
| Chromium, Total | 0.5 | mg/Kg | 12.1 | | 9.47 | 11.2 | 11.8 | 5.22 | 6.06 | 8.11 | 6.67 | 12.2 | 34.2 | 57.8 |
| Chromium 6 | 0.5 | mg/Kg | ND | | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Copper | 0.5 | mg/Kg | 9.8 | | 4.95 | 3.63 | 3.9 | 1.4 | 3.44 | 9.01 | 2.77 | 18.3 | 6.72 | 35.3 |
| Cobalt | 0.1 | mg/Kg | 2.21 | | 2 | 2.65 | 2.1 | 0.67 | 1.67 | 1.87 | 10.8 | 4.86 | 2.21 | 3.16 |
| Fluoride | 1 | mg/L | ND | | 2.1 | ND | ND | ND | ND | ND | ND | ND | 1.36 | ND |
| Lead | 0.5 | mg/Kg | 3.45 | | 1.45 | 1.53 | 13 | 1.05 | 2.05 | 13.6 | 7.75 | 21 | 4.25 | 16.6 |
| Mercury | 0.06 | mg/Kg | ND | | ND | ND | ND | ND | ND | ND | ND | 0.44 | ND | ND |
| Molybdenum | 0.2 | mg/Kg | 1.23 | | 12.1 | 1.82 | 0.36 | 0.67 | 0.2 | 0.26 | 0.47 | 8.71 | 1.59 | 0.45 |
| Nickel | 0.5 | mg/Kg | 16.1 | | 3.45 | 16.4 | 20.9 | 1.95 | 4.38 | 4.75 | 265 | 80.7 | 32.3 | 58.5 |
| Selenium | 0.5 | mg/Kg | ND | | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Silver | 0.1 | mg/Kg | ND | | ND | 0.1 | ND | ND | ND | ND | ND | ND | ND | 0.13 |
| Thallium | 0.1 | mg/Kg | 0.11 | | 0.13 | 0.12 | 0.18 | ND | ND | ND | ND | ND | ND | 0.15 |
| Vanadium | 5 | mg/Kg | 47.6 | | 28.2 | 30.1 | 70.9 | 27.4 | 20.2 | 17.4 | 30.6 | 664 | 281 | 443 |
| Zinc | 0.5 | mg/Kg | 18.3 | | 16.5 | 14.9 | 11.2 | 4.48 | 12.8 | 25.3 | 13.3 | 45.6 | 12 | 21.3 |
| Iron | 100 | mg/Kg | 12,900 | | 13,400 | 10,100 | 9,810 | 15,800 | 8,760 | 10,700 | 8,780 | 9,310 | 31,900 | 16,100 |
| Aluminum | 3 | mg/Kg | 3,170 | | 2,970 | 2,660 | 3,760 | 2,040 | 794 | 1,270 | 2,490 | 1,570 | 2,170 | 2,300 |

# South Basin Arranged by Depth

**Table 9**

| | Boring ID | | 1-3 | 2-3 | 3-3 | 4-3 | 5-4 | 7-3 | 8-3 | 9-3 | 10-3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Depth (feet) | | 5 | | | | | | | | |
| Parameter | PQL | Units | | | | | | | | | |
| pH (field) | | units | 7.35 | 7.33 | 7.99 | 7.01 | 5.59 | 7.21 | 7.11 | 7.17 | 7 |
| pH (lab) | | units | 7.83 | 8.13 | 7.63 | 7.51 | 6 | 8.05 | 7.37 | 7.97 | 7.69 |
| TCE | 2.5 | ug/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Antimony | 0.2 | mg/Kg | ND | ND | ND | 0.23 | ND | 7.27 | 0.52 | 0.29 | ND |
| Arsenic | 0.2 | mg/Kg | 3.2 | 2.52 | 0.84 | 0.7 | 1.88 | 2.26 | 2.08 | 2.84 | 2.1 |
| Barium | 1 | mg/Kg | 63.3 | 32.2 | 7.98 | 10.6 | 5.73 | 9.26 | 14.8 | 13.6 | 11.9 |
| Beryllium | 0.1 | mg/Kg | ND | 0.16 | ND | ND | ND | ND | ND | 0.11 | ND |
| Cadmium | 0.1 | mg/Kg | 0.11 | ND | ND | ND | ND | ND | 0.81 | ND | ND |
| Chloride | 2 | mg/L | 46.1 | 3.61 | 6.57 | 4.51 | 19.9 | 19.8 | 5 | 5.42 | 8.26 |
| Chromium, Total | 0.5 | mg/Kg | 3.89 | 7.97 | 3.96 | 8.99 | 6.92 | 7.44 | 12.5 | 44.1 | 17.1 |
| Chromium 6 | 0.5 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Copper | 0.5 | mg/Kg | 3.37 | 3.25 | 1.49 | 4.29 | 6.03 | 4.21 | 9.95 | 14 | 13.6 |
| Cobalt | 0.1 | mg/Kg | 0.86 | 1.97 | 0.67 | 0.61 | 1.36 | 1.91 | 4.79 | 2.19 | 2.14 |
| Fluoride | 1 | mg/L | 1.4 | 1.37 | ND | ND | ND | ND | ND | ND | ND |
| Lead | 0.5 | mg/Kg | 1.4 | 2.33 | 1.82 | 3.03 | 2.99 | 16.8 | 16.1 | 3.68 | 3.53 |
| Mercury | 0.06 | mg/Kg | ND | ND | ND | ND | 0.07 | ND | 0.21 | ND | ND |
| Molybdenum | 0.2 | mg/Kg | 3.55 | 0.42 | 0.45 | 1.13 | 0.22 | 0.26 | 1.99 | 1.7 | 0.53 |
| Nickel | 0.5 | mg/Kg | ND | 36.8 | 3.29 | 4.2 | 6.4 | 27.5 | 60.7 | 35.1 | 34.6 |
| Selenium | 0.5 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Silver | 0.1 | mg/Kg | ND | ND | ND | 0.11 | ND | ND | ND | 0.28 | ND |
| Thallium | 0.1 | mg/Kg | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vanadium | 5 | mg/Kg | 7.43 | 40.7 | 18.5 | 21.5 | 21.1 | 33.3 | 141 | 699 | 81.4 |
| Zinc | 0.5 | mg/Kg | 20.1 | 30.8 | 3.97 | 4.55 | 9.63 | 28.3 | 28.3 | 14.2 | 12.4 |
| Iron | 100 | mg/Kg | 11,600 | 3,720 | 8,600 | 7,570 | 8,090 | 10,100 | 9,340 | 11,300 | 17,300 |
| Aluminum | 3 | mg/Kg | 1,980 | 1,310 | 8,060 | 482 | 719 | 1,530 | 1,560 | 2,120 | 1,860 |

# Appendix 1: North and BCCB Basins

Field Forms

Boring Logs

Bar Charts

# Field Forms

SOUTHERN CALIFORNIA EDISON

An EDISON INTERNATIONAL Company

# Daily Report

Date: 4/2/97 Page 1 of 2

I have read and completely understand the approved procedures in the SAP. Pat Hamilton

Weather: Sunny, warm

Equipment Used: Glo-Parmer pH meter + soil probe : Hand Auger

Visitors: Greg Sewell, George Becker, Greg Hoxeng

## Sampling Completed

| Boring No. | Sample Depth | Type Soil or Water | Field pH | Sample Temp | Backfilled |
|---|---|---|---|---|---|
| NB1-1 | 6" | SOIL | 7.35 | 16.2 | Bentonite |
| NB1-2 | 3'6" | SOIL | 7.69 | 17.5 | / |
| NB1-3 | 5' | SOIL | 7.56 | 19.5 | / |
| NB2-1 | 6" | SOIL | 7.83 | 20.5 | / |
| NB2-2 | 3' | SOIL | 7.74 | 20.5 | / |
| NB2-3 | 5' | SOIL | 8.25 | 20.7 | / |
| NB3-1 | 6" | SOIL | 8.38 | 21.2 | / |
| NB3-2 | 3' | SOIL | 8.31 | 21.0 | / |
| NB3-3 | 5' | SOIL | 8.00 | 23.8 | / |
| NB4-1 | 6" | SOIL | 8.64 | 17.9 | / |
| NB4-2 | 3' | SOIL | 8.63 | 19.3 | / |

Special Conditions/Problems/Comments:

I have completed the sampling using the approved procedures described in the SAP.

SOUTHERN CALIFORNIA
EDISON
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# Daily Report

Date: 4/2/97 Page 2 of 2

I have read and completely understand the approved procedures in the SAP. _____

Weather: _____

Equipment Used: _____

Visitors: _____

## Sampling Completed

| Boring No. | Sample Depth | Type Soil or Water | Field pH | Sample Temp | Backfilled |
|---|---|---|---|---|---|
| NB4-3 | 5' | SOIL | 7.84 | 19.4 | Bentonite |
| NB5-1 | 6" | SOIL | 8.77 | 18.3 | ( |
| NB5-2 | 3' | SOIL | 8.04 | 16.8 | ( |
| NB6-1 | 6" | SOIL | 8.09 | 16.0 | ( |
| NB6-2 | 3' | SOIL | 7.74 | 16.1 | ( |
| NB6-3 | 5' | SOIL | 7.11 | 17.3 | ( |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Special Conditions/Problems/Comments: _____

I have completed the sampling using the approved procedures described in the SAP. Pat Hamilton

SOUTHERN CALIFORNIA
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# Calibration Log

Performed By: P. HAMILTON

Instrument: COLE-PARMER pH probe (soil)

| Date | Temp | Standard | Actual | Comments |
|---|---|---|---|---|
| 4/2/97 | 18.9 | 7.00 | 7.02 | 8/97 again |
| 4/2/97 | 18.9 | 10.00 | 10.01 | " |
| 4/2/97 | | 4.01 | 4.00 | " |
| | | | | |

Instrument:

| Date | Temp | Standard | Actual | Comments |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Instrument:

| Date | Temp | Standard | Actual | Comments |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Comments/Problems:

Calibrations were completed using procedures described in the SAP. Pat Hamilton

SOUTHERN CALIFORNIA
EDISON
An EDISON INTERNATIONAL Company

# Daily Report

Date: 4/3/97 Page 1 of 2

I have read and completely understand the approved procedures in the SAP. Pat Hamilton

Weather: Clear, Warm

Equipment Used: Cole Parmer pH meter and Soil probe : Hand Auger

Visitors: [illegible]

## Sampling Completed

| Boring No. | Sample Depth | Type Soil or Water | Field pH | Sample Temp | Backfilled |
|---|---|---|---|---|---|
| NB8-1 | 6" | SOIL | 8.09 | 16.0 | |
| NB8-2 | 3' | SOIL | 8.01 | 16.1 | |
| NB8-3 | 4.5' | SOIL | 7.19 | 16.9 | |
| NB7-1 | 6" | SOIL | 8.12 | 18.1 | |
| NB7-2 | 3' | SOIL | 7.59 | 17.6 | |
| NB7-3 | 5' | SOIL | 7.31 | 18.3 | |
| NB9-1 | 6" | SOIL | 8.55 | 19.0 | |
| NB9-2 | 3' | SOIL | 8.19 | 19.5 | |
| NB9-3 | 5' | SOIL | 6.95 | 20.9 | |
| NB10-1 | 6" | SOIL | 8.25 | 20.6 | |
| NB10-2 | 3' | SOIL | 8.13 | 20.7 | |

Special Conditions/Problems/Comments:

I have completed the sampling using the approved procedures described in the SAP.

SOUTHERN CALIFORNIA
EDISON
An EDISON INTERNATIONAL Company

# Daily Report

Date: 4/3/97 Page 2 of 2

I have read and completely understand the approved procedures in the SAP. _____

Weather: _____

Equipment Used: _____

Visitors: _____

## Sampling Completed

| Boring No. | Sample Depth | Type Soil or Water | Field pH | Sample Temp | Backfilled |
|---|---|---|---|---|---|
| NB10-3 | 5' | Soil | 8.57 | 22.3 | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Special Conditions/Problems/Comments: _____

I have completed the sampling using the approved procedures described in the SAP. Pat Hamilton

SOUTHERN CALIFORNIA
EDISON
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# Calibration Log

Performed By: P. HAMILTON

Instrument: Cole Parmer pH meter (soil)

| Date | Temp | Standard | Actual | Comments |
|---|---|---|---|---|
| 4/3/97 | 19.2 | 7.00 | 7.02 | |
| 4/3/97 | 19.4 | 10.01 | 10.07 | |
| 4/3/97 | 19.1 | 4.01 | 4.00 | |
| | | | | |

Instrument:

| Date | Temp | Standard | Actual | Comments |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Instrument:

| Date | Temp | Standard | Actual | Comments |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Comments/Problems:

Calibrations were completed using procedures described in the SAP. Pat Hamilton

SOUTHERN CALIFORNIA
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# Daily Report

Date: 4/9/97 Page 1 of 2

I have read and completely understand the approved procedures in the SAP. Pat Hamilton

Weather: Cool, windy

Equipment Used: Cole Parmer pH meter and Soil/water probe
Hand auger

Visitors: [illegible], [illegible]

## Sampling Completed

| Boring No. | Sample Depth | Type Soil or Water | Field pH | Sample Temp | Backfilled |
|---|---|---|---|---|---|
| BCCB1-1 | 6" | SOIL | 7.77 | 17.2 | |
| BCCB1-2 | 3' | SOIL | 7.34 | 17.7 | |
| BCCB1-3 | 5' | SOIL | 8.23 | 18.3 | |
| BCCB2-1 | 6" | SOIL | 7.89 | 19.2 | |
| BCCB2-2 | 3' | SOIL | 7.78 | 21.0 | |
| BCCB2-3 | 5' | SOIL | 7.77 | 21.5 | |
| BCCB3-1 | 6" | SOIL | 8.45 | 19.2 | |
| BCCB3-2 | 3' | SOIL | 8.03 | 19.3 | |
| BCCB3-3 | 5' | SOIL | 7.91 | 20.5 | |
| BCCB4-1 | 6" | SOIL | 8.49 | 22.5 | |
| BCCB4-2 | 3' | SOIL | 8.39 | 21.2 | |

Special Conditions/Problems/Comments:

I have completed the sampling using the approved procedures described in the SAP.

SOUTHERN CALIFORNIA
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# Daily Report

Date: 4/9/97 Page 2 of 2

I have read and completely understand the approved procedures in the SAP. _____

Weather: _____

Equipment Used: _____

Visitors: _____

## Sampling Completed

| Boring No. | Sample Depth | Type Soil or Water | Field pH | Sample Temp | Backfilled |
|---|---|---|---|---|---|
| BCCB4-3 | 5' | SOIL | 8.50 | 227 | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Special Conditions/Problems/Comments: _____

I have completed the sampling using the approved procedures described in the SAP. [illegible]

SOUTHERN CALIFORNIA
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# Calibration Log

Performed By: P. HAMILTON

Instrument: COLE PARMER pH probe

| Date | Temp | Standard | Actual | Comments |
|---|---|---|---|---|
| 4/9/97 | 19.4 | 7.00 | 7.02 | [illegible] 8/97 |
| | 19.6 | 10.01 | 10.07 | 8/97 |
| | 19.5 | 4.01 | 4.00 | 8/97 |
| | | | | |

Instrument: _____

| Date | Temp | Standard | Actual | Comments |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Instrument: _____

| Date | Temp | Standard | Actual | Comments |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Comments/Problems: _____

Calibrations were completed using procedures described in the SAP. Pat Hamilton

# Boring Logs

# Log of Boring NB1

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- North Retention Basin | |
| **Date:** 4/2/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 7.85 | |
| 1 | | | **Sand**, brown, medium to coarse grained, dry |
| 2 | | | **Sand**, tan and brown layers, minor gravel |
| 3 | | | Color change to red-brown, cuttings are damp, gravel is stained orange |
| | ■ | 7.69 | |
| 4 | | | |
| 5 | | | **Silty Sand**, dark brown, moist, gravel. Gravel appears man-made caused by high heat: glassy, light weight |
| | ■ | 7.56 | |

**Remarks:** Problem retrieving the sample at 5 feet because of wood and debris.

The sampler was wedged below the debris. It was recovered using a jack.

# Log of Boring NB2

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- North Retention Basin | |
| **Date:** 4/2/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 7.83 | |
| 1 | | | **Sand**, brown, medium grained, moist |
| 2 | | | Layer of black material that appears to be cold patch: light weight |
| 3 | | | **Sand**, tan, medium grained, dry |
| | ■ | 7.74 | **Silty Sand**, red-brown, gravel with red staining |
| 4 | | | |
| 5 | | | |
| | ■ | 8.25 | |

**Remarks:**

# Log of Boring NB3

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- North Retention Basin | |
| **Date:** 4/2/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 8.38 | |
| 1 | | | **Sand**, dark brown, medium grained, dry |
| 2 | | | Color change to tan, a piece of asphalt was observed in the cuttings |
| 3 | | | |
| | ■ | 8.31 | Color change to dark brown, a piece of heavy gauge wire was observed |
| 4 | | | |
| 5 | | | **Silty Sand**, red-brown, gravel with red staining<br>Pieces of wood and asphalt were observed in the cuttings |
| | ■ | 8 | |

**Remarks:**

# Log of Boring NB4

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- North Retention Basin | |
| **Date:** 4/2/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 8.64 | |
| 1 | | | **Sand**, dark brown, medium grained, dry, minor gravel |
| 2 | | | |
| | | | Pieces of Asphalt and wood chips observed in the cuttings |
| 3 | | | |
| | ■ | 8.63 | Rounded gravel noted in the cuttings |
| 4 | | | Color change to brown<br>Noted a piece of brick in the cuttings |
| 5 | | | **Silty Sand**, red-brown, gravel |
| | ■ | 7.84 | Pieces of wire and asphalt were observed in the cuttings |

**Remarks:**

# Log of Boring NB5

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station – North Retention Basin | |
| **Date:** 4/2/97 | **Boring Depth**: 4 feet |
| **Logged By**: P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 8.77 | |
| 1 | | | **Sand**, brown, medium grained, moist, shell fragments |
| 2 | | | Color change to tan with gravel |
| 3 | | | **Silty Sand**, brown, dry, gravel, dificult drilling |
| | ■ | 8.04 | |
| 4 | | | |
| | ■ | | |

**Remarks:** Refusal encountered at 4 feet. Attempted to drill and wedge for 1 hour.

# Log of Boring NB6

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- North Retention Basin | |
| **Date:** 4/2/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 8.09 | |
| 1 | | | **Sand**, brown, medium grained, moist, rounded gravel |
| 2 | | | Pieces of brick observed in the cuttings |
| 3 | | | **Sand**, tan, medium grained, moist |
| | ■ | 7.74 | **Silty Sand**, brown, medium grained, moist |
| 4 | | | **Clayey Sand**, red-brown, coarse grained, moist |
| 5 | | | |
| | ■ | 7.11 | **Peat**, black, fibrous, shells |

**Remarks:**

# Log of Boring NB8

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- North Retention Basin | |
| **Date:** 4/3/97 | **Boring Depth:** 4.5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 8.09 | |
| 1 | | | **Sand**, brown, medium grained, dry, minor gravel |
| 2 | | | Color change to tan |
| | | | Color change to dark brown |
| 3 | | | Color change to orange/brown, pieces of orange stained gravel |
| | ■ | 8.01 | Layer of coarse grained sand |
| 4 | | | |
| | ■ | 7.19 | **Silty Sand**, black, coarse grained, moist, brick chips |

**Remarks:** Refusal at 4.5 feet because of gravel layer.

# Log of Boring NB7

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- North Retention Basin | |
| **Date**: 4/3/97 | **Boring Depth:** 5 feet |
| **Logged By**: P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 8.12 | |
| 1 | | | **Sand**, brown, medium grained, dry |
| 2 | | | **Sand**, tan, coarse grained, gravel |
| 3 | | | **Silty Sand**, red-brown, coarse grained, moist |
| | ■ | 7.59 | |
| 4 | | | |
| 5 | | | |
| | ■ | 7.31 | |

**Remarks:**

# Log of Boring NB9

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- North Retention Basin | |
| **Date:** 4/3/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 8.55 | **Sand**, brown, medium grained, dry |
| 1 | | | Large piece of asphalt at 1-inch |
| 2 | | | Color change to tan |
| 3 | | | Color change to brown |
| | ■ | 8.19 | Color change to gray |
| 4 | | | **Silty Sand**, brown, medium grained, moist, gravel, asphalt pieces |
| 5 | | | |
| | ■ | 6.95 | |

**Remarks:**

# Log of Boring NB10

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- North Retention Basin | |
| **Date:** 4/3/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 8.25 | **Sand**, brown, medium grained, dry |
| 1 | | | Large piece of asphalt at 1-inch |
| 2 | | | Color change to tan |
| 3 | | | Color change to brown |
| | ■ | 8.13 | |
| 4 | | | Pieces of asphalt observed in cuttings |
| 5 | | | **Silty Sand**, red-brown, medium grained, moist, gravel, brick pieces |
| | ■ | 8.57 | |

**Remarks:**

# Log of Boring BCCB1

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- Boiler Chemical Cleaning Basin | |
| **Date:** 4/9/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 7.77 | |
| 1 | | | **Sand**, brown, medium grained, dry, gravel |
| 2 | | | |
| 3 | | | **Sand**, tan, medium grained, uniform grains, moist |
| | ■ | 7.34 | |
| 4 | | | Layer of fill material: glass, copper wire, concrete pieces |
| 5 | | | Rounded cobbles |
| | ■ | 8.23 | |

**Remarks:**

# Log of Boring BCCB2

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- Boiler Chemical Cleaning Basin | |
| **Date:** 4/9/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 7.89 | |
| 1 | | | **Sand**, brown, medium grained, dry, brick chips |
| 2 | | | Color change to tan with shell fragments |
| 3 | | | |
| | ■ | 7.78 | **Sand**, tan, medium grained, uniform grains, moist |
| 4 | | | |
| 5 | | | |
| | ■ | 7.77 | |

**Remarks:**

# Log of Boring BCCB3

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- Boiler Chemical Cleaning Basin | |
| **Date:** 4/9/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 8.45 | |
| 1 | | | **Sand**, brown, medium grained, dry, rounded gravel |
| 2 | | | |
| 3 | | | **Sand**, tan, medium grained, uniform grains, moist |
| | ■ | 8.03 | |
| 4 | | | |
| 5 | | | |
| | ■ | 7.91 | |

**Remarks:**

# Log of Boring BCCB4

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station – Boiler Chemical Cleaning Basin | |
| **Date:** 4/9/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 8.49 | |
| 1 | | | **Sand**, brown, medium grained, dry, rounded gravel |
| 2 | | | |
| 3 | | | **Sand**, tan, medium grained, uniform grains, moist<br>Layer of gray sand with debris: copper wire, brick chips |
| | ■ | 8.39 | |
| 4 | | | |
| 5 | | | |
| | ■ | 8.50 | |

**Remarks:**

# Appendix 2: South Basin

Field Forms

Boring Logs

Bar Charts

# Field Forms

SOUTHERN CALIFORNIA EDISON

An EDISON INTERNATIONAL Company

# Daily Report

Date: 5/19/97 Page 1 of 3

I have read and completely understand the approved procedures in the SAP. Pat Hamilton

Weather: Overcast

Equipment Used: Cole-Parmer pH meter

Visitors: Greg Sweel, George Becker

## Sampling Completed

| Boring No. | Sample Depth | Type Soil or Water | Field pH | Sample Temp | Backfilled |
|---|---|---|---|---|---|
| SB1-1 | 6" | SOIL | 9.95 | 20.6 | Bentonite |
| SB1-2 | 3' | SOIL | 7.12 | 21.3 | |
| SB1-3 | 5' | SOIL | 7.35 | 21.5 | |
| SB5-1 | 6" | SOIL | 9.20 | 21.3 | |
| SB5-2 | 1' | SOIL | 6.57 | 21.5 | |
| SB5-3 | 3' | SOIL | 5.20 | 21.2 | |
| SB5-4 | 5' | SOIL | 5.59 | 22.0 | |
| SB6-1 | 6" | SOIL | 9.27 | 21.6 | |
| SB4-1A | 1" | SOIL | 7.94 | 21.9 | |
| SB6-2 | 2' | SOIL | 10.17 | 24.5 | |
| SB2-1 | 3' | SOIL | 9.84 | 24.4 | |

Special Conditions/Problems/Comments:

SB1 - red-brown sand, 7.76 pH at 20.9°C

SB6-2 sample cuttings from 2-2.5'

I have completed the sampling using the approved procedures described in the SAP.

SOUTHERN CALIFORNIA
EDISON
An EDISON INTERNATIONAL Company

# Daily Report

Date: 5/19/97 Page ~~1~~ 2 of 3

I have read and completely understand the approved procedures in the SAP. _____

Weather: _____

Equipment Used: _____

Visitors: _____

## Sampling Completed

| Boring No. | Sample Depth | Type Soil or Water | Field pH | Sample Temp | Backfilled |
|---|---|---|---|---|---|
| SB2-2 | 3' | SOIL | 7.50 | 24.6 | Bentonite |
| SB2-3 | 5' | SOIL | 7.33 | 24.1 | |
| SB3-1 | 6" | SOIL | 3.94 | 28.0 | |
| SB3-2 | 3' | SOIL | 7.16 | 28.5 | |
| SB3-3 | 5' | SOIL | 7.99 | 26.9 | |
| SB7-1 | 6' | SOIL | 8.19 | 26.9 | |
| SB7-2 | 3' | SOIL | 7.04 | 26.0 | |
| SB7-3 | 5' | SOIL | 7.21 | 24.7 | |
| SB10-1 | 6' | SOIL | 6.93 | 25.5 | |
| SB10-2 | 3' | SOIL | 7.95 | 25.3 | |
| SB10-3 | 5' | SOIL | 7.00 | 25.2 | |

Special Conditions/Problems/Comments: _____

I have completed the sampling using the approved procedures described in the SAP. _____

SOUTHERN CALIFORNIA EDISON

An EDISON INTERNATIONAL Company

# Daily Report

Date: 5/19/97 Page ~~1~~ 3 of 3

I have read and completely understand the approved procedures in the SAP. _____

Weather: _____

Equipment Used: _____

Visitors: _____

## Sampling Completed

| Boring No. | Sample Depth | Type Soil or Water | Field pH | Sample Temp | Backfilled |
|---|---|---|---|---|---|
| SB9-1 | 6" | SOIL | 6.09 | 25.0 | Bentonite |
| SB9-2 | 3' | SOIL | 7.80 | 25.2 | |
| SB9-3 | 5' | SOIL | 7.17 | 24.6 | |
| SB8-1 | 6" | SOIL | 5.31 | 24.3 | |
| SB8-2 | 3' | SOIL | 7.46 | 24.1 | |
| SB8-3 | 5' | SOIL | 7.11 | 23.9 | |
| SB4-1 | 6" | SOIL | 6.67 | 23.7 | |
| SB4-2 | 3' | SOIL | 7.96 | 23.5 | |
| SB4-3 | 5' | SOIL | 7.01 | 23.4 | |
| | | | | | |
| | | | | | |

Special Conditions/Problems/Comments: _____

I have completed the sampling using the approved procedures described in the SAP. Pat Hamilton

# Boring Logs

# Log of Boring SB1

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- South Basin | |
| **Date:** 5/19/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 9.95 | |
| 1 | | | **Sand**, red-brown, medium grained, moist, shell fragments |
| | | | pods of red sand |
| 2 | | | |
| 3 | | | |
| | ■ | 7.12 | **Silt**, gray, wet, pods and streaks of red-orange color |
| 4 | | | **Gravelly Sand**, tan, moist, red staining on gravel |
| | | | **Sand**, gray, medium grained, moist |
| 5 | | | **Sandy Silt**, dark brownish red, fine grained sand, moist, shell fragments |
| | ■ | 7.35 | |

**Remarks:**

# Log of Boring SB2

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- South Basin | |
| **Date:** 5/19/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 9.84 | |
| 1 | | | **Sand**, tannish red, medium grained, moist, gravel, shell fragments |
| 2 | | | |
| 3 | | | **Sand**, dark brown, medium grained, moist, abundant shell fragments |
| | ■ | 7.5 | |
| 4 | | | **Sand**, gray, medium grained, moist, gravel |
| 5 | | | |
| | ■ | 7.33 | |

**Remarks:**

# Log of Boring SB3

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- South Basin | |
| **Date:** 5/19/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 3.94 | **Gravelly Sand**, yellow tan, coarse grained, moist |
| 1 | | | **Sand**, gray, medium grained, moist |
| 2 | | | **Sand**, tan, medium grained, moist |
| 3 | | | |
| 4 | ■ | 7.16 | |
| 5 | | | |
| | ■ | 7.99 | |

**Remarks:**

# Log of Boring SB4

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- South Basin | |
| **Date**: 5/19/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 6.67 | |
| 1 | | | **Sand**, gray, medium grained, moist |
| 2 | | | |
| 3 | | | |
| | ■ | 7.96 | |
| 4 | | | |
| 5 | | | Saturated conditions |
| | ■ | 7.01 | |

**Remarks:** Boring location was moved from initial openning because of staturated sand between HDPE and gunite liners. The saturated fill sand was samples for analysis.

# Log of Boring SB5

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station – South Basin | |
| **Date:** 5/19/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 9.20 | |
| 1 | | | **Sand**, orange, coarse grained, moist, gravel |
| 2 | | | Color change to red-brown |
| 3 | | | **Sand**, brown, medium grained, moist, pieces of brick and asphalt |
| | ■ | 6.57 | |
| 4 | | | |
| 5 | | | |
| | ■ | 5.20 | Wedge of asphalt on bottom of sample tube |

**Remarks:**

# Log of Boring SB6

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- South Basin | |
| **Date:** 5/19/97 | **Boring Depth:** 3 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 9.27 | |
| 1 | | | **Fill**, sand matrix with tan, orange, and brown color |
| | | | Encountered copper wire, brick and asphalt pieces |
| 2 | | | |
| | ■ | 10.17 | |
| 3 | | | |

**Remarks:** Move boring location 2 feet to the west and encountered the same fill material and refusal at 3 feet.

# Log of Boring SB7

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- South Basin | |
| **Date:** 5/19/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 8.19 | |
| 1 | | | **Gravelly Sand**, greenish brown, coarse grained, moist, pods of green clay |
| 2 | | | **Silty Sand**, red, medium grained, moist, thin layers of white clay |
| 3 | | | |
| | ■ | 7.04 | **Sand**, gray, medium grained, moist |
| 4 | | | |
| 5 | | | Saturated conditions |
| | ■ | 7.21 | |

**Remarks:**

# Log of Boring SB8

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station – South Basin | |
| **Date:** 5/19/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| 1 | ■ | 5.31 | **Sand**, gray-green, medium grained, moist, gravel |
| 2 | | | **Sand**, dark gray to black, medium grained, moist |
| 3 | | | |
| 4 | ■ | 7.46 | |
| 5 | | | Saturated conditions |
| | ■ | 7.11 | |

**Remarks:**

# Log of Boring SB9

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- South Basin | |
| **Date:** 5/19/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 6.09 | **Sand**, red-orange, medium grained, moist, gravel |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| | ■ | 7.8 | |
| 4 | | | |
| 5 | | | **Sand**, black, medium grained, saturated |
| | ■ | 7.17 | |

**Remarks:**

# Log of Boring SB10

| | |
|---|---|
| **Client:** Southern California Edison | |
| **Project:** Redondo Generating Station -- South Basin | |
| **Date:** 5/19/97 | **Boring Depth:** 5 feet |
| **Logged By:** P. Hamilton | **Drilling Co.:** Odyssey Exploration |
| **Method:** Hand Auger | |

| Depth Feet | Sample | Field pH | Description |
|---|---|---|---|
| | ■ | 6.93 | |
| 1 | | | **Sand**, red-orange, medium grained, moist, pods of bright red |
| 2 | | | |
| 3 | | | |
| | ■ | 7.95 | |
| 4 | | | |
| 5 | | | **Sand**, gray, medium grained, saturated |
| | ■ | 7 | |

**Remarks:**

# Groundwater Investigation Report, 1999

**Staff Query 1**

# Ground Water Investigation Report
# Redondo Generating Station

## Southern California Edison

September 13, 1999

Prepared by:

P. Hamilton

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Appendix 1: Boring Logs and Well Development Data Sheets

Appendix 2: Laboratory Reports for Bore Hole Cuttings

Appendix 3: Field Forms

Appendix 4: Laboratory Reports for Ground Water Samples

## Introduction

In July 1999, the Department of Toxic Substances Control (DTSC) directed Edison to begin an evaluation monitoring program at the Redondo Generating Station. Edison prepared a draft workplan to perform the additional field work required to define the nature and extent of contamination detected downgradient of the basins at the station. The proposed work included the installation of 8 new monitoring wells downgradient of the basins and analyzing samples from the existing monitoring wells for the Appendix IX chemical list.

Before the DTSC could respond to the draft workplan, a second issue arose. The new owner, AES, was actively working with the City of Redondo Beach in redeveloping the station property. Edison became involved since they maintain an easement to the tank farm area. Since Edison was not planning to use the old tanks, AES requested to purchase the easement. AES was proposing to remove the tanks to produce additional usable land. As part of the process, an environmental study was required to determine if contamination was present in the tank farm area.

Edison and AES began a cooperative study of the soil and ground water in the tank farm area. The ground water studies for the basin closure efforts included the tank farm area. It was logical to place any new wells in locations that would satisfy both investigations. Therefore, the draft workplan was used as a basis for positioning the monitoring wells for the tank farm investigation. The DTSC was verbally notified of the unilateral decision to install new monitoring wells as proposed in the draft workplan.

During the month of August 1999, 13 new monitoring wells were installed downgradient of the basins; 8 associated with the South Basin and 5 with the

the new wells were presented in the Monitoring Well Installation Plan (Work Plan) submitted as Appendix C of the WQMP in April 1996. After proper development, ground water samples were removed from the new wells and were analyzed for metals, volatile organic compounds, and total petroleum hydrocarbons. All sampling procedures were performed as described in the Sampling and Analysis Plan (SAP) presented as Appendix A to the Water Quality Monitoring Program and approved by the DTSC.

This report compiles all of the data and information derived during the construction and sampling of the new monitoring wells. A description of each new compliance monitoring well is given on Table 1 with the locations shown on Figure 1. Besides the presentation of the installation data and well logs, the additional geologic and ground water chemistry information will be incorporated with the existing studies at the site. A section describing the changes in the dewatering system has been added to show how the gradient configuration has been altered over the years. Concentration contour plots for selected metals were developed and presented as overlays on the gradient contours.

## Well Installation

The 8 new wells associated with the South Basin, RW-14 through 21, were drilled between August 4 and August 6. Five of the wells required a crane to position the rig to the drill sites because of either surface piping or concrete dikes. Three mobilizations were necessary to complete the five wells downgradient of the North Basin complex. Special clearances from Edison were required since two of the wells, RW-22 and 23, were within the 220 kV switchyard. These two wells were drilled on August 14. Wells RW-24 and 25

were installed on August 11. The fifth well at the North Basin replaced monitoring well RW-2. Well RW-2 had deteriorated over the years because of severe algae problems. The algae had clogged the screen section and would not allow enough water through to properly develop the well. This situation had been discussed in several quarterly reports. Recently, the DTSC has suggested replacing the well. It was drilled on August 6 and designated RW-2A.

The bore holes were created with a SIMCO, track mounted, drill rig using 10-inch hollow stem augers. The soil was continuously sampled, screened for pH, and logged as described in the Work Plan. The sampling equipment was decontaminated between samples. All drilling equipment was steam cleaned between bore holes using a portable cleaning unit. The unit was emptied into either the North or South Basins. The bore hole cuttings were placed in barrels until the results of the soil tests were received from the laboratory. Each well required 2 or 3 barrels for the cuttings. It was decided to obtain a composite sample from barrels for each bore hole rather than mixing the various bore holes as described in the Work Plan.

As anticipated, saturated sand conditions were encountered below the water table in most drill holes allowing sand to enter the augers as the center bit was being removed. When this occurred, soil sampling ceased, the augers were removed from the hole, and a plug was placed over the bottom of the hollow stem auger. Unless the clay layer causing the perched water was encountered, the bore hole was overdrilled by a foot to permit the proper length of casing to be installed. The augers were carefully lifted to allow space for the plug to be removed. Before removal, the casing was placed in the augers and the augers were filled with water from the station fresh water line. This water created a hydrostatic head to hold the saturated sand from entering the auger and displacing gravel pack. This procedure was successful at all locations. The gravel pack required was either the same as the calculated quantity or within a half cubic foot

because of the running sand. The quantity of gravel pack used is recorded on the boring logs contained in Appendix 1. The quantity of water added is shown on the Well Development data sheets following the log in Appendix 1.

Well RW-19 near the South Basin encountered the same impenetrable surface as located in Well RW-9 at 12 feet below the ground surface. Large pieces of asphalt were retrieved from the drill cuttings. Wells RW-9 and 19 appear to be located over a buried roadway along the flank of the containment dikes. The well RW-19 was cased and completed at 12 feet. However, it can not be used as a monitoring well since there is less than a foot of water in the casing.

Well development began a minimum of 24 hours after the completion of the bentonite and cement seals. An air driven, bladder pump was installed in the well and removed ground water until the discharge was clear. The discharge water was placed into the nearest basin. The development operation removed from 250 to 650 gallons of water from each well. After a few hundred gallons of water had been pumped, the following water quality parameters were measured: electrical conductivity, pH, temperature, and turbidity. The development continued until these measurements stabilized indicating the water chemistry had been restored to natural quality. The measurements and volume of water removed is recorded on the Well Development data sheets in Appendix 1.

## Hydrogeology

Boring logs for the new monitoring wells RW-14 through 25 and the replacement well RW-2A are located in Appendix 1. Color geologic sections were previously submitted in the Well Construction Report dated May 5, 1997, as Figures 2 and 3. These sections derived from the logs of the original wells

illustrate the geologic formations below the retention basins. The lithologic data gathered from the new bore holes verify these sections.

As described in previous submittals, the hydrogeology of the site is complex with two aquifers, the Perched and Silverado Aquifers. Over the western portion of the site, these two aquifers are separated by a clay horizon which confines the Silverado Aquifer. The clay horizon is absent on the eastern portion of the property below the fuel tanks making the Silverado unconfined. The clay is interpreted as sediments deposited in a lagoon environment. It has been speculated that the disappearance of the clay was caused by either faulting or erosion.

The western portion of the site, the area of the generating units, was covered by natural processes with dune sand and wind blown silts along the shoreline. A photograph dated June 6, 1948, shows the plant under construction. Fuel oil Tanks 1 and 2 are being erected in a depression which transverses the entire length of the property from north to south. The eastern edge of the depression is at the eastern property boundary viewed today. The western extent appears to be within a hundred feet of the units under construction. The tanks are founded on the floor of the depression within completed containment dikes. The dikes appear to be coated with an asphaltic material. The tanks and oil handling facility are at the original grade of the depression with an elevation of about 6 feet. Well RW-21 is located on the top of the Tank 2 dike. The boring log indicates the compacted dike continues for 12.5 feet before encountered native silty sand with shell fragments.

Apparently to gain additional usable land, fill was placed within the depression between the containment dikes and the electrical units. The South Basin was constructed in this newly created area. An 8 to 10-foot layer of fill material was encountered in the monitoring well bore holes in the area adjacent to the South Basin. Though the photograph does not show the North Basin and

BCCB, fill was also logged in the bore holes adjacent to these basins. Fill debris was encountered in the soil exploration performed beneath the liners of these basins. The fill below the site was composed of brown, silty sand with a wide variety of debris: brick chips, glass, gravel, concrete, grout, wood, rebar, and rubber.

Above the clay horizon, the fill rests on a coarse grained, brown, silty sand. The deposit is distinctive by the shell content observed in the bore hole cuttings and samples. This silty sand deposit is interpreted as native material and part of the dune complex along the coast. Below the North Basin, a layer of black, silty sand was encountered. The color was due to a high percentage of biotite in the sand grains.

The Silverado Aquifer is composed of rounded, coarse grains of clean sand. It is tan in color. The striking difference between the material comprising the Perched and Silverado aquifers was the total lack of silt in the Silverado and the rounded sand grains. Without knowing the source, it was difficult to determine the difference between the Silverado sand and the #3 Lone Star gravel pack.

Bore hole data from the new monitoring well locations in the Tank 2 containment shows the upper 2 to 3 feet of material is a gray or brown silty sand material. This is probably fill or reworked soil associated with the construction of the tank.

The confining clay horizon is gray in color, shows plastic characteristics, and a very distinctive sulfur odor. Organic debris was observed in the clay and its decomposition probably accounts for the odor. Where penetrated by several of the old 2-inch diameter piezometers on the site, the clay horizon is 6 to 8 feet thick. It was encountered in the following ground water monitoring bore holes for this project: RW-1, 2, 10, 11, 12, 18, 23, and 25. Because of the perched water conditions, the clay is known to be below RW-2A, 7, and 8. The clay was

also discovered in bore holes RW-13 and 21. However, the water level data from these wells indicated the ground water surface is related to the Silverado and not the Perched Aquifer. These two wells are on the edge of the clay horizon where the clay may be in stringers rather than a massive layer. The stringers would normally be thin and not continuous.

The known areal extent of the clay is displayed on Figure 2, a contour map of the top of the clay horizon. The elevations were derived from the boring logs for the wells and piezometers. The surface has some topography with lows near P-3, RW-11, and RW-12. A high is located below the oil handing facility near SW-1 and 3. Figure 3 is the area adjacent to the South Basin at an expanded scale. The data from wells RW-13 and 21 were not used since they are probably stringers along the margin rather than the clay horizon.

An SPT sample of the clay was not obtained during the well installation since saturated sand conditions prohibited sampling when encountered above the clay. However, a sample was taken from the auger bit as it was being removed from well RW-23 with a sample designation of RW-23A. The results of a metal analysis are shown on Table 2. There are no abnormal metal concentrations in the clay sample. A second clay sample was removed from the bore hole for well RW-25. Here, a red clay was encountered. The metal analysis for this sample designated RW-25A is recorded on Table 2. As with the other clay sample, no significant concentrations were detected.

Ten grams of soil was taken from each 18-inch sample and was field tested for pH as described in the Work Plan. The meter and probe were calibrated each day using three buffers: 7.00, 4.01, and 10.01. The field soil pH values in the 11 new wells were similar to an overall range of 7.32 to 8.67. The highest pH values were determined to be in the fill areas. The HAR reported a pH range of 6.5 to 8.0 for the soils tested during that investigation. During the development operation, the ground water pH values were 7.27 to 7.86.

Table 2 contains the results of the analytical tests for metal concentrations from the barrels of bore hole cuttings. These were composite samples from the two or three barrels filled at each well site to screen the soils before disposal. The laboratory analysis indicated some barrels contained higher concentration levels of vanadium, nickel, lead, copper, and arsenic. At the North Basin, RW-22 detected the highest concentration of vanadium and nickel at 127 and 55.7 mg/Kg, respectively. Higher concentrations of nickel and lead were detected in bore hole RW-25. The highest concentration of arsenic was recorded in bore hole RW-24 at 17.9 mg/Kg.

The borings associated with the South Basin detected higher concentrations of vanadium. The highest concentration was detected at bore hole RW-19 at 241 mg/Kg. Bore hole RW-16 and 18 recorded values of 114 and 119 mg/Kg, respectively.

## Dewatering System

The ground water dewatering system installed within the fuel tank 1, 2, and 3 containment dikes basically control the ground water gradient beneath the site. Since the fate of any contamination depends on the gradient, a discussion of the dewatering is deemed appropriate.

In the mid-1960's, an overdraft condition in the Silverado Aquifer was allowing the encroachment of sea water into the aquifer. The eastward migration of sea water was contaminating the fresh water aquifer. In 1965, the injection of fresh water was initiated along the Redondo segment of the West Coast Basin Barrier Project. Injection along the barrier creates a hydrostatic pressure ridge within the confined aquifers which stops or reverses the land ward flow of saline water. Because of the gap in the confining clay horizon below the fuel tanks,

surface ponding began to occur in the Tank 2 containment. The problem was resolved by installing a Stang Hydronic vacuum well point system around the perimeter of the containment. The system removed about 950 gpm lowering the ground water surface about 4 feet.

Within a few years, the surface ponding was observed in the Tanks 1 and 3 containments. This was in response to increased injection by the barrier project. The new problem was corrected by installing a 100-foot deep dewatering well in each containment to augment the Stang system. Each of the new wells removed about 900 gpm for a total of about 2800 gpm for the dewatering system.

In 1993, station personnel noted a substantial reduction in the performance of the dewatering system. The poor well yields had allowed ground water to once again reach the surface causing ponding within the Tank 1 and 3 containments. The Stang system was cleaned in December of 1993. The two deep wells were refurbished in February 1995 using chemicals, sonic cleaning, swabbing, and airlifting. Although there was some improvement, the work did not restore the original production rates of 900 gpm for the 2 wells.

Video logs of both dewatering wells indicated that the metal casing had deteriorated so that collapse was eminent. It was decided that new wells would be constructed about 50 feet from the old dewatering wells. In April 1996, the dewatering wells near Tank 1 and 3 were replaced. The two wells were installed using a mud rotary system with reversible mud. Reversible mud will revert to a watery substance if it is not circulated for 24 hours. The 12-inch diameter, schedule 40, flush threaded PVC casing was installed into a 20-inch diameter bore hole. The casing string consisted of 40 feet of blank casing over 60 feet of screen casing with 0.04-inch slots. A bottom cap was installed. The annulus was gravel packed with aquarium sand and a 20-foot cement seal was placed around the blank casing. The bore holes encountered 3 to 4 feet of silty sand fill before

entering the distinctive sand deposits of the Silverado Aquifer. The wells were developed and tested at 1000 gpm.

The old turbine pumps were refurbished and returned to the newly installed wells. The discharge was between 600 to 700 gpm for each well. Since the new well casing would produce over 1000 gpm, it was evident that the old turbine pumps were not capable of a higher yield.

Because of constant maintenance problems, the station engineer requested that the Stang vacuum system be replaced with a single well designed as wells DW1 and 3. The replacement well was installed in May 1996. A 1000 gpm submersible pump was placed in the new well.

The present dewatering system includes 3, 100-foot deep, 12-inch diameter wells that are screened from 20 to 100 feet. Wells DW1 and 3 contain turbine pumps which discharged 450 and 700 gpm, respectively when refurbished in 1996. The yield has decreased over the past several months to about 200 and 400 gpm. Well DW2 uses a submersible which continues to produce 1000 gpm. The well contractor installed 2-inch diameter piezometers at each dewatering well site when it was discovered the sounding tubes had been inadvertently not been installed in the gravel pack. These piezometers are about 10 feet from the wells and 25 feet in depth. They are used to measure water levels and ground water parameters.

An electrical conductivity and temperature profile were performed on each of the piezometers at the dewatering wells. A profile was also obtained in the old wells that had been capped. A YSI T-C-L meter was used to measure the parameters that have a maximum reading of 19,999 microsiemens. The following procedure was used. The water level was first determined using a Solinst water sounder using the top of casing as the reference. The YSI probe was lowered to an even footage position below the water surface and a reading was taken at 1 to 2-foot intervals. The electrical conductivity and pH of the

discharge water from each dewatering well were measured with calibrated Cole Parmer meters.

The results show some interesting trends. The electrical conductivity of the discharge water from the wells indicated the water is brackish to saline rather than fresh water from the barrier project as anticipated. The highest capacity well, DW2, recorded an EC value of 24,500 microsiemens. Wells DW3 and DW1 measured EC values of 16,570 and 7,460 microsiemens, respectively. The pH values for the 3 wells ranged from 7.33 to 7.68. The old wells at DW1 and DW3 are on the west side of the new pumping well and recorded values above the maximum readings of 19,999 microsiemens. The piezometer at well DW3 is on the east side of the pumping well. The profile indicated the water was considerable fresher with a constant EC value of about 1120 microsiemens. The wells are apparently withdrawing ground water from the injection project on the east and from the sea water on the west.

## Ground Water Gradient

As described above, there are two aquifers beneath the site, the Silverado and Perched Aquifers. The basin closure study has been ongoing since mid-1996. The quarterly water level measurements have demonstrated that the gradient in the Silverado is controlled by the three dewatering wells in the fuel oil tank containments. Since the Perched Aquifer cascades onto the Silverado, it is indirectly influenced by the dewatering system. The only deviation measured during the study period was a short term gradient reversal in the Perched Aquifer below the BCCB. This reversal was in response to heavy spring rains in March 1998. Recharge created a mound near piezometer P-3 which caused wells RW-1

and 2 to become upgradient wells. By the June sampling event, the gradient had returned to the normal configuration.

The ground water levels for the site were measured on August 11, 1999, to determine if the new wells would alter the gradient configuration. The four wells downgradient of the North Basin complex were still under construction and, therefore, not measured on that day. However, these 4 new wells were measured on August 16. The water levels for several of the nearby monitoring wells were included and compared to their readings from the August 11 measurements. Since these readings were within 0.02-foot, the four new wells from the North Basin were added to the August 11 data for plotting purposes. The ground water elevations are shown on Table 3.

Figure 4 is the gradient plot for the August 11 water level measurements. The Perched Aquifer gradient is overlain on the Silverado Aquifer and is shown in green. The gradient from the second quarter sampling event is displayed on Figure 5. Overall, there is little difference in the configuration of the contours. This is verified on expanded scale plots for the South Basin (Figures 6 and 7) and North Basin complex (Figures 8 and 9).

The gradients presented in the previous quarterly and annual reports to the DTSC were measure after the present dewatering system was activated. As described earlier, before the new wells were installed, the removal of ground water was significantly different. The Stang vacuum pump in the Tank 2 containment was the dominant dewatering system. The wells at Tanks 1 and 3 had very little influence on the ground water gradient because of the low yields.

Before the new dewatering wells were installed, ground water measurements were taken at all available piezometers and wells to determine the gradient. Figure 10 is the contour plot of the ground water measurements on February 8, 1996. Piezometer P-26 was the only measuring point in the Tank 2 containment to determine the adequacy of the Stang system. The location

designated 2P is the future position of dewatering well DW2. This was added for reference. Clearly wells 1 and 3 are not influencing the contour configuration and the Stang system in dominant. Figure 11 is an expanded scale plot of the area downgradient of the South Basin.

Ground water levels for the purpose of gradient plots were measured on May 23, 1996. The new wells at Tanks 1 and 3 had been activated and the yields had greatly improved. Well DW2 had been completed but not placed in service at this time. Figure 12 is the resultant gradient plot from these measurements. The influence of the two new wells can readily be viewed. The same expanded plot in the South Basin area is displayed on Figure 13.

Dewatering well DW2 was placed in service on May 25. Ground water measurements were taken on May 28 to determine the effect of the 1000 gpm pump on the gradient. Figure 14 is a plot of the measured gradient. As anticipated, DW2 is the dominant well and almost masks the influence of DW1. Because of the reduction in well yield, recent gradient plots show that DW1 does not affect the gradient (Figure 4). Unlike DW1, DW3 continued to have a capture zone as shown on the South Basin area plot (Figure 15). Figure 6 shows the capture zone is present in the most recent gradient measurements.

The ground water measurements described above are shown on Table 4. The table includes a column which calculates the difference in the water levels before and after dewatering well DW2 was added to the system.

## Ground Water Sampling

Two ground water sampling events occurred in mid-August 1999. On August 11, samples were retrieved from 11 monitoring wells downgradient of the South Basin. Four of the existing wells were included with the 7 new wells to

accurately display the fate of the vanadium plume detected downgradient of the South Basin. The replacement well for RW-2, designated RW-2A, was also sampled in this event. The 4 new wells downgradient of the North Basin were sampled on August 16. A sample was also retrieved from the piezometer at dewatering well DW2, designated 2P. The purpose of the sampling was to produce an environmental assessment of any contamination below the fuel oil tank area. All sampling procedures were performed as described in the Sampling and Analysis Plan (SAP) presented as Appendix A to the Water Quality Monitoring Program and approved by the DTSC.

The sampling routine began with an inspection of the monitoring wells and obtaining water level measurements. All wells were in good condition. The water level measurements were recorded on the appropriate field form.

The probes of the Cole-Parmer pH and EC meters were calibrated. The Redi-Flo pump was slowly lowered to the position recorded on the Field Parameter forms for each well. As described in the SAP, the pump discharge is manipulated by a variable speed controller that changes the electrical frequency to the pump motor. The appropriate frequency for micro-purging was soon established by using the setting from the previous well. The setting would vary slightly depending on the depth of the pump. The purge rate goal was at 0.8 liters per minute.

The following procedure was used during sample purging. A sample was taken in a thick, plastic beaker at five minute intervals and placed in a shaded, protective, foam rubber holder. The probes were immediately placed in the sample vessel. The values were recorded on the field forms after the meters indicated the readings were stable. A second beaker was used for the next sample with the probes shifted from the previous sample. The process continued until the values stabilized or for a minimum of 15 minutes.

After the water quality parameters stabilized, as illustrated on the field parameter forms, the labeled sample containers were filled, and placed in ice chests. The appropriate forms were completed and the sampling equipment was decontaminated by pumping a solution of deionized water and Alconox with a rinse of deionized water. All field forms created during the sampling events are contained in Appendix 3 and include daily reports, water level measurements, calibration logs, and field parameters for each well.

## Ground Water Chemistry

Samples retrieved from the two sampling events were sent to Weck Laboratories to be analyzed for the 17 metals and volatile organic compound by method 8260. Any sample obtained from within the tank containments were also analyzed for total petroleum hydrocarbons. The laboratory reports for the two sampling event are included in Appendix 4. The test results have been divided into two tables for each basin and grouped by well number. Table 5 contains the results of the metal content of the ground water samples from the South Basin area. The VOC data is shown on Table 6. The metal analysis for samples downgradient of the North Basin complex is displayed on Table 7 with the VOC data on Table 8. No TPH was detected for any sample from within the tank containments.

### South Basin

Table 5 shows that the following 6 metals were detected in the ground water samples downgradient of the South Basin: arsenic, barium, molybdenum, nickel, selenium, and vanadium. The concentration values for barium are at or

below the concentrations normally recorded for the background samples. Though near PQL concentrations of molybdenum have been detected in the background samples, the values determined at wells RW-13, 14, and 21 show higher concentrations. Nickel and selenium have not been detected in the background water samples. Near PQL concentrations of nickel continue to be recorded in well RW-13. A slightly higher nickel concentration was discovered in the new well RW-14 which is downgradient of well RW-13. Selenium was detected in wells RW-13 and 18 which are about 25 feet apart at concentrations of 14 and 10.6 ug/L, respectively.

Over the past 10 quarterly sampling events, higher than background concentrations of vanadium have been detected downgradient of the South Basin. The highest concentrations were determined to be in the furthest well from the basin indicating the contamination has migrated downgradient. It appears the HDPE liner stopped the leakage and the vanadium plume has become detached from the basin.

The new wells verify this assumption. High concentrations of vanadium were detected in the new well locations. The highest concentration was measured at well RW-18 at a value of 15,400 ug/L. Wells RW-16 and 20 in the Silverado Aquifer recorded concentrations of 697 and 475 ug/L, respectively.

Figure 16 is a plot of the vanadium concentrations recorded on August 11. The concentration contours are shown in red. The ground water gradient for the Perched Aquifer, shown in green, has been overlain on the Silverado gradient. Wells RW-10, 12, and 17 where vanadium was not detected, were assigned the PQL of 10 ug/L for plotting purposes only. There are no limiting wells upgradient of wells RW-13 and 18 to define the plotting program. However, it is reasonable to assume the plume did not migrate upgradient.

The contours show the vanadium migrated downgradient in the Perched Aquifer to the area of well RW-18 where the metal cascaded on to the Silverado

Aquifer. The boring logs indicated the edge of the clay horizon is in the immediate vicinity of wells RW-13 and 18.

The convoluted shape of the contours in the Silverado can be explained by reviewing the ground water gradient in the past. It is believed the leakage occurred before the relining in 1986. During this period, the ground water gradient in the Silverado was controlled by the Stang vacuum dewatering system in the Tank 2 containment as previously shown on Figure 11. This would allow the vanadium to move from the P-16 area northeast towards the P-26 area (Figure 11). When the new dewatering wells were placed in service, the gradient was changed because of the capture zone created by well DW3 (3P). This moved the vanadium plume to the east-southeast. Vanadium was not detected in the furthest downgradient well RW-17.

Though the vanadium plume was anticipated, the arsenic concentrations detected at wells RW-15 (84.3 ug/L) and 2P (53.4 ug/L) were not. Arsenic has never been detected in the background samples. A maximum concentration of 15.7 ug/L had been recorded in well RW-13. Arsenic was detected in all of the new wells in the Silverado Aquifer. Figure 17 is a concentration plot for arsenic on August 11. Wells RW-8, 10, 11, and 12 where arsenic was not detected, were assigned the PQL of 5 ug/L for plotting purposes only. The plot indicates the highest concentrations are located in the area adjacent to well RW-15. The concentrations reduce to about 45 ug/L downgradient of well RW-15. The concentration continues in a negative trend to 15.1 ug/L at well RW-17 but increases to 53.4 ug/L near dewatering well 2 (2P).

A small concentration of 1,1-DCA was detected in most wells as shown on Table 6. The highest concentration was at well RW-10 at a value of 3.2 ug/L. TCE was recorded at the 3 wells grouped near the dewatering well 3, wells RW-16, 17, and 20. The highest concentration was detected at well RW-17 at a value

of 2 ug/L. Tetrachloroethane and 1,1,1-Trichloroethane were detected in one well with concentrations of 1.5 and 5.4 ug/L, respectively.

**North Basin Complex**

Table 7 shows the metal concentrations detected in the 4 new wells downgradient of the complex and at dewatering well 2. Concentrations of antimony, arsenic, barium, chromium, lead, molybdenum, nickel, and vanadium were recorded. The barium, molybdenum, and lead concentrations in the new wells are similar to the values recorded in the closest upgradient well. Antimony, chromium, and lead were only detected in one well at PQL concentrations.

Figure 18 is a plot of the arsenic concentrations detected at the new wells on August 16. The 7 wells upgradient of the new wells were not sampled on August 16. For plotting purposes, the historic concentrations from the past 10 sampling events were assigned to the well location. The concentration contours are shown in red. The ground water gradient for the Perched Aquifer, shown in green, has been overlain on the Silverado gradient. Wells RW-1, 2A, 3, 4, 5, and 7 where arsenic was not detected were assigned the PQL of 5 ug/L for plotting purposes only. There are no limiting wells upgradient of well RW-6 to define the plotting program to the north. However, it is reasonable to assume the arsenic did not migrate upgradient as shown on the plot.

Arsenic concentrations have been continually detected at compliance well RW-6 over the 10 quarterly sampling events. The arsenic contours indicate the arsenic concentration is contered in the immediate area of well RW-6. The downgradient well RW-22 detected an arsenic concentration of 21 ug/L. Well RW-24 in the Silverado recorded a concentration of 30.3 ug/L. As discussed in

the South Basin section, the sample from the piezometer at dewatering well 2, 2P, detected a higher concentration at 53.4 ug/L.

The vanadium detected in the ground water adjacent to the North Basin complex has been difficult to interpret. Vanadium has not been recorded in any of the wells withdrawing water from the Silverado Aquifer. The wells penetrating the Perched Aquifer have detected various concentrations normally ranging from 12 to 90 ug/L. The gradient reversal measured in March 1998 affected the vanadium concentrations. Well RW-1 recorded a short term spike of 724 ug/L. The background well RW-7 began an increasing trend to the present with a concentration of 104 ug/L recorded during the June 1999 sampling event.

The initial samples from the new downgradient wells RW-22 and 23 detected higher concentrations of vanadium than the background wells, 265 and 623 ug/L, respectively. Well RW-22 is sampling the Silverado while RW-23 is monitoring the Perched Aquifer. Further downgradient, at wells RW-24 (Silverado) and RW-25 (Perched), the concentrations reduce significantly.

Figure 19 is a plot of the vanadium concentrations detected at the new wells on August 16. The 7 wells upgradient of the new wells were not sampled on August 16. For plotting purposes, the historic concentrations from the past 10 sampling events were assigned to the well location. The concentration contours are shown in red. The ground water gradient for the Perched Aquifer, shown in green, has been overlain on the Silverado gradient. Wells RW-3, 4, 5, and 6 where vanadium was not detected were assigned the PQL of 10 ug/L for plotting purposes only.

There are probably two coalescing vanadium plumes downgradient of the basins. A plume in the Perched Aquifer is located downgradient of the basins. It was detected in the monitoring wells during the gradient reversal. Well RW-1 recorded a spike and the background well RW-7 began an increasing trend. When the normal gradient was reestablished, the concentration at well RW-1

reduced and the vanadium latent ground water which moved above RW-7 began to flow southeastward.

The concentration detected at well RW-22 is either from water cascading from the Perched Aquifer or from the soil below the North Basin. During the soil investigation, several high concentrations of vanadium were detected in the fill material at 5 feet below the liner.

Table 8 shows the VOC parameters detected in the August 16 sampling. Well RW-22 recorded concentrations of several benzene products with the highest value of 44 ug/L for chlorobenzene. DCA and DCE were detected in well RW-25 along with 5 ug/L of MTBE. The sample from the dewatering well 2 piezometer detected DCA, DCE, chlorobenzene, chlorotoluene, and vinyl chloride.

Table 1

# Description of Monitoring Wells

| Well No. | Well Use | Well Depth (feet) | Well Diameter (inches) | Perforated Interval (feet) |
|---|---|---|---|---|
| RW-1 | Water Level -- Sampling | 21 | 2 | 5-21 |
| RW-2A | Water Level -- Sampling | 20 | 4 | 10-20 |
| RW-3 | Water Level -- Sampling | 33 | 2 | 13-33 |
| RW-4 | Water Level -- Sampling | 30 | 4 | 10-30 |
| RW-5 | Water Level -- Sampling | 30 | 4 | 10-30 |
| RW-6 | Water Level -- Sampling | 30 | 4 | 10-30 |
| RW-7 | Water Level -- Sampling | 25 | 4 | 5-25 |
| RW-8 | Water Level -- Sampling | 20 | 4 | 5-20 |
| RW-10 | Water Level -- Sampling | 15 | 4 | 5-15 |
| RW-11 | Water Level -- Sampling | 28 | 4 | 8-28 |
| RW-12 | Water Level -- Sampling | 29 | 4 | 9-29 |
| RW-13 | Water Level -- Sampling | 25 | 4 | 10-25 |
| RW-14 | Water Level -- Sampling | 14 | 4 | 5-15 |
| RW-15 | Water Level -- Sampling | 14 | 4 | 5-15 |
| RW-16 | Water Level -- Sampling | 14 | 4 | 5-15 |
| RW-17 | Water Level -- Sampling | 14 | 4 | 5-15 |
| RW-18 | Water Level -- Sampling | 25 | 4 | 10-25 |
| RW-20 | Water Level -- Sampling | 14 | 4 | 5-15 |
| RW-21 | Water Level -- Sampling | 25 | 4 | 10-25 |
| RW-22 | Water Level -- Sampling | 25 | 4 | 10-25 |
| RW-23 | Water Level -- Sampling | 20 | 4 | 10-20 |
| RW-24 | Water Level -- Sampling | 14 | 4 | 5-15 |
| RW-25 | Water Level -- Sampling | 25 | 4 | 10-25 |

Table 2

# Analytical Results from Bore Hole Cuttings

| Parameter | RW-2A | RW-14 | RW-15 | RW-16 | RW-17 | RW-18 | RW-19 | RW-20 | RW-21 | RW-22 | RW-23 | RW-23A | RW-24 | RW-25 | RW-25A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Arsenic | 2.6 | 3.34 | 3.41 | 12.2 | 4.17 | 3.06 | 5.32 | 3 | 3.95 | 3.28 | 3.71 | 4.19 | 17.9 | 2.95 | 4.78 |
| Barium | 10.4 | 39.5 | 34.4 | 49 | 21.2 | 26.7 | 40.7 | 30.9 | 13.2 | 18.8 | 24.9 | 59.9 | 30.4 | 21.7 | 74.5 |
| Beryllium | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Cadmium | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chromium, Total | 7.85 | 8.85 | 7.86 | 4.8 | 5.93 | 8.1 | 9.91 | 7.22 | 3.66 | 8.45 | 8.25 | 2.37 | 5.24 | 7.95 | 4.29 |
| Copper | 0.71 | 3.53 | 4.3 | 1.82 | 2.52 | 2.3 | 4.72 | 3.51 | 0.98 | 5 | 4.22 | 2.61 | 2.21 | 16.1 | 3.21 |
| Cobalt | 1.13 | 2.21 | 2.15 | 1.07 | 2.03 | 2.46 | 2.51 | 2.41 | 1.02 | 4.21 | 1.81 | 0.91 | 1.4 | 2.08 | 1.27 |
| Lead | 2.63 | 2.58 | 6.72 | 2.33 | 1.44 | 2.35 | 6.29 | 4.58 | ND | 9.1 | 7.61 | 1.33 | 1.27 | 15.1 | 1.19 |
| Mercury | ND | 0.07 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Molybdenum | ND | ND | ND | 1.57 | ND | ND | ND | ND | ND | ND | ND | 0.77 | 0.87 | ND | 0.88 |
| Nickel | 21.5 | 10.1 | 6.97 | 2.1 | 3.64 | 7.82 | 27.3 | 7.59 | 2.16 | 55.7 | 5.24 | 3.67 | 3.3 | 37 | 3.37 |
| Selenium | 1.62 | ND | 1.02 | 2.86 | ND | ND | 1.1 | ND | ND | 1.37 | 1.82 | 2.99 | 3.28 | 1.53 | 3.43 |
| Silver | ND | ND | ND | 0.74 | ND | ND | ND | ND | ND | ND | ND | 1.27 | 0.79 | ND | 1.34 |
| Thallium | ND | 1.21 | ND | ND | ND | 1.05 | 1.33 | ND | ND | ND | ND | ND | ND | ND | ND |
| Vanadium | 39.2 | 24.6 | 23.7 | 114 | 14.9 | 119 | 241 | 35.6 | 7.6 | 127 | 33.3 | 10 | 33.2 | 69.9 | 15.5 |
| Zinc | 8.64 | 15.2 | 15.9 | 8.05 | 9.84 | 10.7 | 18.9 | 15.1 | 5.09 | 24.4 | 23.4 | 9.69 | 10.1 | 32.8 | 12.5 |

Table 3

# Ground Water Elevations

| Well No. | Northing | Easting | Elevation Top of Casing | 9/26/97 | 2/25/98 | 6/12/98 | 10/1/98 | 12/3/98 | 3/4/99 | 6/9/99 | 8/11/99 | 8/16/99 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DW-1P | -144.855 | 791.843 | 7.73 | -0.9 | 0.07 | -0.54 | -0.16 | 0.29 | 0.54 | 0.96 | 1.24 | |
| DW-2P | -407.812 | 615.905 | 6.9 | -5.05 | -4.57 | -5.07 | -4.54 | -4.28 | -4.02 | -3.94 | -3.63 | |
| DW-3P | -698.626 | 702.728 | 6.42 | 3.32 | -1.74 | -2.38 | -2.46 | -2.3 | -2.28 | -1.76 | -1.61 | |
| P-2 | -1310.027 | 474.513 | 19.46 | 3.58 | 3.9 | 3.27 | 3.2 | 3.4 | 3.25 | 3.5 | 3.8 | |
| P-3 | 42.366 | 512.359 | 20.12 | 5.38 | 7.48 | 5.56 | 5.13 | 4.92 | 4.66 | 4.97 | 5.01 | 4.99 |
| P-5 | -942.694 | 389.81 | 14.7 | 3.31 | 3.82 | 2.79 | 2.81 | 3.02 | 2.73 | 2.99 | 3.24 | |
| P-6 | -644.002 | 198.157 | 17.38 | 4.54 | 5.52 | 4.48 | 4.68 | 4.22 | 4.14 | 4.32 | 4.49 | |
| P-7 | -634.779 | 200.944 | 17.22 | 3.37 | 4 | 2.95 | 3.08 | 3.48 | 3.27 | 2.99 | 3.14 | |
| P-8 | -1034.137 | 671.876 | 7.39 | 0.54 | 0.57 | -0.05 | -0.12 | 0.08 | -0.05 | 0.26 | 0.58 | |
| P-10 | -1564.059 | 487.391 | 19.47 | 3.81 | 4.13 | 3.59 | 3.53 | 3.71 | 3.53 | 3.82 | 4.13 | |
| P-12 | -704.271 | -108.48 | 14.37 | 4.43 | 4.9 | 4.27 | 4.36 | 4.23 | 4 | 4.29 | 4.55 | |
| P-13 | -201.065 | 264.013 | 17.87 | 5.22 | 6.94 | 5.4 | 5.29 | 4.97 | 4.69 | 5 | 5.05 | |
| P-15 | 358.822 | 513.124 | 24.86 | 5.54 | 6.63 | 6.04 | 5.68 | 5.51 | 5.31 | 5.52 | 5.56 | |
| P-16 | -740.903 | 453.237 | 18.55 | 3.92 | 2.13 | 1.42 | 1.31 | 1.47 | 1.5 | 1.73 | 2.07 | |
| P-17 | -239.378 | 616.033 | 16.28 | 4.3 | 6.7 | 4.8 | 4.46 | 4.44 | 4.06 | 4.55 | 4.31 | |
| P-18 | -708.068 | -102.084 | 14.57 | 3.71 | 4.58 | 3.38 | 3.45 | 3.91 | 3.77 | 3.18 | 3.32 | |
| P-19 | 301.402 | -117.51 | 15.2 | 5.25 | 6.45 | 5.5 | 5.33 | 5.26 | 4.89 | 5.27 | 5.2 | |
| P-22 | -879.949 | 522.389 | 5.9 | 0.79 | 0.6 | -0.12 | -0.19 | 0.01 | -0.05 | 0.19 | 0.51 | |
| P-25 | -1124.221 | 432.544 | 7.89 | 1.15 | 1.67 | 0.83 | 0.73 | 0.91 | 0.75 | 1 | 1.32 | |
| P-26 | -547.288 | 658.67 | 6.51 | -0.12 | -0.51 | -1.52 | -1.55 | -1.35 | -1.32 | -1.01 | -0.69 | |
| P-28 | -691.862 | 622.72 | 5.2 | 0.66 | -0.97 | -1.73 | -1.81 | -1.61 | -1.61 | -1.32 | -1.01 | |
| P-29 | -808 | 730.735 | 6.4 | 2.8 | 1.75 | 1.06 | 0.99 | 1.19 | 1.13 | 1.47 | 1.78 | |
| P-30 | -245.924 | 893.387 | 7.44 | 1.38 | 2.05 | 1.21 | 1.23 | 1.48 | 1.48 | 1.83 | 2.12 | |

Table 3

# Ground Water Elevations

| Well No. | Northing | Easting | Elevation Top of Casing | 9/26/97 | 2/25/98 | 6/12/98 | 10/1/98 | 12/3/98 | 3/4/99 | 6/9/99 | 8/11/99 | 8/16/99 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P-31 | -358.038 | 677.108 | 7.41 | -1.89 | -1.28 | -2.38 | -2.27 | -2.04 | -1.97 | -1.72 | -1.4 | |
| P-32 | -381.826 | 771.71 | 7.23 | 0.44 | 1.07 | -0.08 | -0.05 | 0.18 | 0.18 | 0.48 | 0.82 | |
| P-33 | -397.367 | 837.902 | 7.27 | 1.31 | 1.8 | 0.83 | 0.82 | 1.05 | 1.02 | 1.33 | 1.66 | |
| P-34 | -531.449 | 817.106 | 7.28 | 1.7 | 1.68 | 0.78 | 0.74 | 0.95 | 0.92 | 1.19 | 1.55 | |
| P-35 | -633.54 | 773.329 | 7.78 | 2.07 | 0.96 | 0.18 | 0.12 | 0.32 | 0.31 | 0.63 | 0.96 | |
| P-36 | -611.492 | 695.835 | 7.04 | 1.61 | 0.3 | -0.54 | -0.6 | -0.4 | -0.39 | -0.12 | 0.26 | |
| P-37 | -578.643 | 579.54 | 6.64 | 0.86 | 0.36 | -0.5 | -0.55 | -0.36 | -0.32 | -0.06 | 0.28 | |
| P-38 | -477.496 | 597.44 | 6.46 | -1.22 | | -2.08 | -2.06 | -1.85 | -1.78 | -1.55 | -1.19 | |
| SW-1 | -350.744 | 508.053 | 7.56 | 4.42 | 5.81 | 4.64 | 4.44 | 4.36 | 4.07 | 4.43 | 4.28 | |
| SW-3 | -436.068 | 493.77 | 6.75 | 4.32 | 4.83 | 3.61 | 3.76 | 3.64 | 3.61 | 3.84 | 3.66 | |
| SW-4 | -544.53 | 479.835 | 5.65 | 3.61 | 3.96 | 3.61 | 3.67 | 3.51 | 3.49 | 3.67 | 3.51 | |
| RW-1 | 262.56 | 624.049 | 17.5 | 5.08 | 6.76 | 5.11 | 4.61 | 4.51 | 4.2 | 4.58 | 4.58 | 4.57 |
| RW-2A | 256.889 | 651.362 | 16.7 | | | | | | | | 4.73 | 4.71 |
| RW-3 | 435.58 | 650.521 | 22.79 | 2.87 | 3.99 | 3.51 | 3.08 | 2.92 | 2.75 | 2.94 | 3 | |
| RW-4 | 419.968 | 929.069 | 22.75 | 3.12 | 3.93 | 3.43 | 3.26 | 3.42 | 3.31 | 3.64 | 3.88 | |
| RW-5 | 267.509 | 941.511 | 17.67 | 2.69 | 3.47 | 2.93 | 2.8 | 2.97 | 2.9 | 3.24 | 3.51 | 3.52 |
| RW-6 | 265.227 | 809.466 | 17.67 | 2.63 | 3.37 | 2.78 | 2.66 | 2.85 | 2.81 | 3.12 | 3.38 | 3.37 |
| RW-7 | 364.83 | 587.468 | 25.14 | 5.47 | 6.58 | 6.04 | 5.65 | 5.49 | 5.3 | 5.51 | 5.57 | |
| RW-8 | -441.375 | 278.377 | 19.85 | 4.85 | 6.38 | 5 | 5.05 | 4.61 | 4.37 | 4.66 | 4.72 | |
| RW-10 | -597.974 | 459.85 | 12.52 | 3.95 | 4.58 | 3.79 | 3.87 | 3.6 | 3.54 | 3.74 | 3.68 | |
| RW-11 | -660.629 | 430.214 | 15.83 | 3.9 | 4.66 | 3.79 | 3.89 | 3.61 | 3.54 | 3.74 | 3.74 | |
| RW-12 | -673.071 | 382.932 | 18.59 | 4.04 | 4.91 | 3.98 | 4.09 | 3.76 | 3.65 | 3.88 | 3.91 | |
| RW-13 | -692.61 | 453.03 | 16.3 | 3.81 | 3.87 | 2.14 | 2.04 | 1.91 | 1.7 | 2.01 | 2.09 | |

Table 3

# Ground Water Elevations

| Well No. | Northing | Easting | Elevation Top of Casing | 9/26/97 | 2/25/98 | 6/12/98 | 10/1/98 | 12/3/98 | 3/4/99 | 6/9/99 | 8/11/99 | 8/16/99 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RW-14 | -754.789 | 490.792 | 6.71 | | | | | | | | 2.18 | |
| RW-15 | -683.292 | 510.775 | 6.15 | | | | | | | | 1.61 | |
| RW-16 | -643.344 | 561.28 | 5.76 | | | | | | | | 0.91 | |
| RW-17 | -683.417 | 633.269 | 5.7 | | | | | | | | 0.29 | |
| RW-18 | -716.906 | 450.494 | 18.19 | | | | | | | | 3.36 | |
| RW-19 | -654.524 | 461.842 | 14.15 | | | | | | | | 3.61 | |
| RW-20 | -664.517 | 547.705 | 5.98 | | | | | | | | 1.2 | |
| RW-21 | -543.506 | 534.373 | 17.43 | | | | | | | | 0.62 | |
| RW-22 | 229.997 | 775.979 | 19.17 | | | | | | | | | 3.23 |
| RW-23 | 228.696 | 669.025 | 18.92 | | | | | | | | | 4.49 |
| RW-24 | -73.214 | 698.635 | 6.69 | | | | | | | | | 1.93 |
| RW-25 | -21.131 | 635.158 | 17.91 | | | | | | | | | 4.29 |

Table 4

# Ground Water Elevations

| Well No. | Elevation Top of Casing | 2/8/96 | 5/23/96 | 5/28/96 | Difference 5/23 and 5/28 |
|---|---|---|---|---|---|
| DW-1P | 7.73 | | -1.21 | -2.82 | -1.61 |
| DW-2P | 6.9 | | 1.67 | -5.85 | -7.52 |
| DW-3P | 6.42 | | -1.32 | -2.85 | -1.53 |
| P-2 | 19.46 | 4.54 | 3.76 | 3.14 | -0.62 |
| P-3 | 20.12 | | 5.73 | 5.68 | -0.05 |
| P-5 | 14.7 | 4.24 | 3.43 | 2.78 | -0.65 |
| P-6 | 17.38 | 5.07 | 4.75 | 4.4 | -0.35 |
| P-7 | 17.22 | 4.46 | 3.36 | 2.93 | -0.43 |
| P-8 | 7.39 | 4.18 | 0.54 | -0.28 | -0.82 |
| P-10 | 19.47 | 4.67 | 4.05 | 3.51 | -0.54 |
| P-12 | 14.37 | 4.98 | 4.61 | 4.37 | -0.24 |
| P-13 | 17.87 | 5.98 | 5.65 | 5.58 | -0.07 |
| P-15 | 24.86 | 5.9 | 5.93 | 5.9 | -0.03 |
| P-16 | 18.55 | 4.22 | 2.28 | 1.14 | -1.14 |
| P-17 | 16.28 | 5.56 | 5.03 | 4.85 | -0.18 |
| P-18 | 14.57 | 4.85 | 3.43 | 3.43 | 0 |
| P-19 | 15.2 | 5.9 | 5.43 | 5.38 | -0.05 |
| P-22 | 5.9 | 4.18 | 0.57 | -0.38 | -0.95 |
| P-25 | 7.89 | 4.43 | 1.36 | 0.69 | -0.67 |
| P-26 | 6.51 | 1.46 | 0.64 | -1.94 | -2.58 |
| P-28 | 5.2 | 3.36 | -0.68 | -2.09 | -1.41 |
| P-29 | 6.4 | | 1.79 | 0.69 | -1.1 |
| P-30 | 7.44 | | 1.91 | 0.4 | -1.51 |
| P-31 | 7.41 | | 1.77 | -3.03 | -4.8 |
| P-32 | 7.23 | | 1.86 | -0.72 | -2.58 |
| P-33 | 7.27 | | 2.14 | 0.24 | -1.9 |
| P-34 | 7.28 | | 2.05 | 0.31 | -1.74 |
| P-35 | 7.78 | | 2.24 | -0.28 | -2.52 |
| P-36 | 7.04 | | 0.86 | -0.95 | -1.81 |
| P-37 | 6.64 | | 1.36 | -0.87 | -2.23 |
| P-38 | 6.46 | | 1.55 | -2.58 | -4.13 |
| SW-1 | 7.56 | 5.4 | 5.09 | | |

Table 4

# Ground Water Elevations

| Well No. | Elevation Top of Casing | 2/8/96 | 5/23/96 | 5/28/96 | Difference 5/23 and 5/28 |
|---|---|---|---|---|---|
| SW-3 | 6.75 | 4.25 | 4.6 | | |
| SW-4 | 5.65 | 3.65 | 4.4 | | |
| RW-1 | 17.5 | 5.79 | 5.34 | 5.29 | -0.05 |
| RW-2 | 17.29 | 5.69 | 5.42 | 5.37 | -0.05 |
| RW-3 | 22.79 | 5.93 | 3.23 | 3.23 | 0 |
| RW-4 | 22.75 | | 3.68 | 3.1 | -0.58 |
| RW-5 | 17.67 | | 3.22 | 2.49 | -0.73 |
| RW-6 | 17.67 | | 3.05 | 2.23 | -0.82 |
| RW-7 | 25.14 | | 5.88 | 5.86 | -0.02 |
| RW-8 | 19.85 | | 5.29 | 5.2 | -0.09 |
| RW-10 | 12.52 | | 4.11 | 3.87 | -0.24 |

Table 5

# Metal Concentrations -- South Basin

| Parameter | Units | PQL | RW-10 | RW-11 | RW-12 | RW-13 | RW-14 | RW-15 | RW-16 | RW-17 | RW-18 | RW-20 | RW-21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ug/L | 6 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Arsenic | ug/L | 5 | ND | ND | ND | 10.9 | 16.5 | 84.3 | 44.2 | 15.1 | 21.1 | 29.9 | 45.7 |
| Barium | ug/L | 20 | 58.1 | 64.3 | 53.6 | 82.1 | 54.3 | 41.6 | 38 | 64.7 | 31.9 | 46.9 | 85.6 |
| Beryllium | ug/L | 1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Cadmium | ug/L | 1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chromium, total | ug/L | 5 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Cobalt | ug/L | 7 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Copper | ug/L | 50 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Lead | ug/L | 5 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Mercury | ug/L | 0.5 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Molybdenum | ug/L | 8 | ND | ND | ND | 36.2 | 15.9 | ND | 11.8 | ND | 43.5 | ND | 32 |
| Nickel | ug/L | 5 | ND | ND | ND | 5.6 | 8.34 | ND | ND | ND | ND | ND | ND |
| Selenium | ug/L | 5 | ND | ND | ND | 14 | ND | ND | ND | ND | 10.6 | ND | ND |
| Silver | ug/L | 1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Thallium | ug/L | 1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vanadium | ug/L | 10 | ND | 381 | ND | 10,700 | 22.1 | 15.1 | 697 | ND | 15,400 | 475 | 16.5 |
| Zinc | ug/L | 50 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

Table 6

# VOC (Method 8260) -- South Basin

| | Well ID | | RW-10 | RW-11 | RW-12 | RW-13 | RW-14 | RW-15 | RW-16 | RW-17 | RW-18 | RW-20 | RW-21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Date | | 8/11/99 | | | | | | | | | | |
| Parameter | Units | PQL | | | | | | | | | | | |
| 1,1-Dichloroethane (1,1-DCA) | ug/L | 0.5 | 3.2 | 2.3 | 2.2 | ND | 0.56 | 1.2 | 1.6 | 1.6 | ND | 2 | 2.4 |
| Chloroform | ug/L | 0.5 | ND | ND | ND | ND | ND | 0.98 | ND | ND | 0.83 | ND | 3.1 |
| 1,1,1-Trichloroethane | ug/L | 0.5 | ND | ND | ND | ND | ND | ND | ND | ND | ND | 5.4 | ND |
| Tetrachloroethene | ug/L | 0.5 | ND | ND | ND | ND | ND | ND | ND | 1.5 | ND | ND | ND |
| Trichloroethene (TCE) | ug/L | 0.5 | ND | ND | ND | ND | ND | ND | 0.69 | 2 | ND | 1.6 | ND |

Table 7

# Metal Concentrations -- North Basin

| Parameter | Units | PQL | RW-22 | RW-23 | RW-24 | RW-25 | 2P |
|---|---|---|---|---|---|---|---|
| Antimony | ug/L | 6 | ND | 6.89 | ND | ND | ND |
| Arsenic | ug/L | 5 | 21 | 13.3 | 30.3 | 16.3 | 53.4 |
| Barium | ug/L | 20 | 125 | 116 | 29 | 118 | 44.9 |
| Beryllium | ug/L | 1 | ND | ND | ND | ND | ND |
| Cadmium | ug/L | 1 | ND | ND | ND | ND | ND |
| Chromium, total | ug/L | 5 | ND | ND | ND | 7.06 | ND |
| Cobalt | ug/L | 7 | ND | ND | ND | ND | ND |
| Copper | ug/L | 50 | ND | ND | ND | ND | ND |
| Lead | ug/L | 5 | ND | ND | ND | 5.58 | ND |
| Mercury | ug/L | 0.5 | ND | ND | ND | ND | ND |
| Molybdenum | ug/L | 8 | 30.7 | 33 | ND | 25.5 | ND |
| Nickel | ug/L | 5 | ND | 48.7 | ND | ND | ND |
| Selenium | ug/L | 5 | ND | ND | ND | ND | ND |
| Silver | ug/L | 1 | ND | ND | ND | ND | ND |
| Thallium | ug/L | 1 | ND | ND | ND | ND | ND |
| Vanadium | ug/L | 10 | 265 | 623 | 16.6 | 31 | ND |
| Zinc | ug/L | 50 | ND | ND | ND | ND | ND |

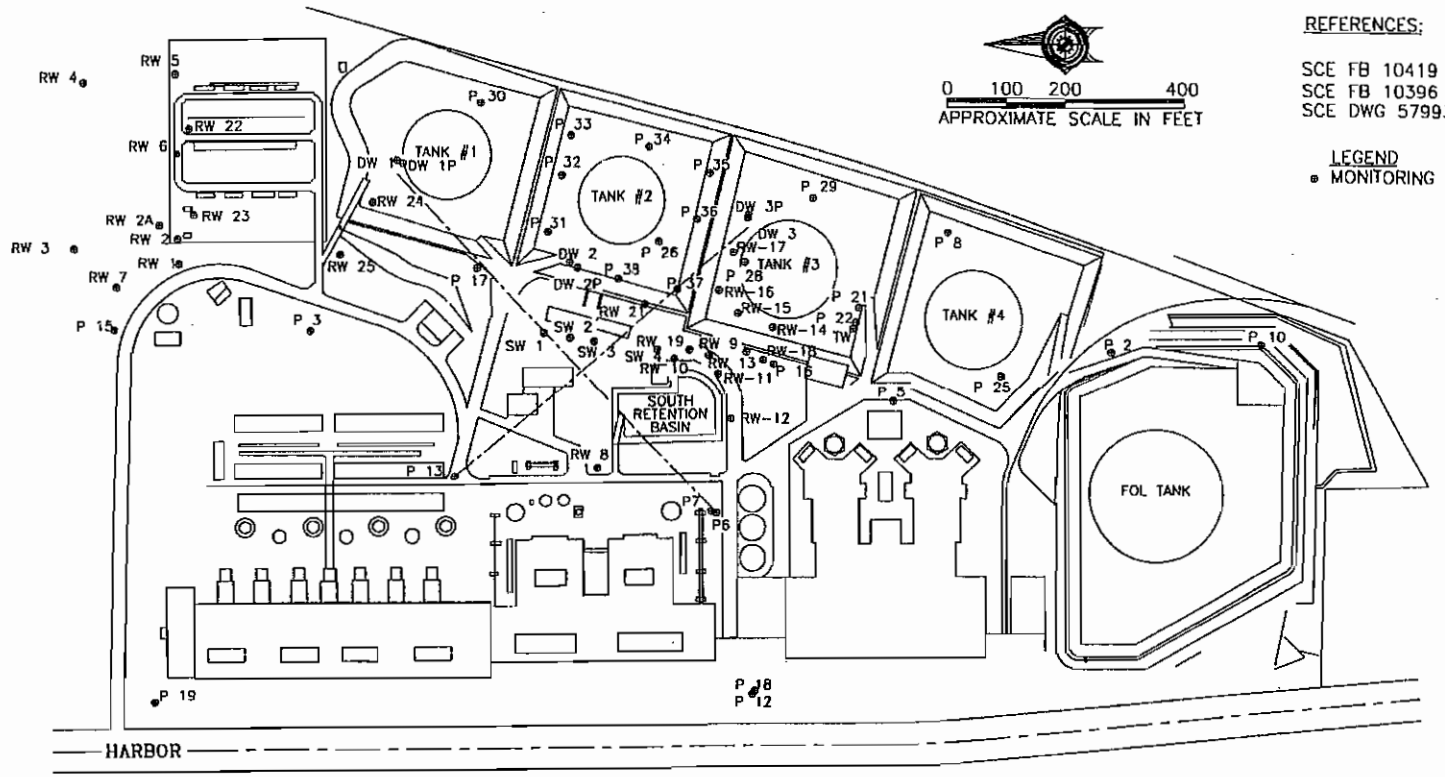
Table 8

# VOC (Method 8260) -- North Basin

| | Well ID | | RW-22 | RW-23 | RW-24 | RW-25 | 2P |
|---|---|---|---|---|---|---|---|
| | Date | | 8/16/99 | | | | |
| Parameter | Units | PQL | | | | | |
| 1,1-Dichloroethene (1,1-DCE) | ug/L | 0.5 | ND | ND | ND | 1.2 | ND |
| 1,1-Dichloroethane (1,1-DCA) | ug/L | 0.5 | ND | ND | ND | 3.9 | 6.1 |
| trans-1,2-Dichloroethene | ug/L | 0.5 | ND | ND | ND | ND | 5.9 |
| MTBE | ug/L | 2 | ND | ND | ND | 5 | ND |
| Chlorobenzene | ug/L | 2.5 | 44 | ND | ND | ND | 3.8 |
| 1,2-Dichlorobenzene | ug/L | 2 | 21 | ND | ND | ND | ND |
| 1,3-Dichlorobenzene | ug/L | 2 | 6.2 | ND | ND | ND | ND |
| 1,4-Dichlorobenzene | ug/L | 2 | 10 | ND | ND | ND | ND |
| 1,2,4-Trichlorobenzene | ug/L | 1 | 3.7 | ND | ND | ND | ND |
| Vinyl chloride | ug/L | 1 | ND | ND | ND | ND | 3.6 |
| 2-Chlorotoluene | ug/L | 0.5 | ND | ND | ND | ND | 4.2 |
| Chloroform | ug/L | 0.5 | ND | 1.8 | ND | 0.84 | ND |
| 1,1,1-Trichloroethane | ug/L | 0.5 | ND | ND | ND | ND | ND |
| Tetrachloroethene | ug/L | 0.5 | ND | ND | ND | ND | ND |
| Trichloroethene (TCE) | ug/L | 0.5 | ND | ND | ND | ND | ND |

J.O. 6508 L.E.S. 3694 DATE 8/10/99
J.O. 6723 L.E.S. 2724 DATE 2/14/97
J.O. 6402 L.E.S. 2347 DATE 2/23/96
File Name M:\ARCHIVE\DRAWING\JER2347a,b,c in server SURVEY01

| PT# | NORTHING | EASTING | ELEV. |
|---|---|---|---|
| DW1 | -104.314 | 797.235 | 7.333 |
| DW1P | -114.855 | 791.843 | 7.725 |
| DW2 | -394.560 | 625.035 | 5.667 |
| DW2P | -407.812 | 615.905 | 6.900 |
| DW3 | -697.794 | 697.679 | 5.542 |
| DW3P | -698.626 | 702.728 | 6.422 |
| P2 | -1310.027 | 474.513 | 19.462 |
| P3 | 42.366 | 512.359 | 20.122 |
| P5 | -942.694 | 389.810 | 14.704 |
| P6 | -644.002 | 198.157 | 17.382 |
| P7 | 634.779 | 200.944 | 17.220 |
| P8 | -1034.137 | 671.876 | 7.394 |
| P10 | -1564.059 | 487.391 | 19.471 |
| P12 | -704.271 | -108.480 | 14.365 |
| P13 | -201.065 | 264.013 | 17.870 |
| P15 | 358.822 | 513.124 | 24.861 |
| P16 | -740.903 | 453.237 | 18.554 |
| P17 | -239.378 | 616.033 | 16.280 |
| P18 | -708.068 | -102.084 | 14.574 |
| P19 | 301.402 | -117.510 | 15.198 |
| P21 | -884.492 | 547.080 | 5.526 |
| P22 | -879.949 | 522.389 | 5.899 |
| P25 | -1124.221 | 432.544 | 7.887 |
| P26 | -547.288 | 658.670 | 6.514 |
| P28 | -691.862 | 622.720 | 5.701 |
| P29 | -808.000 | 730.735 | 6.399 |
| P30 | -945.924 | 893.387 | 7.439 |
| P31 | -358.038 | 677.108 | 7.409 |
| P32 | -381.626 | 771.710 | 7.234 |
| P33 | -397.367 | 837.902 | 7.271 |
| P34 | -531.449 | 817.106 | 7.276 |
| P35 | -633.540 | 773.329 | 7.782 |
| P36 | -611.492 | 695.835 | 7.044 |
| P37 | -578.643 | 579.540 | 6.639 |
| P38 | -477.496 | 597.440 | 6.460 |
| RW1 | 281.560 | 624.049 | 17.503 |
| RW2 | 257.408 | 669.451 | 17.291 |
| RW2A | 256.889 | 651.362 | 16.700 |
| RW3 | 435.580 | 650.521 | 22.786 |
| RW4 | 419.968 | 929.069 | 22.751 |
| RW5 | 267.509 | 941.511 | 17.673 |
| RW6 | 265.227 | 809.466 | 17.665 |
| RW7 | 364.830 | 587.460 | 25.135 |
| RW8 | -441.375 | 278.377 | 19.847 |
| RW9 | -631.079 | 469.398 | 12.908 |
| RW10 | -597.974 | 459.850 | 12.520 |
| RW11 | -660.629 | 430.214 | 15.828 |
| RW12 | -673.071 | 392.932 | 18.590 |
| RW13 | -692.610 | 453.030 | 16.300 |
| RW14 | -754.789 | 490.792 | 6.705 |
| RW15 | -683.292 | 510.775 | 6.153 |
| RW16 | -643.344 | 561.28 | 5.762 |
| RW17 | -683.417 | 633.259 | 5.703 |
| RW18 | -716.906 | 450.494 | 18.194 |
| RW19 | -654.524 | 461.842 | 14.148 |
| RW20 | -664.517 | 547.705 | 5.984 |
| RW21 | -543.506 | 534.373 | 17.433 |
| RW22 | 229.997 | 775.979 | 19.174 |
| RW23 | 228.696 | 669.025 | 18.923 |
| RW24 | -73.214 | 698.635 | 6.693 |
| RW25 | -21.131 | 635.158 | 17.911 |
| SW1 | -350.744 | 508.053 | 7.561 |
| SW2 | -395.060 | 499.821 | 7.609 |
| SW3 | -436.068 | 493.770 | 6.749 |
| SW4 | -544.530 | 479.835 | 5.654 |
| TW | -674.685 | 512.095 | 7.286 |

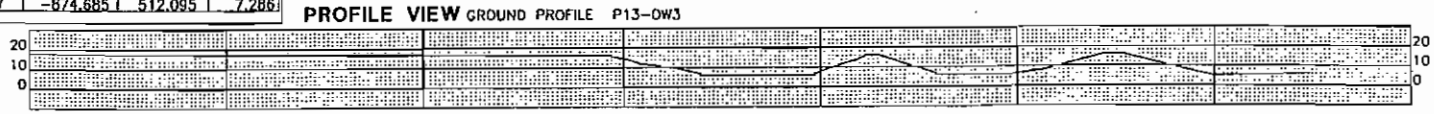



REFERENCES:

SCE FB 10419 PG 87-90
SCE FB 10396 PG 9-14
SCE DWG 579939-18

LEGEND
• MONITORING WELL

**PROFILE VIEW** GROUND PROFILE P13-DW3




GROUND PROFILE P6-DW1

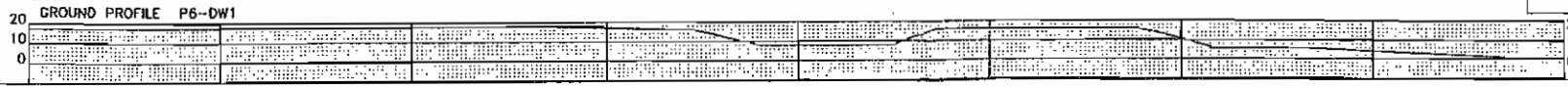



FIGURE 1

REDONDO BEACH GENERATING STATION
LOCATION OF DEWATERING & MONITORING WELLS

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

NO VERTICAL EXAGERATION SHOWN
SCALE 1"=60' VERT AND HORZ.

# Contour Map -- Top of Clay Horizon

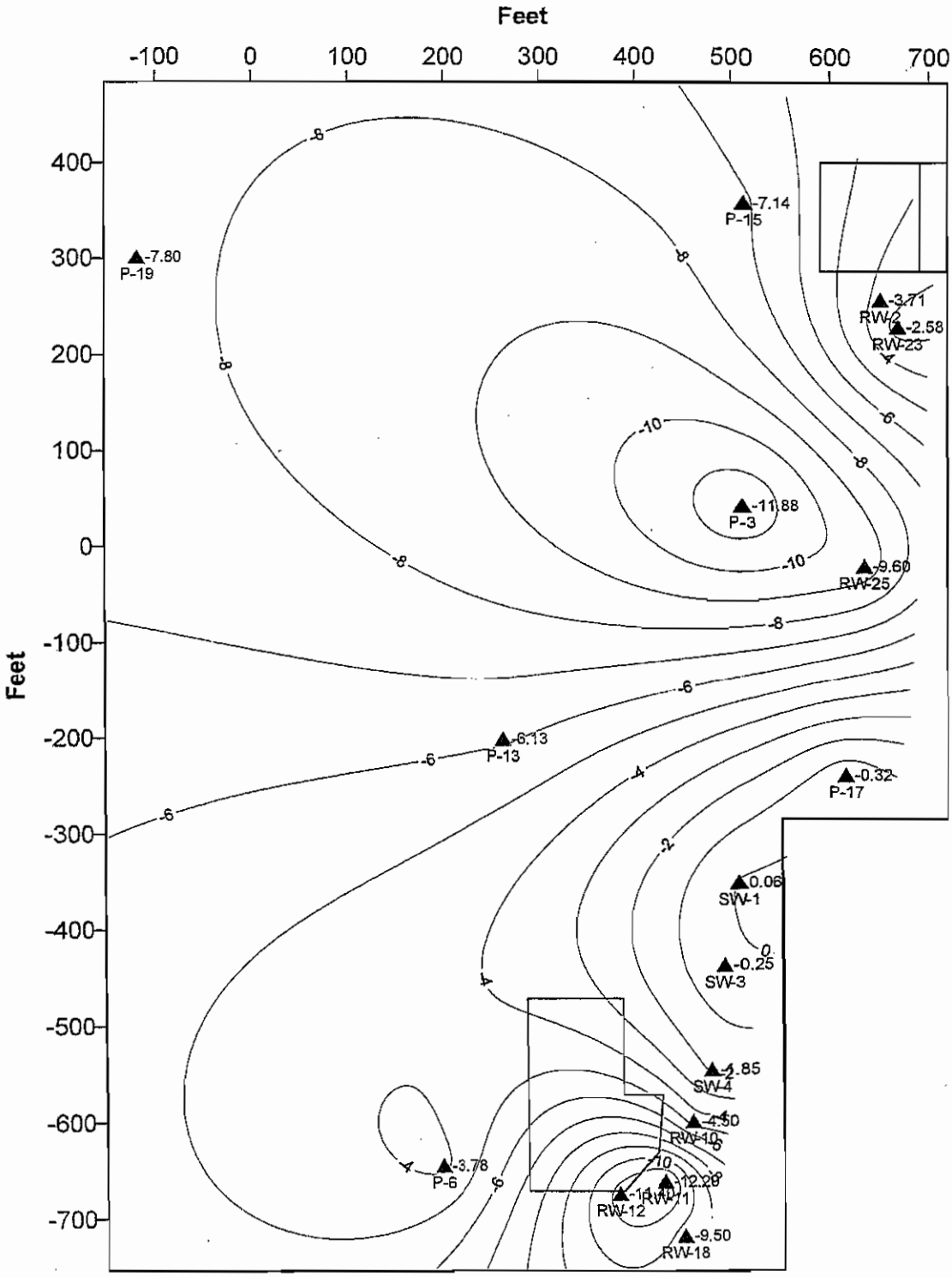



**Figure 2**

# Contour Map -- Top of Clay Horizon -- South Basin

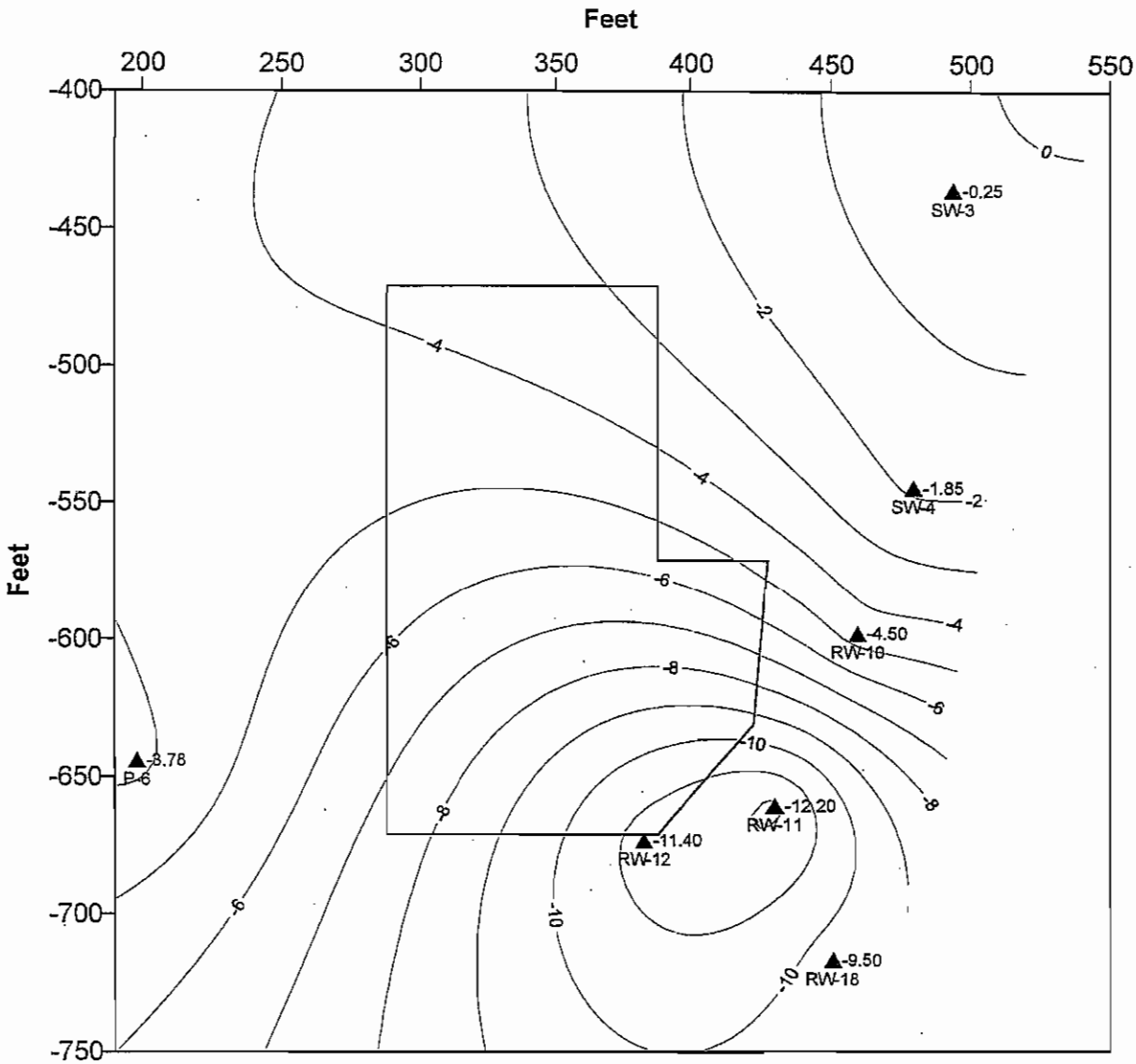



**Figure 3**

# Ground Water Gradient -- 8/11/99
# Silverado and Perched Aquifers

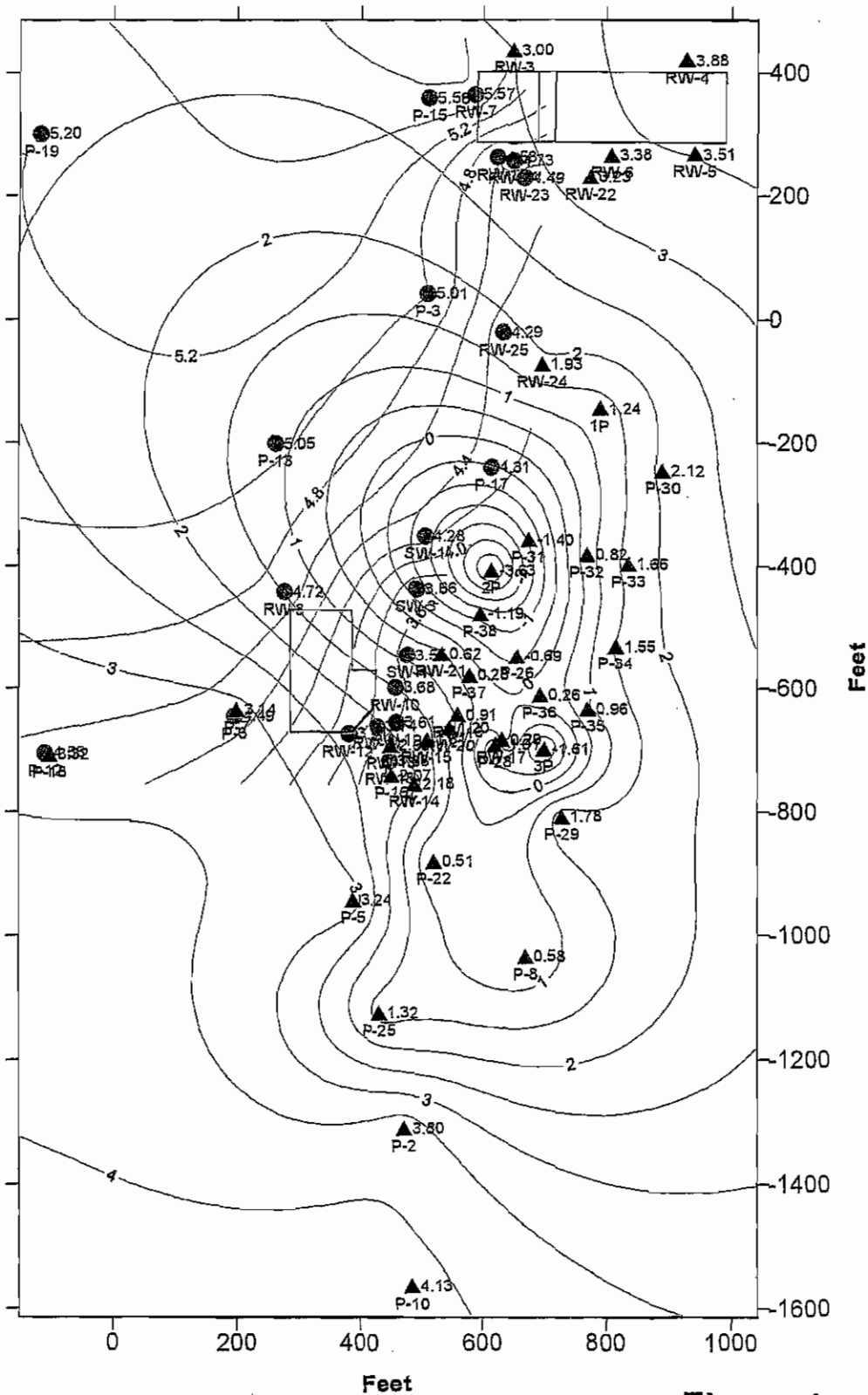



Figure 4

# Ground Water Gradient -- 6/9/99
# Silverado and Perched Aquifers

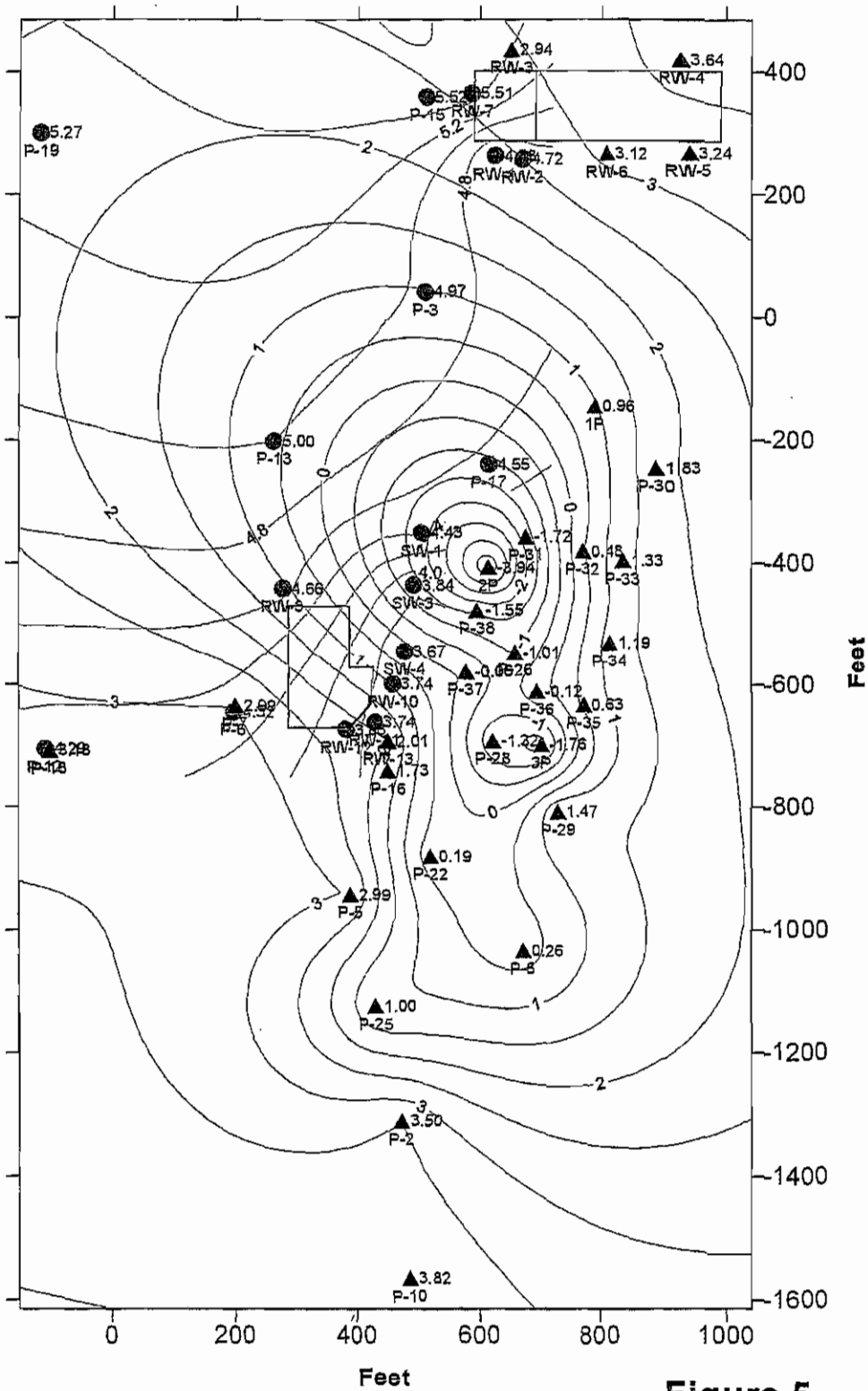



Figure 5

# Ground Water Gradient -- 8/11/99
# Silverado and Perched Aquifers
# South Basin

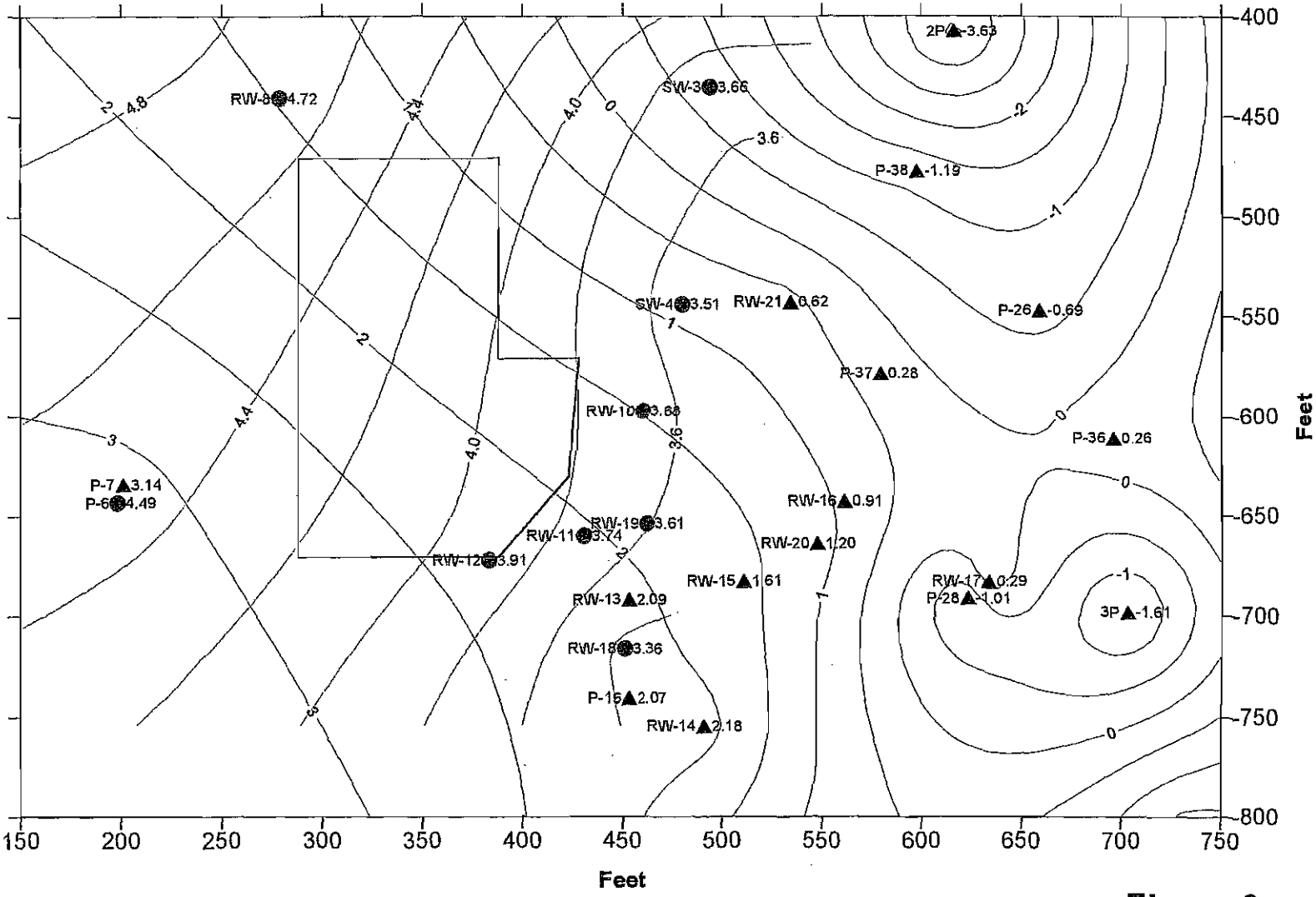



Figure 6

# Ground Water Gradient -- 6/9/99
# Silverado and Perched Aquifers
# South Basin

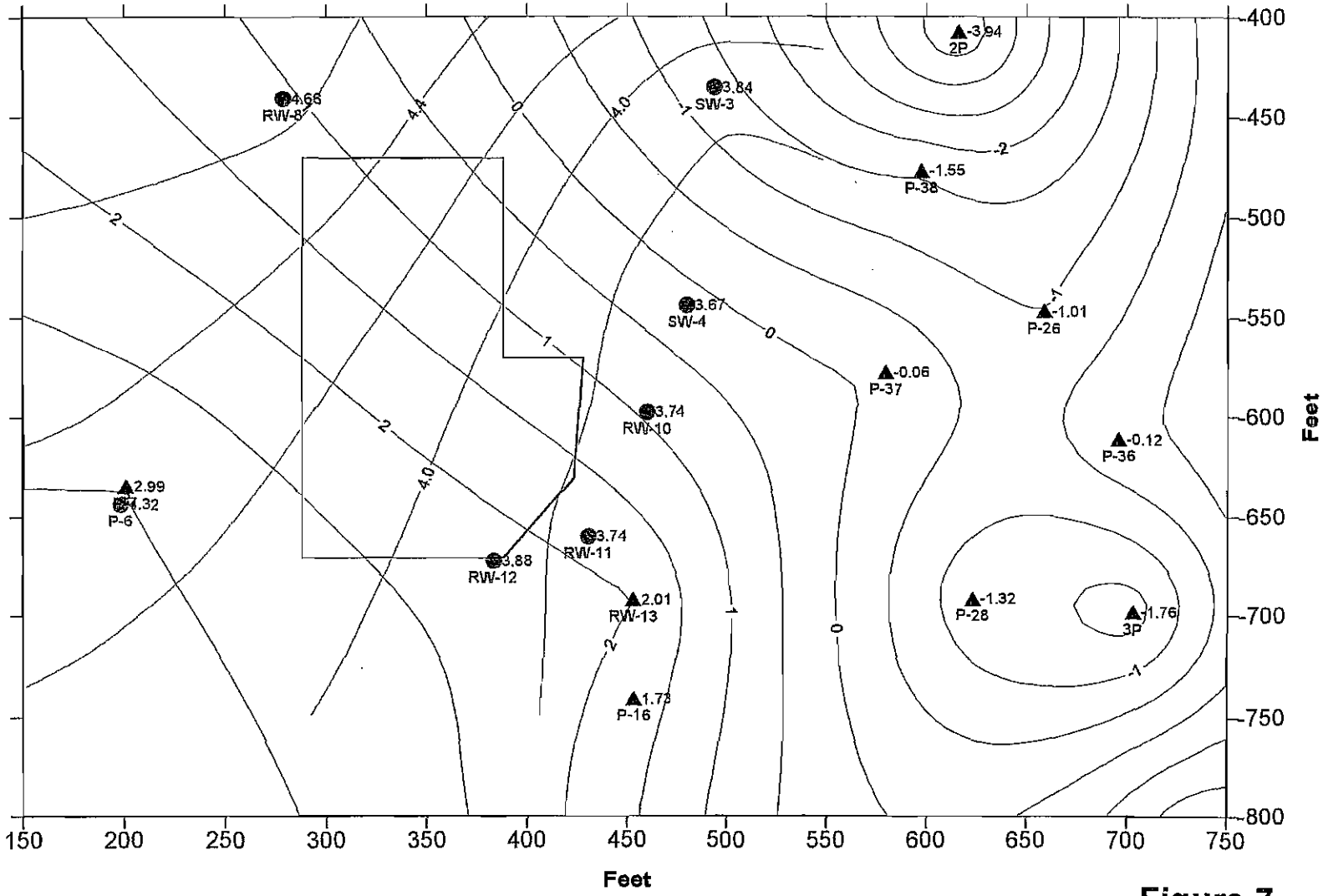



Figure 7

# Ground Water Gradient
# Silverado and Perched Aquifers
# North Basin

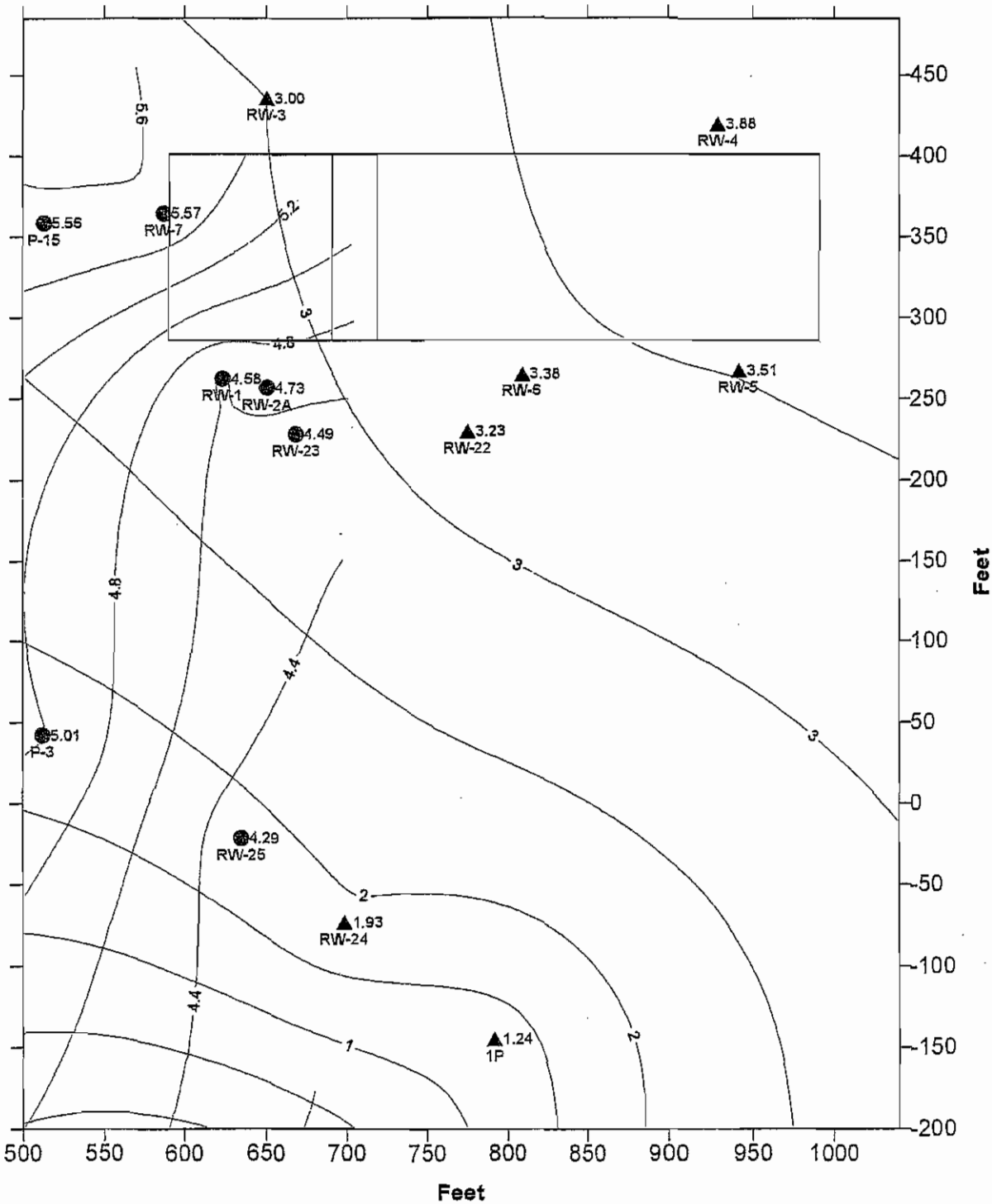



Figure 8

# Ground Water Gradient -- 6/9/99
# Silverado and Perched Aquifers

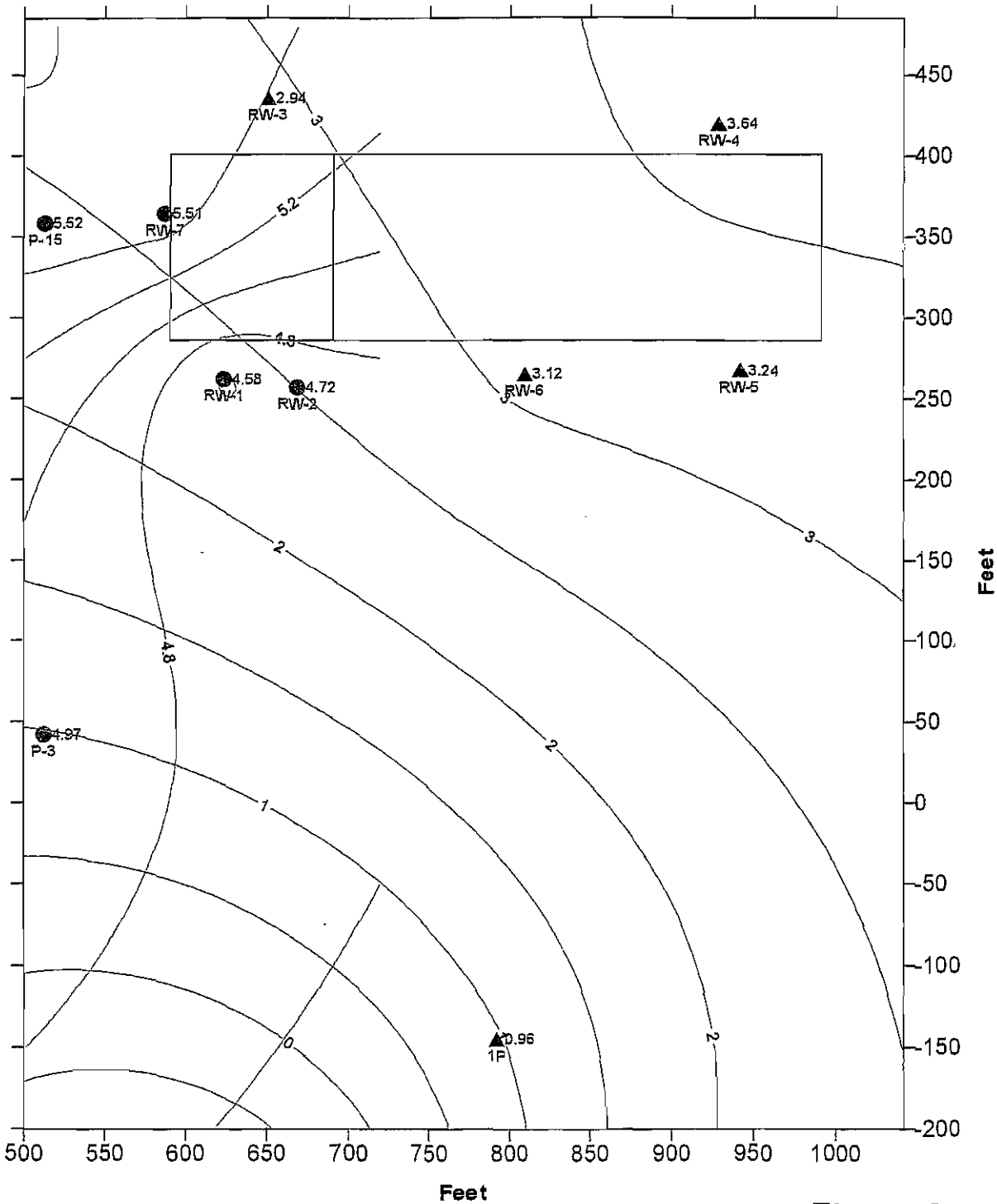



Figure 9

# Ground Water Gradient -- 2/8/96

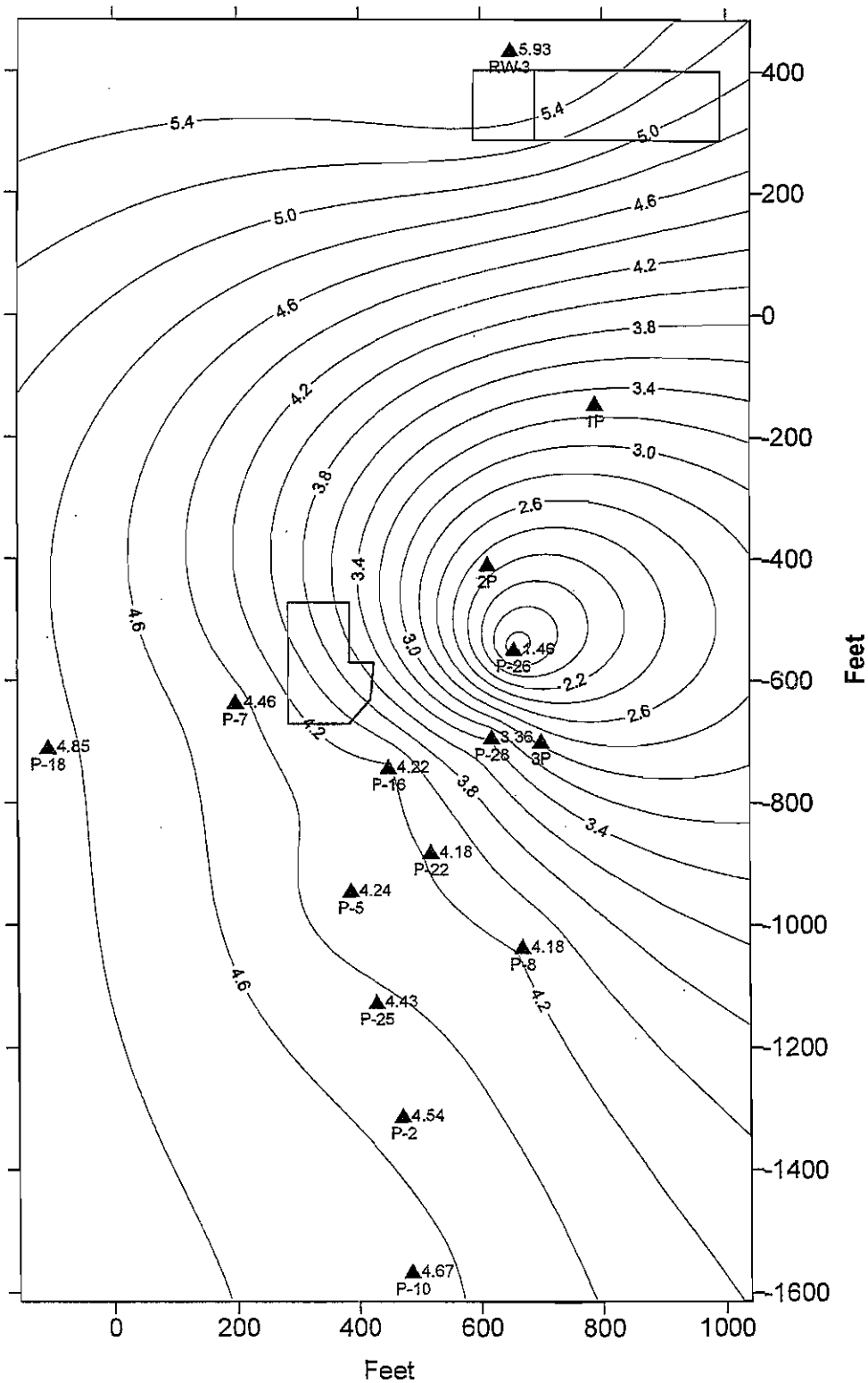



**Figure 10**

# Ground Water Gradient -- 2/8/96
## Silverado Aqiufer

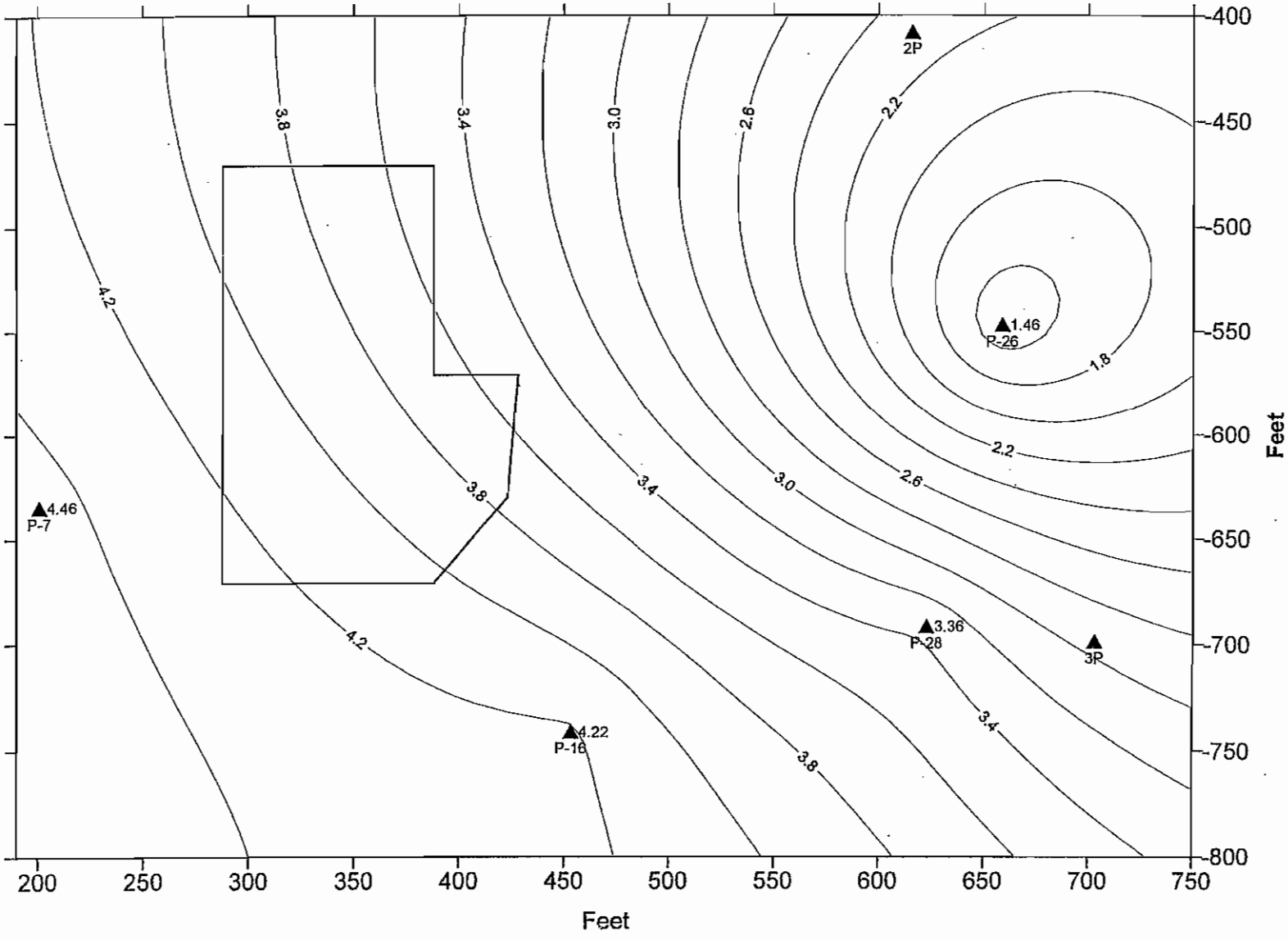



**Figure 11**

# Ground Water Gradient -- 5/23/96
## Silverado Aquifer

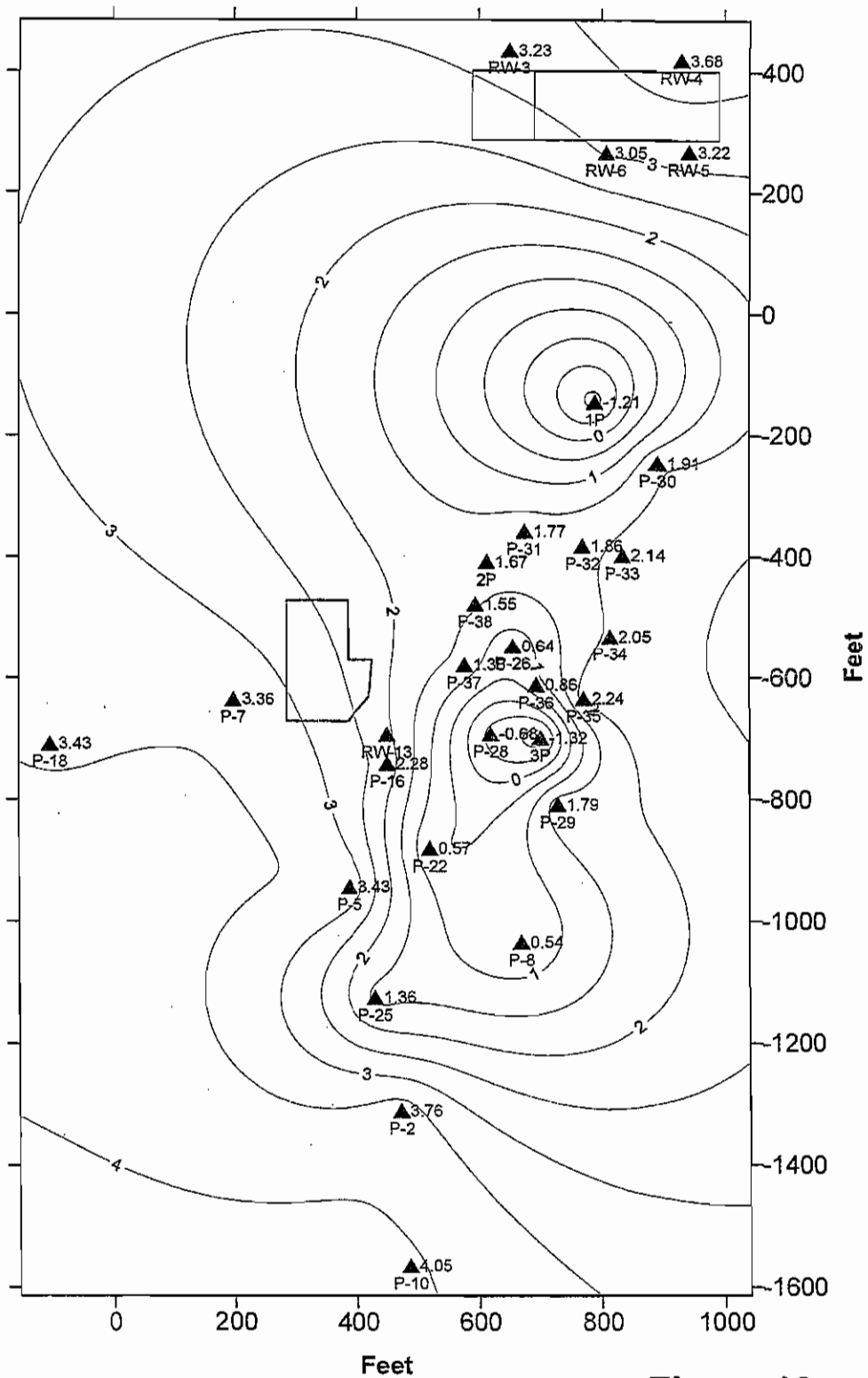



**Figure 12**

# Ground Water Gradient -- 5/23/96
## Silverado Aquifer

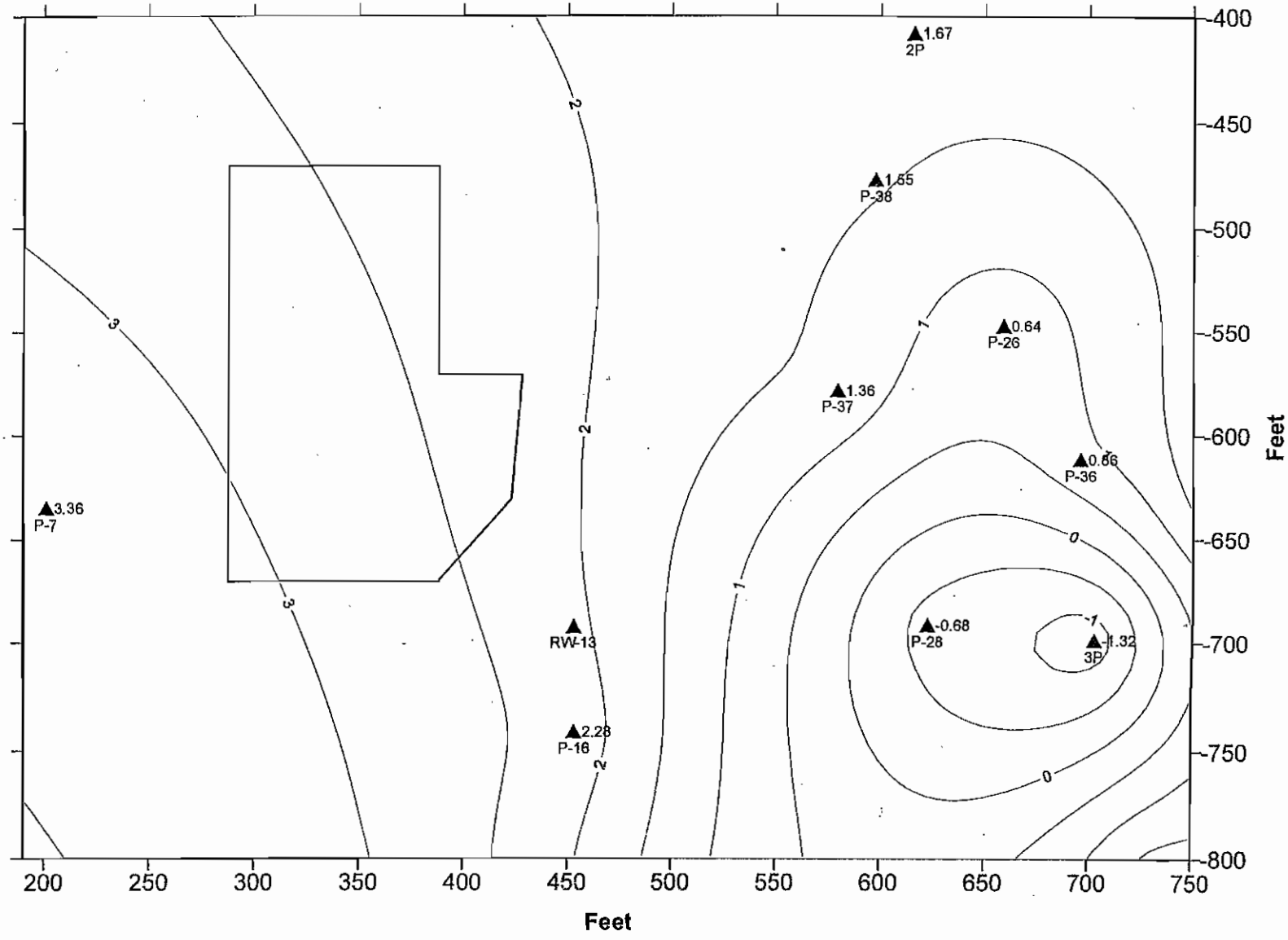



**Figure 13**

# Ground Water Gradient -- 5/28/96
## Silverado Aquifer

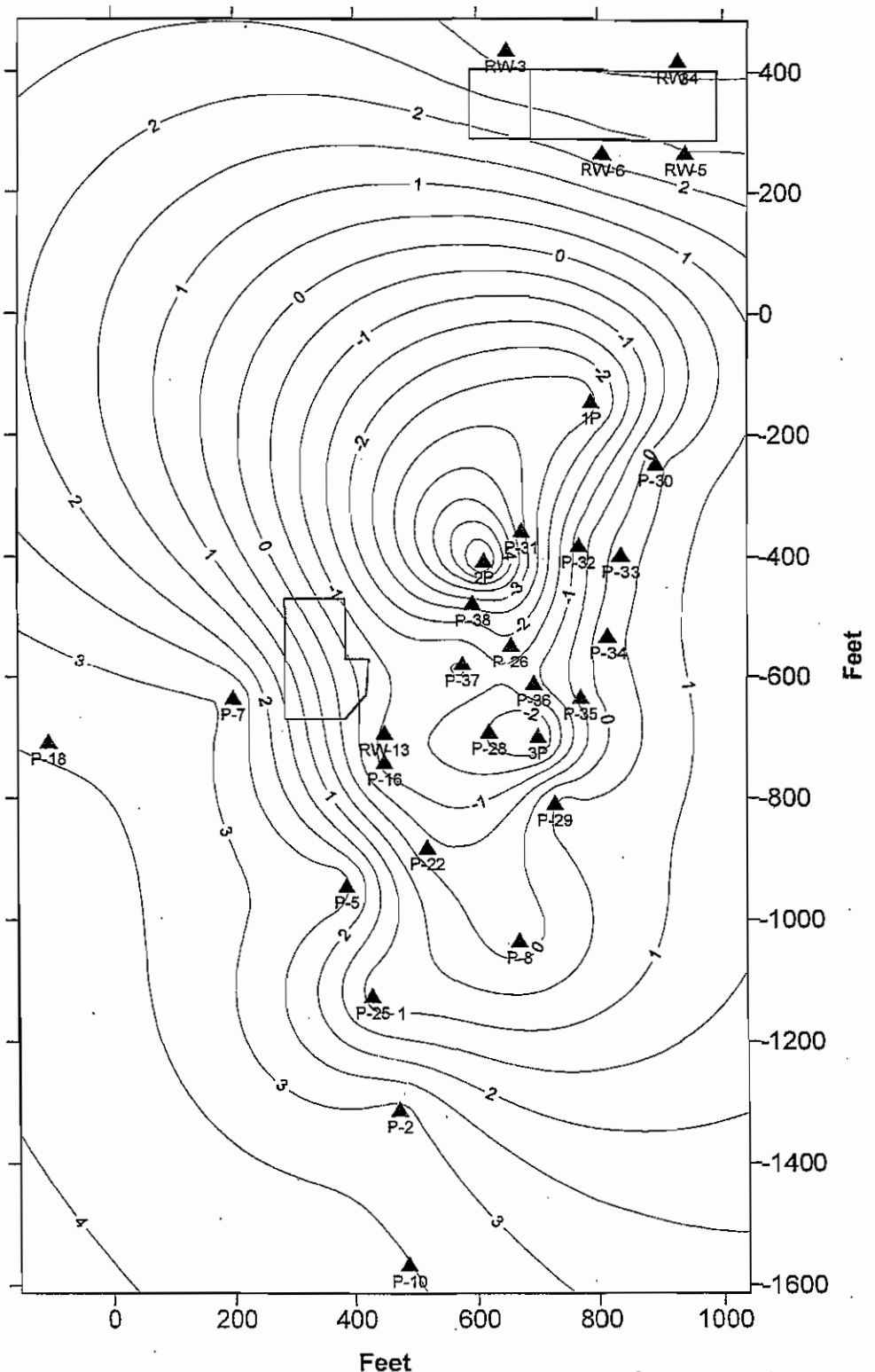



**Figure 14**

# Ground Water Gradient -- 5/28/96
## Silverado Aquifer

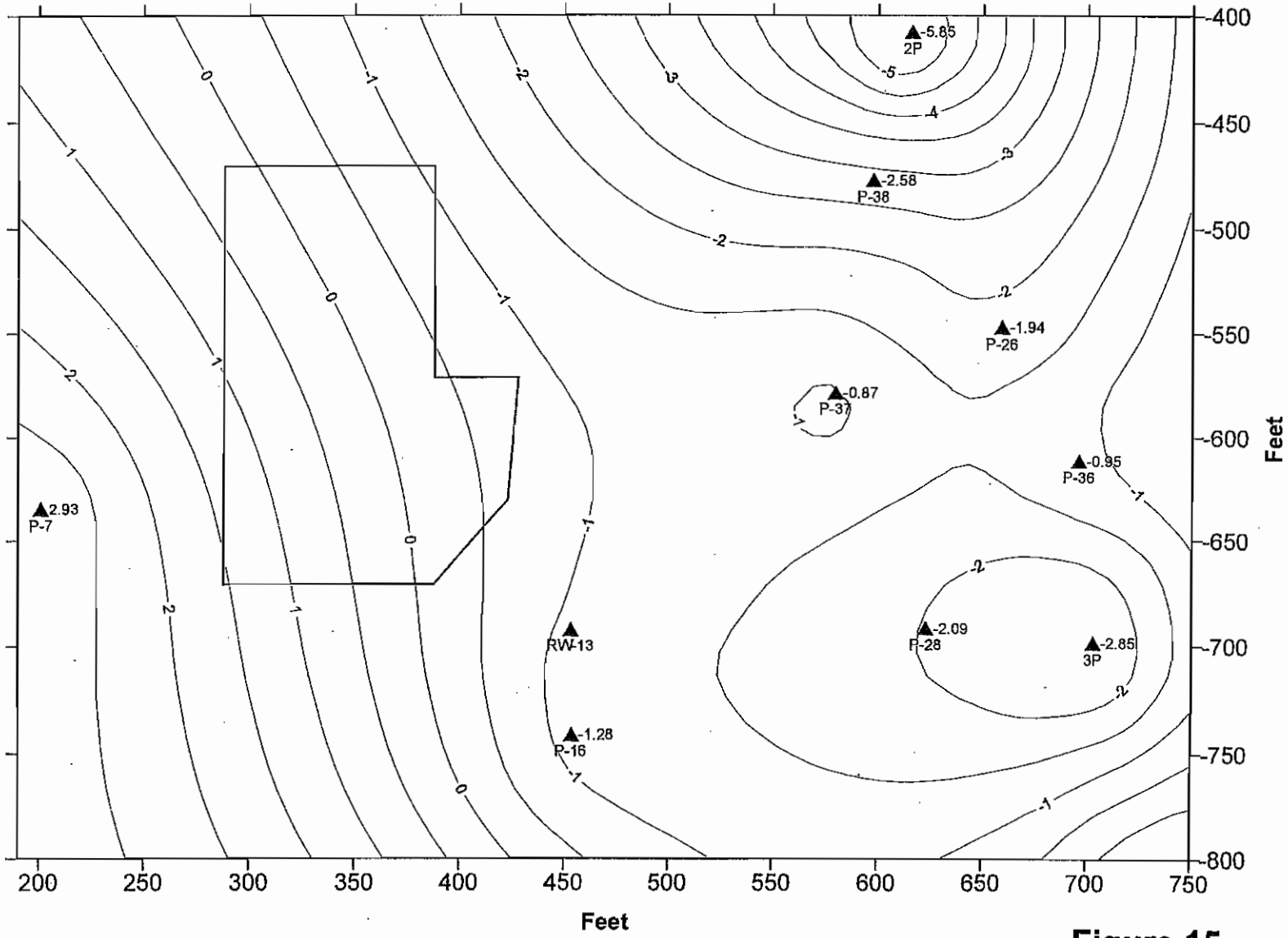



**Figure 15**

# Vanadium Concentration with Ground Water Gradient -- 8/11/99
## Silverado and Perched Aquifers
## South Basin

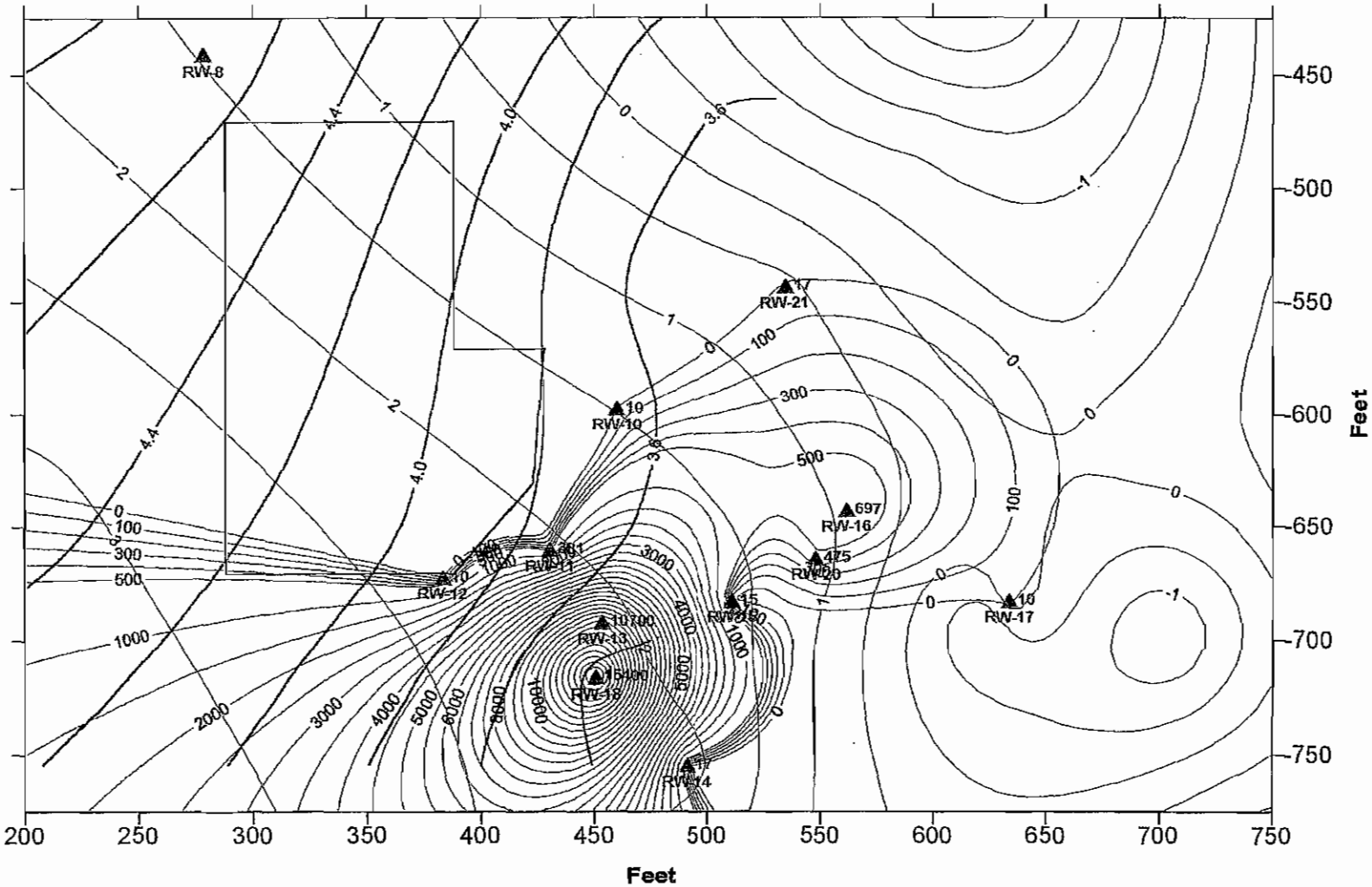



Figure 16

# Arsenic Concentration with Ground Water Gradient -- 8/11/99
## Silverado and Perched Aquifers
## South Basin

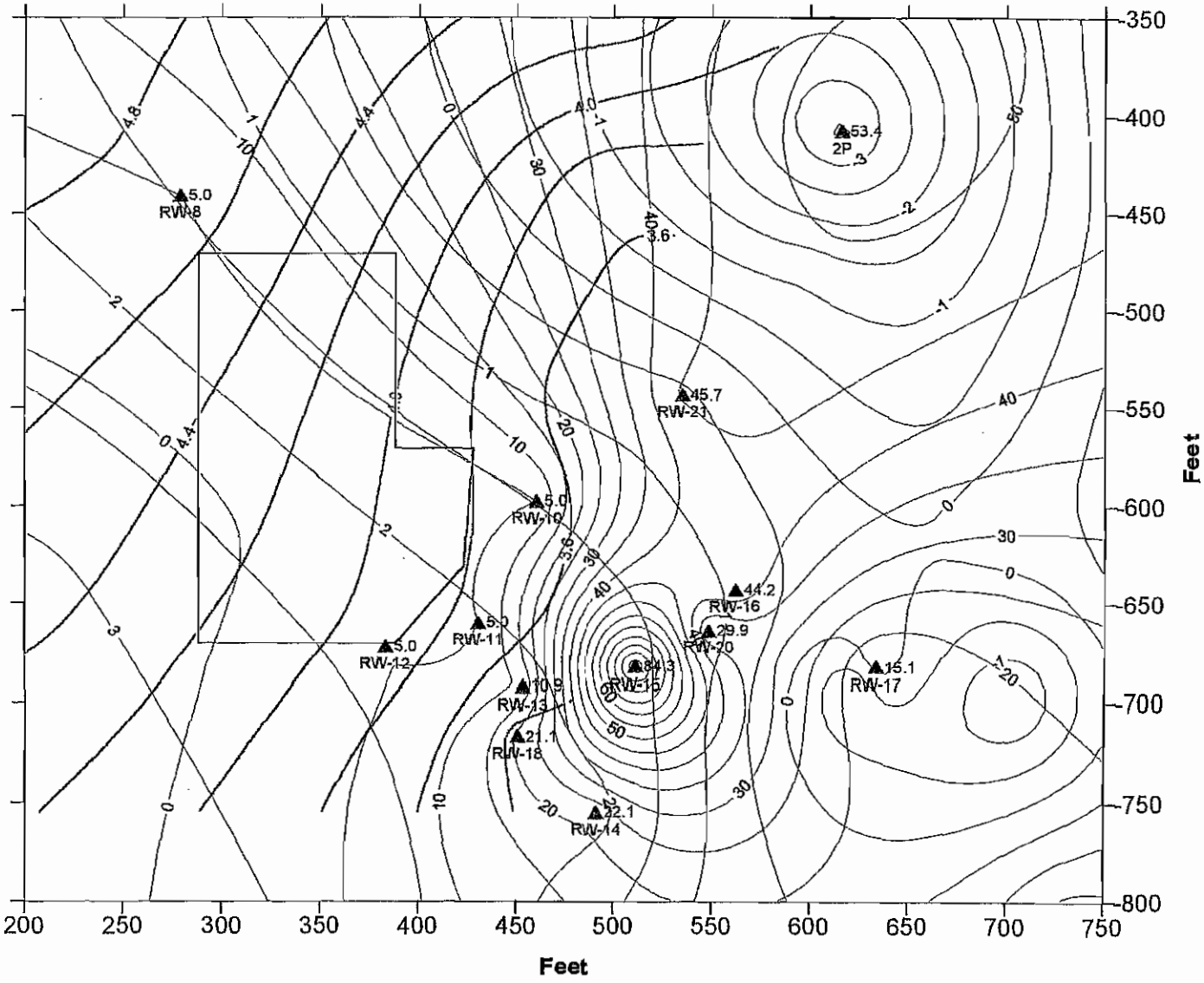



Figure 17

# Arsenic Concentration with Ground Water Gradient
# Silverado and Perched Aquifers
# North Basin

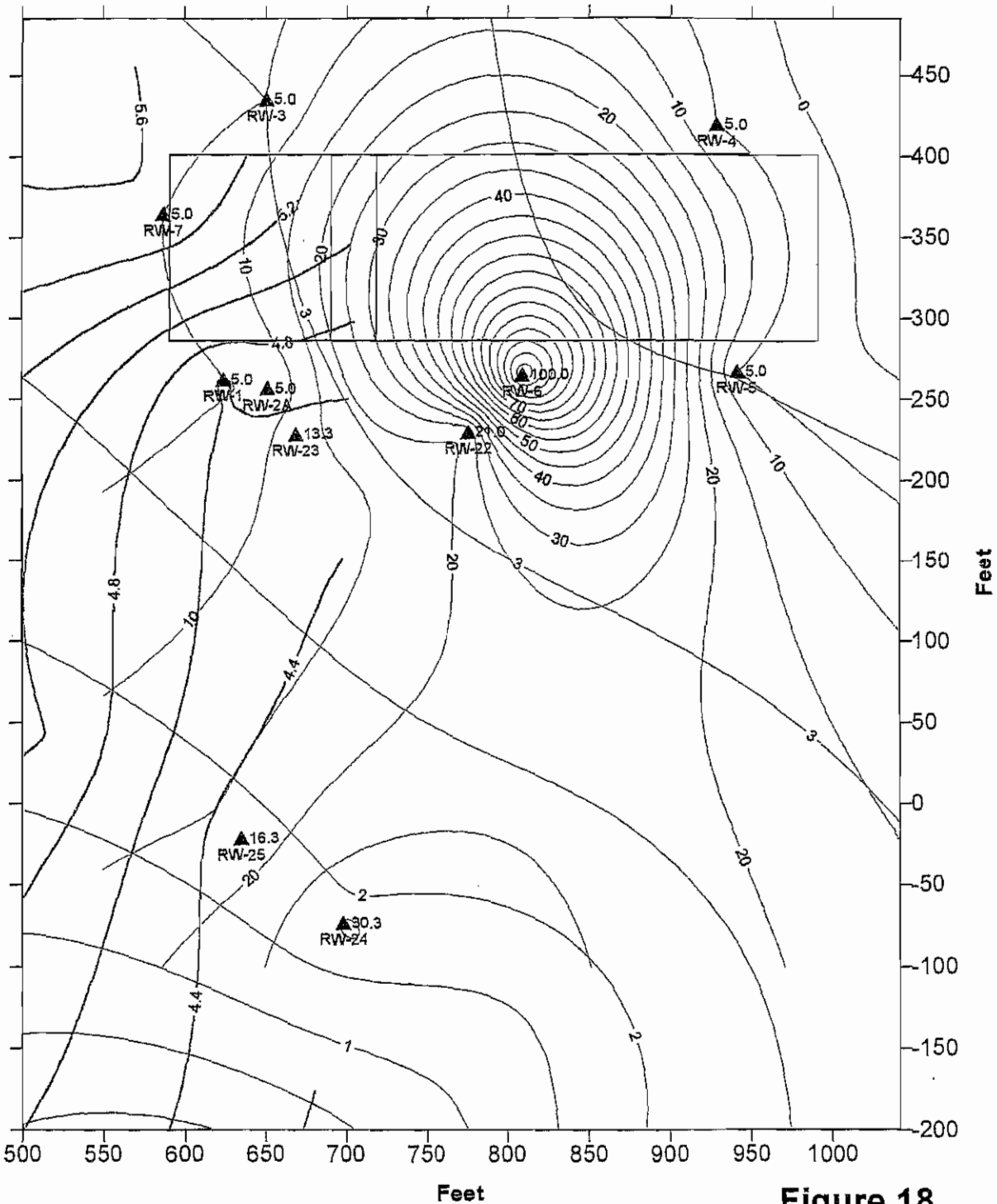



Figure 18

# Vanadium Concentration with Ground Water Gradient
# Silverado and Perched Aquifers
# North Basin

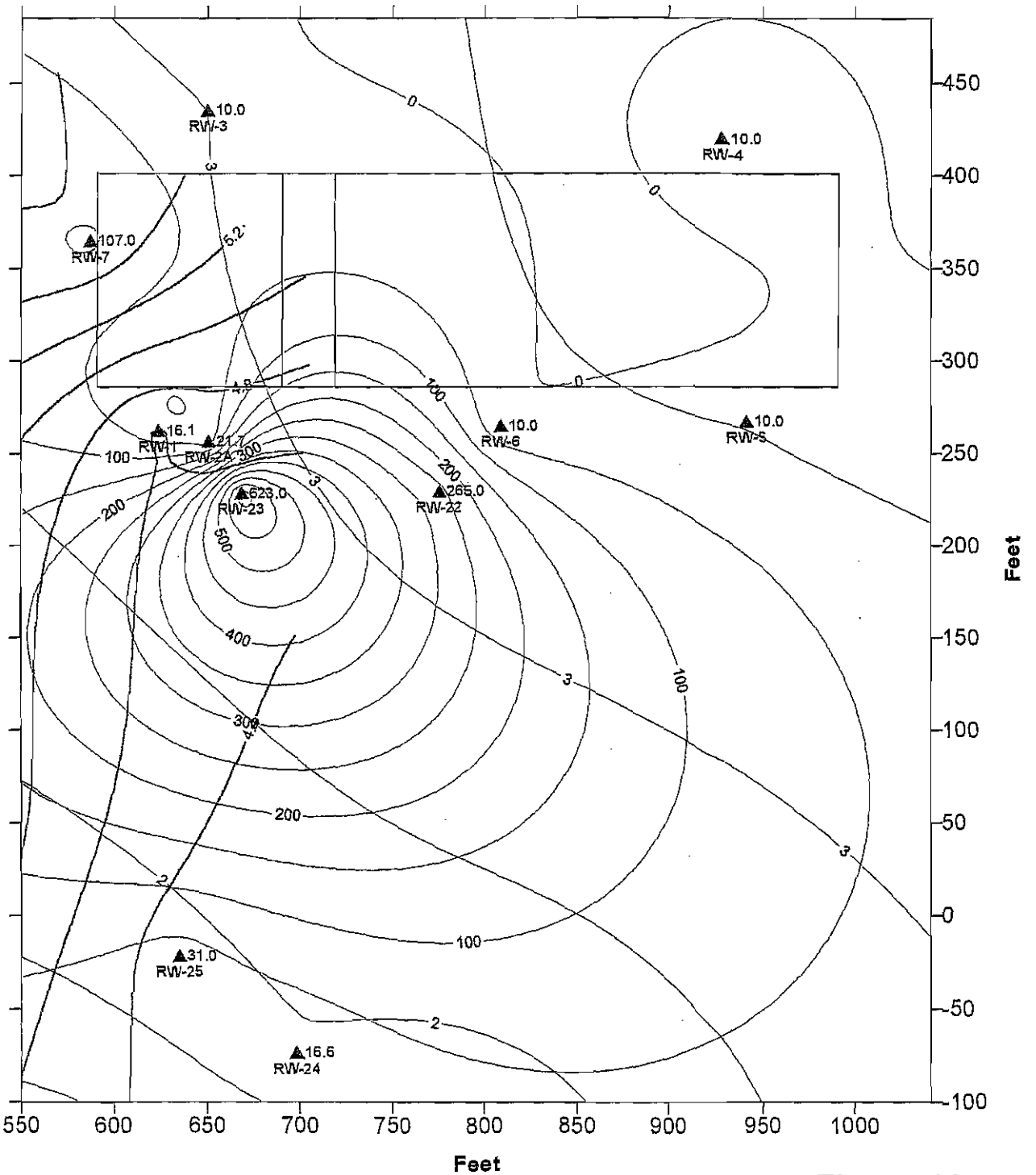



Figure 19

# Appendix 1: Boring Logs and Well Development Data Sheets

Southern California Edison



| | | | |
|---|---|---|---|
| Client: Redondo Generating Station | | | Well Number: RW-2A |
| Project: Ground Water Quality Monitoring Program | | | Well Construction Data |
| Date Started: AUG 6 99 | Date Completed: AUG 6 99 | | Screen: 0.02-inch slot From: 10 - To: 20 |
| Logged By: P. Hamilton | Checked By: P. Hamilton | | Pack: Lone Star #3 From: 9 - To: 20 |
| Drilling Co.: Odyssey | Driller: D. Loftis | | Seal: Bentonite From: 5 - To: 9 |
| Method: Hollow Stem Auger | Equipment: SIMCO | | Grout: Cement From: 0 - To: 5 |
| Boring Depth (feet)/Diameter: 21.0 | Measuring Point Elevation (feet): 16.70 | | Casing Size: 4-inch PVC Flush threaded |
| Initial GW Level (feet): ▽ 11.54 | GW Level (feet): ▼ 11.99 | Time/Date: 8/16/99 | Protective Casing: Protective flush mounted cover |

| Depth Feet | Blow Count | Sample | Description | | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | 0 | |
| | 6 12 21 | X | **Silty Sand**, brown, coarse grained, gravel<br>Encountered debris throughout this layer including glass, brick, wire, and plastic | pH=8.15 | | | | Cement Seal |
| | 15 21 35 | X | | pH=8.03 | | | | 4" PVC blank casing |
| 5 | 7 14 21 | X | | pH=7.57 | | | 5 | |
| | 10 21 34 | X | Encountered several bolts and washers | pH=7.81 | | | | Bentonite Seal |
| | 5 14 19 | X | | pH=7.99 | | | | |
| 10 | 3 8 12 | X | | pH=7.64 | | | 10 | |
| | 2 6 9 | X | **Silty Sand**, brown, moist, coarse grained gravel, shell fragments | pH=7.32 | | | | Lone Star #3 Gravel Pack, calculated and used 5 cu.ft. |
| | 3 5 7 | X | | pH=7.59 | | | | Method of placement: slowly poured as augers were removed |
| 15 | 2 4 7 | X | | pH=7.44 | | | 15 | |

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Southern California Edison



Project: Ground Water Quality Monitoring Program

Well Number: RW-2A

| Depth Feet | Blow Count | Sample | Description | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|
| | 3<br>5<br>9 | X | pH = 7.62<br>**Silty Sand**, brown, saturated, coarse grained gravel, shell fragments<br><br>Saturated sand began to enter auger as the center bit was being removed | | | | 4" PVC screen casing |
| 20 | | | | | | 20 | Bottom Cap |
| | | | Total Depth of Drill Hole = 21 feet | | | | Bottom sluff due to running, saturated sand |
| 25 | | | | | | 25 | |
| 30 | | | | | | 30 | |
| 35 | | | | | | 35 | |

# Well Development

## Redondo Generating Station

### Well ID: RW-2A

| Date | Water Added | Water Removed | | E.C. | Temp | pH | Turbidity |
|---|---|---|---|---|---|---|---|
| | | Bailed | Pumped | | | | |
| 8/6/99 | 13 | | | 786 | | | |
| 8/7/99 | | | 200 | 4820 | 22.1 | 7.84 | 6.17 |
| | | | 100 | 4860 | 22.0 | 7.86 | 3.72 |
| | | | 50 | 4850 | 22.1 | 7.84 | 2.15 |
| | | | 50 | 4860 | 22.1 | 7.84 | 2.14 |
| | | | | | | | |
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| | | | | | | | |
| TOTAL: | 13 | | 400 | Total Water Removed: | | | 400 |

Southern California Edison



| | | | |
|---|---|---|---|
| Client: Redondo Generating Station | | | Well Number: RW-14 |
| Project: Ground Water Quality Monitoring Program | | | Well Construction Data |
| Date Started: AUG 5 99 | Date Completed: AUG 5 99 | | Screen: 0.02-inch slot From: 4 - To: 14 |
| Logged By: P. Hamilton | Checked By: P. Hamilton | | Pack: Lone Star #3 From: 3 - To: 14 |
| Drilling Co.: Odyssey | Driller: D. Loftis | | Seal: Bentonite From: 1 - To: 3 |
| Method: Hollow Stem Auger | Equipment: SIMCO | | Grout: Cement From: 0 - To: 1 |
| Boring Depth (feet)/Diameter: 15.0 | Measuring Point Elevation (feet): 6.71 | | Casing Size: 4-inch PVC Flush threaded |
| Initial GW Level (feet): ▽ 4.33 | GW Level (feet): ▼ 4.53 | Time/Date: 8/11/99 | Protective Casing: 10-inch Sch 80 PVC |

| Depth Feet | Blow Count | Sample | Description | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | 0 | |
| | 5 9 12 | X | **Silty Sand**, gray, moist, medium to coarse grained gravel pH=7.99 | | | | Cement Seal<br>Bentonite Seal |
| | 6 11 14 | X | **Sand**, tan, moist, coarse grained, uniform rounded grains pH=7.68<br>Saturated | | | | 4" PVC blank casing |
| 5 | 2 4 6 | X | pH=7.71 | | | 5 | |
| | | | | | | | Lone Star #3 Gravel Pack, calculated 5 cu.ft. used 4.5 cu.ft.<br>Method of placement: slowly poured as augers were removed |
| 10 | | | | | | 10 | |
| | | | | | | | 4" PVC screen casing<br>Bottom Cap |
| 15 | | | Total Depth of Drill Hole = 15 feet | | | 15 | Bottom sluff due to running, saturated sand |

# Well Development

## Redondo Generating Station

### Well ID: RW-14

| Date | Water Added | Water Removed | | E.C. | Temp | pH | Turbidity |
|---|---|---|---|---|---|---|---|
| | | Bailed | Pumped | | | | |
| 8/5/99 | 9 | | | 834 | | | |
| 8/6/99 | | | 150 | 964 | 22.6 | 7.34 | 6.27 |
| | | | 200 | 967 | 22.5 | 7.33 | 5.31 |
| | | | 100 | 966 | 22.6 | 7.34 | 5.29 |
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| | | | | | | | |
| TOTAL: | 9 | | 450 | Total Water Removed: | | | 450 |

Southern California Edison



| | | | |
|---|---|---|---|
| Client: Redondo Generating Station | | | Well Number: RW-15 |
| Project: Ground Water Quality Monitoring Program | | | Well Construction Data |
| Date Started: AUG 5 99 | Date Completed: AUG 5 99 | | Screen: 0.02-inch slot From: 4 - To: 14 |
| Logged By: P. Hamilton | Checked By: P. Hamilton | | Pack: Lone Star #3 From: 3 - To: 14 |
| Drilling Co.: Odyssey | Driller: D. Loftis | | Seal: Bentonite From: 1 - To: 3 |
| Method: Hollow Stem Auger | Equipment: SIMCO | | Grout: Cement From: 0 - To: 1 |
| Boring Depth (feet)/Diameter: 15.0 | Measuring Point Elevation (feet): 6.15 | | Casing Size: 4-inch PVC Flush threaded |
| Initial GW Level (feet): 4.34 | GW Level (feet): 4.54 | Time/Date: 8/11/99 | Protective Casing: 10-inch Sch 80 PVC |

| Depth Feet | Blow Count | Sample | Description | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | 0 | |
| | | | **Silty Sand**, gray, moist, medium to coarse grained gravel | | | | Cement Seal |
| | | | pH=8.10 | | | | Bentonite Seal |
| | 4 7 11 | | **Sand**, tan, moist, coarse grained, uniform rounded grains | | | | |
| | 5 7 13 | | pH=7.84 | | | | 4" PVC blank casing |
| 5 | | | Saturated | | | 5 | |
| | 1 4 7 | | pH=7.58 | | | | |
| | | | | | | | Lone Star #3 Gravel Pack, calculated and used 5 cu.ft. |
| | | | | | | | Method of placement: slowly poured as augers were removed |
| 10 | | | | | | 10 | |
| | | | | | | | 4" PVC screen casing |
| | | | | | | | Bottom Cap |
| 15 | | | | | | 15 | Bottom sluff due to running, saturated sand |
| | | | Total Depth of Drill Hole = 15 feet | | | | |

# Well Development

## Redondo Generating Station

**Well ID: RW-15**

| Date | Water Added | Water Removed | | E.C. | Temp | pH | Turbidity |
|---|---|---|---|---|---|---|---|
| | | Bailed | Pumped | | | | |
| 8/5/99 | 9 | | | 745 | | | |
| 8/6/99 | | | 200 | 2731 | 22.6 | 7.43 | 9.64 |
| | | | 200 | 2972 | 22.5 | 7.45 | 3.98 |
| | | | 150 | 2989 | 22.6 | 7.46 | 3.77 |
| | | | 100 | 2974 | 22.6 | 7.47 | 3.75 |
| | | | | | | | |
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| **TOTAL:** | 9 | | 650 | **Total Water Removed:** | | | 650 |

Southern California Edison



| | | | |
|---|---|---|---|
| Client: Redondo Generating Station | | | Well Number: RW-16 |
| Project: Ground Water Quality Monitoring Program | | | Well Construction Data |
| Date Started: AUG 4 99 | Date Completed: AUG 4 99 | | Screen: 0.02-inch slot From: 4 - To: 14 |
| Logged By: P. Hamilton | Checked By: P. Hamilton | | Pack: Lone Star #3 From: 3 - To: 14 |
| Drilling Co.: Odyssey | Driller: D. Loftis | | Seal: Bentonite From: 1 - To: 3 |
| Method: Hollow Stem Auger | Equipment: SIMCO | | Grout: Cement From: 0 - To: 1 |
| Boring Depth (feet)/Diameter: 15.0 | Measuring Point Elevation (feet): 5.76 | | Casing Size: 4-inch PVC Flush threaded |
| Initial GW Level (feet): 4.94 | GW Level (feet): 4.85 | Time/Date: 8/11/99 | Protective Casing: 10-inch Sch 80 PVC |

| Depth Feet | Blow Count | Sample | Description | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | 0 | |
| | 5<br>11<br>17 | X | **Silty Sand**, dark gray, moist, medium to coarse grained gravel<br>pH=8.28 | | | | Cement Seal<br>Bentonite Seal |
| 5 | 4<br>7<br>12 | X | **Sand**, tan, moist, coarse grained, uniform rounded grains<br>pH=8.16<br>Saturated | | | 5 | 4" PVC blank casing |
| | 7<br>12<br>19 | X | pH=7.88 | | | | |
| | 3<br>6<br>8 | X | pH=7.72 | | | | Lone Star #3 Gravel Pack, calculated and used 5 cu.ft.<br>Method of placement: slowly poured as augers were removed |
| 10 | | | | | | 10 | |
| | | | | | | | 4" PVC screen casing |
| | | | | | | | Bottom Cap |
| 15 | | | | | | 15 | Bottom sluff due to running, saturated sand |
| | | | Total Depth of Drill Hole = 15 feet | | | | |

# Well Development

## Redondo Generating Station

**Well ID: RW-16**

| Date | Water Added | Water Removed | | E.C. | Temp | pH | Turbidity |
|---|---|---|---|---|---|---|---|
| | | Bailed | Pumped | | | | |
| 8/4/99 | 9 | | | 764 | | | |
| 8/5/99 | | | 200 | 2698 | 22.6 | 7.44 | 5.64 |
| | | | 150 | 2657 | 22.6 | 7.46 | 2.07 |
| | | | 150 | 2655 | 22.6 | 7.46 | 1.07 |
| | | | 50 | 2654 | 22.6 | 7.47 | 1.05 |
| | | | | | | | |
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| **TOTAL:** | 9 | | 550 | **Total Water Removed:** | | | 550 |

Southern California Edison



| | | | |
|---|---|---|---|
| Client: Redondo Generating Station | | | Well Number: RW-17 |
| Project: Ground Water Quality Monitoring Program | | Well Construction Data | |
| Date Started: AUG 4 99 | Date Completed: AUG 4 99 | Screen: 0.02-inch slot | From: 4 - To: 14 |
| Logged By: P. Hamilton | Checked By: P. Hamilton | Pack: Lone Star #3 | From: 3 - To: 14 |
| Drilling Co.: Odyssey | Driller: D. Loftis | Seal: Bentonite | From: 1 - To: 3 |
| Method: Hollow Stem Auger | Equipment: SIMCO | Grout: Cement | From: 0 - To: 1 |
| Boring Depth (feet)/Diameter: 15.0 | Measuring Point Elevation (feet): 5.70 | Casing Size: 4-inch PVC Flush threaded | |
| Initial GW Level (feet): ▽ 5.45 | GW Level (feet): ▼ 5.41 / Time/Date: 8/11/99 | Protective Casing: 10-inch Sch 80 PVC | |

| Depth Feet | Blow Count | Sample | Description | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | 0 | |
| | | | **Silty Sand**, brown, moist, medium to coarse grained | | | | Cement Seal |
| | | | | | | | Bentonite Seal |
| | 4 13 19 | X | pH=8.11 | | | | 4" PVC blank casing |
| | 9 19 26 | X | pH=8.34 | | | | |
| 5 | | | **Sand**, tan, wet, coarse grained, uniform rounded grains | | | 5 | |
| | 11 23 27 | X | pH=8.06 | | | | |
| | | | Saturated | | | | |
| | 3 8 11 | X | pH=7.92 | | | | Lone Star #3 Gravel Pack, calculated 5 cu.ft.- used 4.5 cu. ft. |
| | | | | | | | Method of placement: slowly poured as augers were removed |
| 10 | | | | | | 10 | |
| | | | | | | | 4" PVC screen casing |
| | | | | | | | Bottom Cap |
| 15 | | | | | | 15 | Bottom sluff due to running, saturated sand |
| | | | Total Depth of Drill Hole = 15 feet | | | | |

# Well Development

## Redondo Generating Station

### Well ID: RW-17

| Date | Water Added | Water Removed | | E.C. | Temp | pH | Turbidity |
|---|---|---|---|---|---|---|---|
| | | Bailed | Pumped | | | | |
| 8/4/99 | 9 | | | 823 | | | |
| 8/5/99 | | | 150 | 2010 | 21.8 | 7.28 | 6.33 |
| | | | 100 | 2035 | 21.9 | 7.29 | 2.79 |
| | | | 100 | 2031 | 21.8 | 7.28 | 1.66 |
| | | | 50 | 2030 | 21.7 | 7.27 | 1.67 |
| | | | | | | | |
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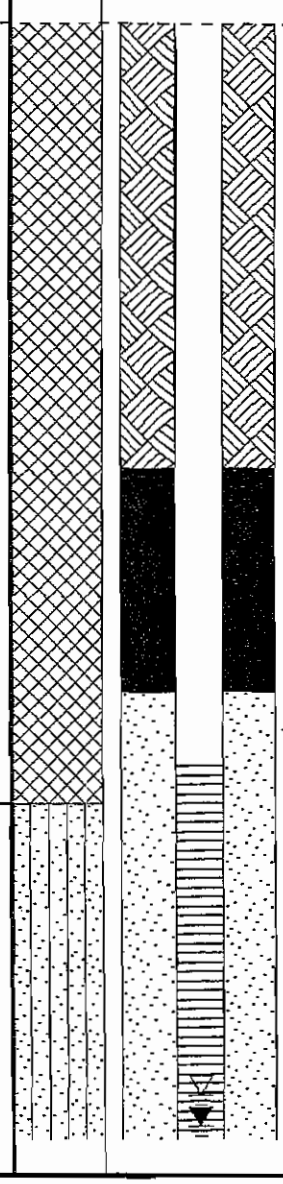
| TOTAL: | 9 | | 400 | Total Water Removed: | | | 400 |

Southern California Edison



| | | | |
|---|---|---|---|
| Client: Redondo Generating Station | | | Well Number: RW-18 |
| Project: Ground Water Quality Monitoring Program | | | Well Construction Data |
| Date Started: AUG 6 99 | Date Completed: AUG 6 99 | | Screen: 0.02-inch slot From: 10 - To: 25 |
| Logged By: P. Hamilton | Checked By: P. Hamilton | | Pack: Lone Star #3 From: 9 - To: 25 |
| Drilling Co.: Odyssey | Driller: D. Loftis | | Seal: Bentonite From: 6 - To: 9 |
| Method: Hollow Stem Auger | Equipment: SIMCO | | Grout: Cement From: 0 - To: 6 |
| Boring Depth (feet)/Diameter: 26.0 | Measuring Point Elevation (feet): 18.19 | | Casing Size: 4-inch PVC Flush threaded |
| Initial GW Level (feet): ▽ 14.41 | GW Level (feet): ▼ 14.83 | Time/Date: 8/11/99 | Protective Casing: 10-inch Sch 80 PVC |

| Depth Feet | Blow Count | Sample | Description | |
|---|---|---|---|---|
| 0 | | | | |
| | | | **Silty Sand**, brown, gravel, brick, glass | |
| | 4 9 14 | X | pH=8.37 | Cement Seal |
| | 9 18 31 | X | pH=8.49 | |
| 5 | | | | |
| | 7 17 24 | X | pH=8.06 | 4" PVC blank casing |
| | 5 10 14 | X | pH=7.98 | Bentonite Seal |
| | 4 7 10 | X | pH=8.09 | |
| 10 | 3 5 8 | X | pH=7.88 | |
| | | | **Silty Sand**, brown, moist, coarse grained gravel, shell fragments | |
| | 4 6 11 | X | Thin gray, clay seams | Lone Star #3 Gravel Pack, calculated and used 7.5 cu.ft. |
| | | | pH=7.79 | |
| | 2 6 9 | X | pH=7.57 | Method of placement: slowly poured as augers were removed |
| | 2 5 8 | X | 4-inch thick layer of medium grained, tan sand | 4" PVC screen casing |
| 15 | | | | |

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Southern California Edison



Project: Ground Water Quality Monitoring Program

Well Number: RW-18

| Depth Feet | Blow Count | Sample | Description | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|
| | 1<br>3<br>5 | X | pH = 7.67<br>**Silty Sand**, brown, saturated, coarse grained shell fragments<br>pH = 7.58<br>Saturated sand began to enter the auger as the center bit was being removed | | | | |
| 20 | | | | | | 20 | |
| 25 | | | **Clay**, gray, wet, plastic, sulfur odor, (pH = 7.63) | | | 25 | Bottom Cap<br>Bottom sluff due to running, saturated sand |
| | | | Total Depth of Drill Hole = 26 feet | | | | |
| 30 | | | | | | 30 | |
| 35 | | | | | | 35 | |

# Well Development

## Redondo Generating Station

### Well ID: RW-18

| Date | Water Added | Water Removed | | E.C. | Temp | pH | Turbidity |
|---|---|---|---|---|---|---|---|
| | | Bailed | Pumped | | | | |
| 8/6/99 | 16 | | | 759 | | | |
| 8/7/99 | | | 200 | 1867 | 21.3 | 7.45 | 22.8 |
| | | | 100 | 1603 | 21.4 | 7.46 | 10.40 |
| | | | 100 | 1584 | 21.4 | 7.47 | 8.37 |
| | | | 50 | 1588 | 21.3 | 7.46 | 6.87 |
| | | | 50 | 1586 | 21.3 | 7.47 | 6.88 |
| | | | | | | | |
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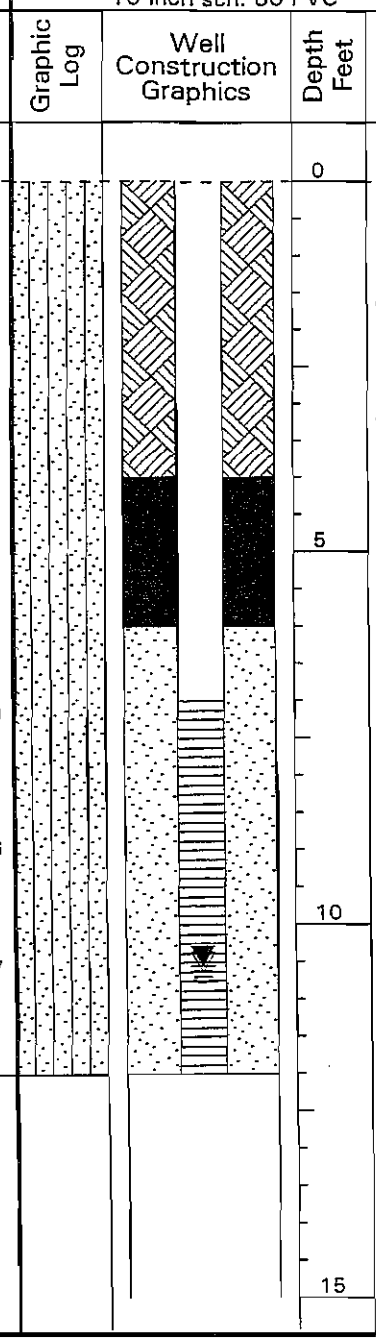
| | | | | | | | |
| TOTAL: | 16 | | 500 | Total Water Removed: | | | 500 |

Southern California Edison



| | | | |
|---|---|---|---|
| Client: Redondo Generating Station | | | Well Number: RW-19 |
| Project: Ground Water Quality Monitoring Program | | | Well Construction Data |
| Date Started: AUG 6 99 | Date Completed: AUG 6 99 | | Screen: 0.02-inch slot From: 7 - To: 12 |
| Logged By: P. Hamilton | Checked By: P. Hamilton | | Pack: Lone Star #3 From: 6 - To: 12 |
| Drilling Co.: Odyssey | Driller: D. Loftis | | Seal: Bentonite From: 4 - To: 6 |
| Method: Hollow Stem Auger | Equipment: SIMCO | | Grout: Cement From: 0 - To: 4 |
| Boring Depth (feet)/Diameter: 12.0 | Measuring Point Elevation (feet): 14.15 | | Casing Size: 4-inch PVC Flush threaded |
| Initial GW Level (feet): ▽ 10.63 | GW Level (feet): ▼ 10.54 | Time/Date: 8/11/99 | Protective Casing: 10-inch sch. 80 PVC |

| Depth Feet | Blow Count | Sample | Description | |
|---|---|---|---|---|
| 0 | | | | |
| | | | **Silty Sand**, brown, moist, gravel<br>Fill debris: brick, cement chips | |
| | 4<br>9<br>12 | X | pH=8.26 | |
| | 8<br>16<br>21 | X | pH=8.04 | |
| 5 | | | | |
| | 3<br>8<br>11 | X | pH=7.86 | |
| | 2<br>7<br>9 | X | pH=7.59 | |
| | 3<br>6<br>11 | X | pH=7.86 | |
| 10 | 2<br>5<br>9 | X | pH=7.37 | |
| | | | Total Depth of Drill Hole = 12 feet<br>Encountered hard layer at 12 feet.<br>Retrieved a piece of asphalt | |
| 15 | | | | |




Well Construction Details

- Cement Seal
- 4" PVC blank casing
- Bentonite Seal
- Lone Star #3 Gravel Pack, calculated and used 3 cu.ft.
- Method of placement: slowly poured as augers were removed
- 4" PVC screen casing
- Bottom cap

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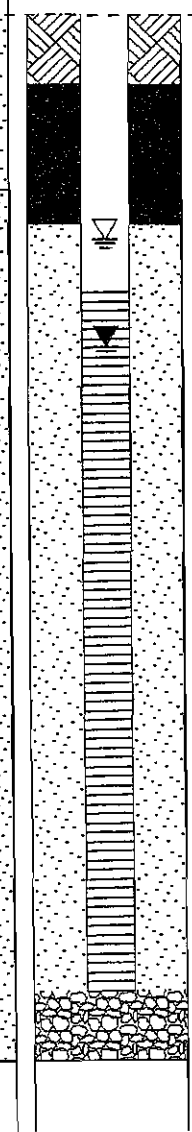
| | | | |
|---|---|---|---|
| Client: Redondo Generating Station | | | Well Number: RW-20 |
| Project: Ground Water Quality Monitoring Program | | | Well Construction Data |
| Date Started: AUG 4 99 | Date Completed: AUG 4 99 | | Screen: 0.02-inch slot From: 4 - To: 14 |
| Logged By: P. Hamilton | Checked By: P. Hamilton | | Pack: Lone Star #3 From: 3 - To: 14 |
| Drilling Co.: Odyssey | Driller: D. Loftis | | Seal: Bentonite From: 1 - To: 3 |
| Method: Hollow Stem Auger | Equipment: SIMCO | | Grout: Cement From: 0 - To: 1 |
| Boring Depth (feet)/Diameter: 15.0 | Measuring Point Elevation (feet): 5.98 | | Casing Size: 4-inch PVC Flush threaded |
| Initial GW Level (feet): ▽ 3.21 | GW Level (feet): ▼ 4.78 | Time/Date: 8/11/99 | Protective Casing: 10-inch Sch 80 PVC |

| Depth Feet | Blow Count | Sample | Description |
|---|---|---|---|
| 0 | | | |
| | | | **Silty Sand**, dark gray, moist, medium to coarse grained gravel |
| | 4<br>8<br>14 | X | **Sand**, tan, moist, coarse grained, uniform rounded grains<br>pH=8.16 |
| | 6<br>10<br>16 | X | pH=7.86<br>Saturated |
| 5 | 3<br>5<br>7 | X | pH=7.77 |
| 10 | | | |
| 15 | | | Total Depth of Drill Hole = 15 feet |

Graphic Log

Well Construction Graphics



| Depth Feet | Well Construction Details |
|---|---|
| 0 | Cement Seal |
| | Bentonite Seal |
| | 4" PVC blank casing |
| 5 | Lone Star #3 Gravel Pack, calculated and used 5 cu.ft. |
| | Method of placement: slowly poured as augers were removed |
| 10 | 4" PVC screen casing |
| | Bottom Cap |
| 15 | Bottom sluff due to running, saturated sand |

# Well Development

## Redondo Generating Station

**Well ID: RW-20**

| Date | Water Added | Water Removed | | E.C. | Temp | pH | Turbidity |
|---|---|---|---|---|---|---|---|
| | | Bailed | Pumped | | | | |
| 8/4/99 | 9 | | | 712 | | | |
| 8/5/99 | | | 150 | 1498 | 21.3 | 7.45 | 4.57 |
| | | | 50 | 1467 | 21.4 | 7.46 | 2.15 |
| | | | 100 | 1465 | 21.4 | 7.47 | 1.44 |
| | | | 50 | 1464 | 21.3 | 7.46 | 1.45 |
| | | | | | | | |
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| | | | | | | | |
| TOTAL: | 9 | | 350 | Total Water Removed: | | | 350 |

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| | | | |
|---|---|---|---|
| Client: Redondo Generating Station | | | Well Number: RW-21 |
| Project: Ground Water Quality Monitoring Program | | | Well Construction Data |
| Date Started: AUG 5 99 | Date Completed: AUG 5 99 | | Screen: 0.02-inch slot From: 9 - To: 24 |
| Logged By: P. Hamilton | Checked By: P. Hamilton | | Pack: Lone Star #3 From: 8 - To: 25 |
| Drilling Co.: Odyssey | Driller: D. Loftis | | Seal: Bentonite From: 5 - To: 8 |
| Method: Hollow Stem Auger | Equipment: SIMCO | | Grout: Cement From: 0 - To: 5 |
| Boring Depth (feet)/Diameter: 25.0 | Measuring Point Elevation (feet): 17.43 | | Casing Size: 4-inch PVC |
| Initial GW Level (feet): ▽ 16.41 | GW Level (feet): ▼ 16.81 | Time/Date: 8/11/99 | Protective Casing: 10-inch Sch 80 PVC |

| Depth Feet | Blow Count | Sample | Description | pH |
|---|---|---|---|---|
| 0 | | | | |
| | | | **Silty Sand**, brown, dry<br>Compacted fill for berm construction<br>Very hard -- difficult drilling | |
| | 12<br>29<br>42 | X | | pH=8.16 |
| | 15<br>44<br>59 | X | | pH=8.34 |
| 5 | | | | |
| | 17<br>38<br>55 | X | | pH=8.58 |
| | 10<br>27<br>41 | X | | pH=8.27 |
| | 12<br>26<br>34 | X | | pH=8.14 |
| 10 | 14<br>31<br>48 | X | | pH=8.11 |
| | 9<br>17<br>26 | X | | pH=7.99 |
| | 5<br>10<br>18 | X | **Silty Sand**, brown, moist, coarse grained gravel, shell fragments | pH=7.81 |
| | 4<br>9<br>14 | X | | pH=7.94 |
| 15 | | | | |

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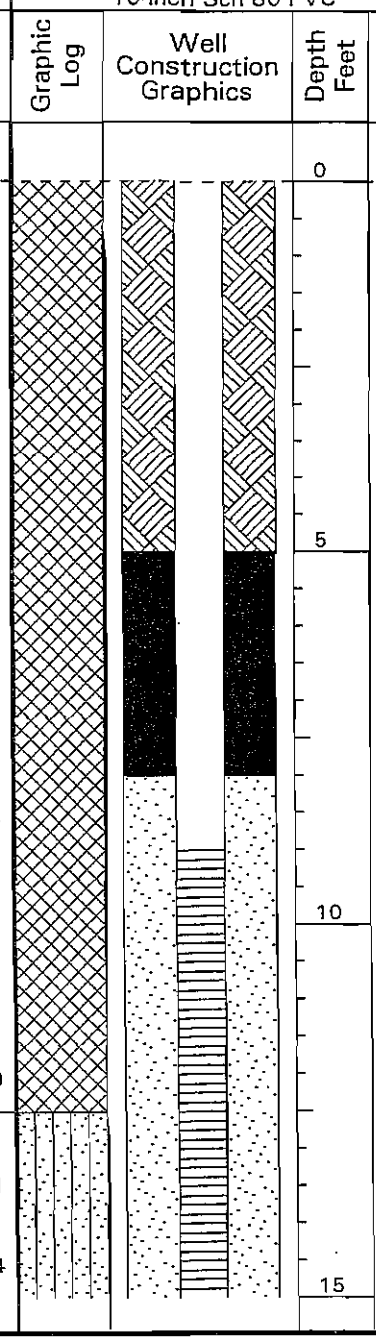


Well Construction Details

- Cement Seal
- 4" PVC blank casing
- Bentonite Seal
- Lone Star #3 Gravel Pack, calculated and used 7.5 cu.ft.
- Methode of placement: slowly poured as augers were removed
- 4" PVC screen casing

Southern California Edison



Project: Ground Water Quality Monitoring Program

Well Number: RW-21

| Depth Feet | Blow Count | Sample | Description | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|
| | 3<br>7<br>11 | X | **Silty Sand**, brown, wet, shell fragments<br>pH=7.68 | | | | |
| | 2<br>4<br>6 | X | Saturated<br>pH=7.87 | | | | |
| | 2<br>3<br>5 | X | pH=7.69 | | | | |
| 20 | | | | | | 20 | |
| | | | Saturated sand began to enter the auger as the center bit was being removed | | | | |
| | | | **Clay**, gray, wet, plastic, sulfur odor (pH=7.81) | | | | Bottom Cap |
| 25 | | | | | | 25 | |
| | | | Total Depth of Drill Hole = 25 feet | | | | |
| 30 | | | | | | 30 | |
| 35 | | | | | | 35 | |

# Well Development

## Redondo Generating Station

**Well ID: RW-21**

| Date | Water Added | Water Removed | | E.C. | Temp | pH | Turbidity |
|---|---|---|---|---|---|---|---|
| | | Bailed | Pumped | | | | |
| 8/5/99 | 16 | | | 837 | | | |
| 8/6/99 | | | 200 | 2988 | 22.8 | 7.48 | 14.4 |
| | | | 100 | 2973 | 22.6 | 7.46 | 9.84 |
| | | | 150 | 2977 | 22.7 | 7.47 | 4.76 |
| | | | 50 | 2975 | 22.7 | 7.47 | 4.77 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| **TOTAL:** | 16 | | 500 | **Total Water Removed:** | | | 500 |

Southern California Edison



| | | | |
|---|---|---|---|
| Client: Redondo Generating Station | | | Well Number: RW-22 |
| Project: Ground Water Quality Monitoring Program | | | Well Construction Data |
| Date Started: AUG 14 99 | Date Completed: AUG 14 99 | | Screen: 0.02-inch slot From: 10 - To: 25 |
| Logged By: P. Hamilton | Checked By: P. Hamilton | | Pack: Lone Star #3 From: 9 - To: 25 |
| Drilling Co.: Odyssey | Driller: D. Loftis | | Seal: Bentonite From: 6 - To: 9 |
| Method: Hollow Stem Auger | Equipment: SIMCO | | Grout: Cement From: 0 - To: 6 |
| Boring Depth (feet)/Diameter: 26.0 | Measuring Point Elevation (feet): 19.17 | | Casing Size: 4-inch PVC Flush threaded |
| Initial GW Level (feet): ▽ 15.62 | GW Level (feet): ▼ 15.94 | Time/Date: 8/16/99 | Protective Casing: 10-inch Sch 80 PVC |

| Depth Feet | Blow Count | Sample | Description | | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | 0 | |
| | | | **Silty Sand**, brown, moist, coarse grained, gravel<br>Gravel covered fill for switchyard | | | | | |
| | 6<br>19<br>34 | X | **Silty Sand**, brown, moist, coarse grained<br>Encountered debris throuhout this layer including glass, brick, wire, plastic | pH=8.14 | | | | Cement Seal |
| | 9<br>19<br>27 | X | | pH=8.09 | | | | |
| 5 | | | | | | | 5 | |
| | 5<br>10<br>16 | X | | pH=8.19 | | | | |
| | 4<br>11<br>18 | X | | pH=8.00 | | | | Bentonite Seal |
| | 3<br>8<br>11 | X | | pH=7.97 | | | | 4" PVC blank Casing |
| 10 | 3<br>6<br>10 | X | | pH=8.06 | | | 10 | |
| | 4<br>8<br>12 | X | **Sand**, tan, wet, coarse grained, rounded grains | pH=7.82 | | | | Lone Star #3 Gravel Pack, calculated and used 7.5 cu.ft. |
| | 5<br>10<br>18 | X | | pH=7.61 | | | | Method of placement: slowly poured as augers were removed |
| 15 | 8<br>14<br>20 | X | | pH=7.57 | | | 15 | |

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Southern California Edison



Project: Ground Water Quality Monitoring Program

Well Number: RW-22

| Depth Feet | Blow Count | Sample | Description | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|
| | 4<br>15<br>24 | X | **Sand**, tan, saturated, coarse grained, rounded grains<br>pH=7.34 | | | | |
| | 7<br>11<br>24 | X | pH=7.48 | | | | 4" PVC screen casing |
| | | | Saturated sand began to enter augers as the center bit was being removed | | | | |
| 20 | | | | | | 20 | |
| 25 | | | | | | 25 | Bottom Cap<br>Bottom sluff due to running, saturated sand |
| | | | Total Depth of Drill Hole = 26 feet | | | | |
| 30 | | | | | | 30 | |
| 35 | | | | | | 35 | |

# Well Development

## Redondo Generating Station

### Well ID: RW-22

| Date | Water Added | Water Removed | | E.C. | Temp | pH | Turbidity |
|---|---|---|---|---|---|---|---|
| | | Bailed | Pumped | | | | |
| 8/14/99 | 16 | | | 741 | | | |
| 8/15/99 | | | 150 | 3541 | 21.8 | 7.43 | 5.71 |
| | | | 50 | 3318 | 21.6 | 7.45 | 3.23 |
| | | | 50 | 3312 | 21.7 | 7.44 | 3.22 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| TOTAL: | 16 | | 250 | Total Water Removed: | | | 250 |

Southern California Edison



| | | | |
|---|---|---|---|
| Client: Redondo Generating Station | | | Well Number: RW-23 |
| Project: Ground Water Quality Monitoring Program | | | Well Construction Data |
| Date Started: AUG 14 99 | Date Completed: AUG 14 99 | | Screen: 0.02-inch slot From: 10 - To: 20 |
| Logged By: P. Hamilton | Checked By: P. Hamilton | | Pack: Lone Star #3 From: 9 - To: 20 |
| Drilling Co.: Odyssey | Driller: D. Loftis | | Seal: Bentonite From: 5 - To: 9 |
| Method: Hollow Stem Auger | Equipment: SIMCO | | Grout: Cement From: 0 - To: 5 |
| Boring Depth (feet)/Diameter: 20.0 | Measuring Point Elevation (feet): 18.92 | | Casing Size: 4-inch PCV Flush threaded |
| Initial GW Level (feet): 14.08 | GW Level (feet): 14.43 | Time/Date: 8/16/99 | Protective Casing: 10-inch Sch 80 PVC |

| Depth Feet | Blow Count | Sample | Description | | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | 0 | |
| | | | **Silty Sand**, brown, moist, coarse grained, gravel<br>Gravel covered fill for switchyard | | | | | |
| | 7<br>14<br>23 | | **Silty Sand**, brown, moist, coarse grained<br>Encountered debris throuhout this layer including glass, brick, wire, plastic | pH=8.37 | | | | Cement Seal |
| | 12<br>19<br>27 | | | pH=8.11 | | | | 4" PVC blank casing |
| 5 | | | | | | | 5 | |
| | 8<br>13<br>24 | | | pH=8.46 | | | | |
| | 10<br>16<br>31 | | | pH=8.57 | | | | Bentonite Seal |
| | 6<br>12<br>23 | | | pH=8.62 | | | | |
| 10 | 4<br>9<br>18 | | | pH=7.89 | | | 10 | |
| | 6<br>10<br>14 | | | pH=7.91 | | | | Lone Star #3 Gravel Pack, calculated and used 5 cu.ft. |
| | 3<br>8<br>12 | | **Silty Sand**, brown, wet, coarse grained<br>rounded gravel, shell fragments | pH=7.49 | | | | Method of placement: Slowly poured as augers were removed |
| | 2<br>6<br>10 | | | pH=7.37 | | | | |
| 15 | | | | | | | 15 | |

Continued Next Page

Southern California Edison



Project: Ground Water Quality Monitoring Program

Well Number: RW-23

| Depth Feet | Blow Count | Sample | Description | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|
| | | X | Saturated | | | | |
| | | | Saturated sand began to enter augers as the center bit was being removed | | | | 4" PVC screen casing |
| 20 | | | Clay, gray, wet, plastic, sulfur odor<br>Sampled for analytical analysis | | | 20 | Bottom Cap |
| | | | Total Depth of Drill Hole = 20 feet | | | | |
| 25 | | | | | | 25 | |
| 30 | | | | | | 30 | |
| 35 | | | | | | 35 | |

# Well Development

## Redondo Generating Station

### Well ID: RW-23

| Date | Water Added | Water Removed | | E.C. | Temp | pH | Turbidity |
|---|---|---|---|---|---|---|---|
| | | Bailed | Pumped | | | | |
| 8/14/99 | 13 | | | 754 | | | |
| 8/15/99 | | | 150 | 4250 | 21.4 | 7.71 | 9.84 |
| | | | 50 | 4248 | 21.4 | 7.62 | 4.91 |
| | | | 50 | 4249 | 21.5 | 7.63 | 3.76 |
| | | | 50 | 4251 | 21.5 | 7.62 | 3.77 |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| **TOTAL:** | 13 | | 300 | **Total Water Removed:** | | | 300 |

Southern California Edison



| | | | |
|---|---|---|---|
| Client: Redondo Generating Station | | | Well Number: RW-24 |
| Project: Ground Water Quality Monitoring Program | | | Well Construction Data |
| Date Started: AUG 11 99 | Date Completed: AUG 11 99 | | Screen: 0.02-inch slot From: 4 - To: 14 |
| Logged By: P. Hamilton | Checked By: P. Hamilton | | Pack: Lone Star #3 From: 3 - To: 14 |
| Drilling Co.: Odyssey | Driller: D. Loftis | | Seal: Bentonite From: 1 - To: 3 |
| Method: Hollow Stem Auger | Equipment: SIMCO | | Grout: Cement From: 0 - To: 1 |
| Boring Depth (feet)/Diameter: 15.0 | Measuring Point Elevation (feet): 6.69 | | Casing Size: 4-inch PVC Flush threaded |
| Initial GW Level (feet): ▽ 4.73 | GW Level (feet): ▼ 4.76 | Time/Date: 8/16/99 | Protective Casing: 10-inch Sch 80 PVC |

| Depth Feet | Blow Count | Sample | Description | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | 0 | |
| | | | **Silty Sand**, brown, moist, medium to coarse grained | | | | Cement Seal |
| | | | | | | | Bentonite Seal |
| | 6 9 15 | X | 2-inch thick clay layer, gray, plastic pH=8.67 | | | | |
| | 5 9 12 | X | | | | | 4" PVC blank casing |
| 5 | | | **Sand**, tan, moist, coarse grained, uniform rounded grains pH=7.98 | | | 5 | |
| | 1 3 6 | X | Saturated pH=7.82 | | | | |
| | | | | | | | Lone Star #3 Gravel Pack, calculated and used 5 cu.ft. |
| | | | | | | | Method of placement: slowly poured as augers were removed |
| 10 | | | | | | 10 | |
| | | | | | | | 4" PVC screen casing |
| | | | | | | | Bottom Cap |
| 15 | | | | | | 15 | Bottom sluff due to running, saturated sand |

Total Depth of Drill Hole = 15 feet

# Well Development

## Redondo Generating Station

### Well ID: RW-24

| Date | Water Added | Water Removed | | E.C. | Temp | pH | Turbidity |
|---|---|---|---|---|---|---|---|
| | | Bailed | Pumped | | | | |
| 8/11/99 | 9 | | | 894 | | | |
| 8/12/99 | | | 150 | 1562 | 21.1 | 7.81 | 5.47 |
| | | | 100 | 1566 | 21.2 | 7.8 | 3.99 |
| | | | 50 | 1565 | 21.1 | 7.81 | 3.98 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| TOTAL: | 9 | | 300 | Total Water Removed: | | | 300 |

Southern California Edison



| | | | |
|---|---|---|---|
| Client: Redondo Generating Station | | | Well Number: RW-25 |
| Project: Ground Water Quality Monitoring Program | | | Well Construction Data |
| Date Started: AUG 11 99 | Date Completed: AUG 11 99 | | Screen: 0.02-inch slot From: 10 - To: 25 |
| Logged By: P. Hamilton | Checked By: P. Hamilton | | Pack: Lone Star #3 From: 9 - To: 25 |
| Drilling Co.: Odyssey | Driller: D. Loftis | | Seal: Bentonite From: 5 - To: 8 |
| Method: Hollow Stem Auger | Equipment: SIMCO | | Grout: Cement From: 0 - To: 5 |
| Boring Depth (feet)/Diameter: 25.0 | Measuring Point Elevation (feet): 17.91 | | Casing Size: 4-inch PVC Flush threaded |
| Initial GW Level (feet): 13.43 | GW Level (feet): 13.62 | Time/Date: 8/16/99 | Protective Casing: 10-inch Sch 80 PVC |

| Depth Feet | Blow Count | Sample | Description | | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | | 0 | |
| | 9 18 32 | X | **Silty Sand**, brown, moist, coarse grained rounded gravel | pH=8.64 | | | | Cement Seal |
| | 12 26 39 | X | 3" gravel layer, moist, tan | pH=8.31 | | | | 4" PVC blank casing |
| 5 | | | | | | | 5 | |
| | 6 18 28 | X | | pH=8.29 | | | | |
| | 4 11 21 | X | 5" tan sand layer, dry, medium grained | pH=8.41 | | | | Bentonite Seal |
| | 5 14 26 | X | | pH=8.11 | | | | |
| 10 | 3 9 16 | X | | pH=8.26 | | | 10 | |
| | 6 11 19 | X | **Silty Sand**, brown, moist, coarse grained gravel, shell fragments | pH=7.94 | | | | Lone Star #3 Gravel Pack, calculated 7.5 cu.ft., used 7 cu.ft. |
| | 3 6 10 | X | | pH=7.48 | | | | Method of placement: slowly poured as augers were removed |
| 15 | 2 8 11 | X | Saturated | pH=7.67 | | | 15 | |

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Southern California Edison



Project: Ground Water Quality Monitoring Program

Well Number: RW-25

| Depth Feet | Blow Count | Sample | Description | Graphic Log | Well Construction Graphics | Depth Feet | Well Construction Details |
|---|---|---|---|---|---|---|---|
| | 2<br>4<br>6 | X | **Silty Sand**, brown, saturated, coarse grained Gravel, shell fragments<br>pH = 7.34<br>Saturated sand began to enter augers as the center bit was being removed | | | | 4" PVC screen casing |
| 20 | | | 4" thick red clay layer, plastic, wet, pH = 7.86 sampled for analytical analysis | | | 20 | |
| 25 | | | **Clay**, gray, wet, plastic, sulfur odor<br>Total Depth of Drill Hole = 25 feet | | | 25 | Bottom Cap |
| 30 | | | | | | 30 | |
| 35 | | | | | | 35 | |

# Well Development

## Redondo Generating Station

### Well ID: RW-25

| Date | Water Added | Water Removed | | E.C. | Temp | pH | Turbidity |
|---|---|---|---|---|---|---|---|
| | | Bailed | Pumped | | | | |
| 8/11/99 | 16 | | | 793 | | | |
| 8/12/99 | | | 200 | 6921 | 21.8 | 7.48 | 4.67 |
| | | | 150 | 6931 | 21.9 | 7.49 | 3.59 |
| | | | 50 | 6935 | 21.8 | 7.48 | 2.64 |
| | | | 100 | 6933 | 21.8 | 7.49 | 2.65 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| TOTAL: | 16 | | 500 | Total Water Removed: | | | 500 |

# Redondo Generating Station Phase II Environmental Site Assessment, 1997

# REDONDO GENERATING STATION
# PHASE II ENVIRONMENTAL SITE ASSESSMENT

**June 1997**

*Submitted to*

## Southern California Edison Company

## Volume 1

*Prepared by:*

CH2MHILL

*3 Hutton Centre Drive, Suite 200*
*Santa Ana, CA 92707*

Revision: Final

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# Executive Summary

At the request of Southern California Edison Company (Edison), CH2M HILL performed a Phase II Environmental Site Assessment (ESA) at the Redondo Generating Station (RGS) located at 1100 Harbor Drive in Redondo Beach, California (Figure 1, Site Vicinity Map, and Figure 2, Redondo Generating Station Facilities Map). The RGS property has been owned and operated by Edison as an electric generating station since 1944. The Phase II ESA was performed to evaluate the environmental condition of the RGS by investigating further evidence of recognized environmental conditions and areas of potential concern identified in the Phase I ESA Report (CH2M HILL, 1997) and other areas of potential concern identified during performance of the Phase II ESA. The primary objective of the Phase II ESA was to determine whether any action is required to address hazardous substances or petroleum products at locations identified as recognized environmental conditions and areas of potential concern at the RGS. A secondary objective was to obtain initial information pertaining to the nature and extent of contaminants identified.

To address these objectives, the following major activities were conducted:

- A comprehensive review of readily available documentation of past and present facility usage and relevant investigations was performed. Both Edison and regulatory agency files were reviewed;
- Interviews with appropriate Edison staff were conducted to obtain additional information;
- A sampling and analysis plan was prepared and implemented to investigate the potential for contamination in soil and groundwater and, if contamination was detected, to provide initial information regarding the nature and extent of the contamination;
- This Phase II Report was prepared to present a summary of the Phase II ESA investigation activities, the investigation results, and the conclusions and recommendations made for each site feature investigated.

Based on the results of the Phase II ESA investigation, no further action is recommended for the site features identified below:

- Transformers
- Pipelines
- Secondary Fuel Pumping Area
- Pig Launching Area

Areas where constituents were detected above the Phase II ESA analytical screening criteria, but remediation may not be required by a regulatory agency, have been identified. It is recommended that Edison undertake a screening evaluation for demonstrating the safety of the site for industrial use and/or approach appropriate agency for a letter which confirms that no risk management or remediation is needed for continued industrial use. The site features associated with these areas are identified below:

- Former USTs area
- Oil/Gas Separator Area

Site features that were not readily accessible for subsurface investigation or where access to the area was restricted due to existing structures and/or operations were either not investigated or the investigation was limited. No further action is recommended for these areas at this time. However, agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of facility decommissioning. The site features associated with these areas are identified below:

- Displacement oil tank area
- Fuel oil storage tank 1 and fuel oil heater area
- Fuel oil storage tanks 2-5
- Valve pit/oily waste sump at units 7 and 8
- Power block
- Aboveground storage tanks
- Primary fuel oil pumping area
- Hazardous waste storage area
- Fuel oil pumping station
- Switchyard
- Demineralizer sump area
- Solvent wash station

Subsurface investigation of surface impoundments, including the resin tank and retention basins, is currently being conducted by Edison in response to a corporate wide negotiated order from DTSC. The investigation includes soil chemistry and groundwater sampling at the retention basins and resin tank. Investigation or assessment of the resin tank is outside the scope of this Phase II ESA.

# 1.0 Introduction

Southern California Edison (Edison) owns and operates an electric generating station located at 1100 Harbor Drive in Redondo Beach, California (Figure 1, Site Vicinity Map). At the request of Edison, CH2M HILL conducted a Phase I Environmental Site Assessment (ESA) (CH2M HILL, 1997) of the Redondo Generating Station (RGS) to achieve the following objectives:

- Provide factual information that may be considered in an appraisal of the facility and adjacent property;
- Provide factual information that may then be factored into an application for rate recovery in connection with environmental conditions at the facility;
- Assist in providing full disclosure of environmental conditions to prospective buyers of the facility.

Subsequent to the Phase I ESA, Edison contracted with CH2M HILL to conduct a Phase II ESA to evaluate soil and groundwater conditions at the site features identified as recognized environmental conditions (RECs) or areas of potential concern (AOPCs).

This report presents the findings of the Phase II ESA and is organized into the following general sections:

- INTRODUCTION—This section presents the purpose and scope of the Phase II ESA, a description of the facility, and a summary of RECs and AOPCs.
- METHODOLOGY—This section presents a summary of previous environmental investigations and remediations, interviews conducted with Edison staff, and a summary of the basis of work and field activities performed at the RGS.
- RESULTS AND DATA EVALUATION—This section presents a summary of the data and findings (i.e., a summary of the local topography, geology and hydrogeology, sample analytical results, and data validation), the criteria used to screen the analytical data, and an assessment of environmental conditions.
- CONCLUSIONS—This section summarizes the findings and conclusions of the Phase II ESA.
- LIMITATIONS—This section provides the limitations on the information and data collected for the Phase II ESA.
- REFERENCES—This section lists the bibliographic information on references cited in this Phase II ESA Report.

## 1.1 Purpose and Scope

At the request of Edison, CH2M HILL performed a Phase II Environmental Site Assessment (ESA) at the RGS (Figure 1). The purpose of the Phase II ESA performed at the RGS is to evaluate soil and groundwater conditions at site features identified as RECs or AOPCs. The primary objective of the Phase II ESA was to determine whether any action is required to address hazardous substances or petroleum products at the facility. A second objective was to obtain initial information pertaining to the nature and extent of contaminants identified.

To address these objectives, the following major activities were conducted:

- A comprehensive review of readily available existing documentation of past and present usage and relevant investigations including review of both Edison and agency files;
- Interviews with appropriate Edison staff to obtain additional information and results of ongoing investigations; and
- Preparing and implementing a Sampling and Analysis Plan to investigate the potential for contamination in soil and groundwater and if contamination was detected, to provide information regarding the nature and extent of contamination.

## 1.2 Site Location and Description

Edison currently owns and operates the RGS, an electric generating station located in Redondo Beach, California. To the west of the station are the King Harbor Marina and the Pacific Ocean. To the south are Beryl Street, hotels, and residential property. To the north are Hernondo Street and commercial and residential property. To the east Pacific Avenue and Catalina Avenue, land use beyond which consists of commercial, light industrial, and residential properties, as shown in Figure 1, Site Vicinity Map. The generating station facilities and site layout are shown in Figure 2.

On May 21, 1997, Edison also reported the possible presence of abandoned oil pipelines located in the off-site area surrounding the RGS. The pipelines are associated with historical uses or the adjacent property. No further information or documentation was available from Edison pertaining to these pipelines. Edison also reported the possible presence of a former sewage sump located under the administration building at the RGS. No additional information was available from Edison pertaining to the sewage sump.

The current use of the facility is an electric generating station comprised of eight gas- or oil-fueled electric generating units. The RGS facility has various storage tanks, equipment, and structures designed to contain several petroleum products. These petroleum products include fuel oil, lube oil, cutter stock, gear oil, mineral oil, gasoline and diesel fuel, and waste oil. The predominant structures located on the property include large aboveground steel tanks that store petroleum products; process units that include boilers, tanks, and various mechanical equipment and vessels; lined retention basins; and buildings for offices, training, and control and maintenance operations.

The term power block as used in this report refers to the part of the generating station where energy is converted from a fuel (fuel oil, distillate, or natural gas) to electricity.

Contained within the power blocks are various structures (such as battery rooms, lube oil rooms, elevators, various sumps, and control rooms) and equipment (such as boilers, pre-heaters, blowers, and turbines).

The RGS was a former marsh and low-lying area that has been filled and regraded to provide the current configuration. Historical records indicate that the first development at the RGS was associated with the construction of four generating units in approximately 1944. Units 1 through 4 are approximately 70-MW natural gas/oil-fired generating units. After this date, the property continued to be developed by Edison for electric generation, with the addition of four units.

# 2.0 Methodology

This section presents a summary of relevant ESA work previously performed at the facility, interviews conducted with Edison staff, results of the regulatory agency file review, the site features investigated, information obtained during regulatory agency file review, and a summary of the basis of work and field activities performed by CH2M HILL at the RGS.

## 2.1 Summary of Previous Environmental Investigations and Remediations

Several environmental investigations and remediations were previously conducted at the RGS. The locations of previous subsurface investigation activities are shown in Figure 3.

One specific area at the RGS that has been previously characterized is the valve pit/oily waste sump for Power Block Units 7 and 8. The valve pit/oily waste sump was investigated in May and June of 1994 (Wallace, 1994). This investigation performed was adequate for the purposes of the Phase II ESA and, consequently, this area was not included in the Phase II ESA subsurface investigation.

Areas impacted by the displacement oil tank were investigated in November 1993 (SCE, 1994). Limited remediation was conducted. However, oil was observed seeping from the remedial excavation after the soil removal action was complete. Consequently, investigation of this area was included as part of the Phase II ESA subsurface investigation.

Previous Edison reports indicate that hydrocarbon impacted soil was observed around the fuel oil heater next to fuel oil tank No. 1 (All American Soils, Inc., 1991a, 1991b, 1992). Most of the impacted soil was removed during remediation of this area in 1991. Approximately 15 cubic yards of impacted soil was reportedly left in place under or near the concrete foundations. Investigation of this area of the site was not included as part of the Phase II ESA subsurface investigation.

An investigation and subsequent soil remediation was conducted in 1986 during removal of three underground storage tanks at the RGS (Hinkle, 1986). Reportedly, not all of the hydrocarbons present in soil were removed. Investigation of this area was included as part of the Phase II ESA.

On May 21, 1997, Edison reported that a past occurrence of soot fall-out from oil burning operations at the RGS impacted the adjacent marina and resulted in a lawsuit filed by the boat owners against Edison. It was reported by Edison to have occurred in approximately the 1970's when the RGS was still burning fuel oil. No other information or documentation was available pertaining to this subject.

An investigation was conducted in 1991 of the oil/gas separator area (All American Soils, Inc., 1991c). Hydrocarbon impacted soil was observed to depths of about 13 feet below ground surface (bgs). In addition, the report indicated that odors from an unknown substance were noted in the top 5 feet of soil. The report recommended additional

investigation including groundwater monitoring. Further investigation of this area was included as part of the Phase II ESA.

In addition to the above investigations, subsurface investigation of surface impoundments, including retention basins, is currently being conducted by Edison in response to a corporate-wide negotiated order from DTSC. The investigation includes soil chemistry and groundwater sampling at the retention basins. This investigation is in progress and results are pending. Investigation or assessment of the retention basin areas are outside the scope of this Phase II ESA.

## 2.2 Interviews Conducted

Interviews were conducted with generating station and general office personnel. Questions were asked concerning unresolved issues in the Phase I ESA and other areas of potential environmental concern, including the fuel oil storage Tank No. 4, transformers, power block, pipelines, primary fuel oil pumping area, fuel oil pipeline, resin tanks, and the oil/gas separator area.

## 2.3 Regulatory Agency File Review

CH2M HILL completed a review of regulatory agency files for the RGS during January 1997. The specific agencies visited and the relevant results of the file reviews are described below. Copies were made of documents that contained pertinent and relevant information for additional review and evaluation.

### U.S. EPA

CH2M HILL visited the U.S. Environmental Protection Agency (EPA) office in San Francisco, California in January 1997, and reviewed the file for the RGS. The file contained copies of permit applications, permits, NPDES monitoring reports, and miscellaneous correspondence.

### RWQCB, Los Angeles

CH2M HILL reviewed the file for the RGS at the RWQCB in January 1997. The file contained miscellaneous correspondence, including a copy of a letter to the RWQCB describing a discharge of chemical cleaning wastewater that occurred in February 1987. Based on the information in the letter, approximately 180,000 gallons of wastewater were released, and 100,000 gallons were recovered. Approximately 80,000 gallons were discharged to the soil. Edison is currently implementing a Water Quality Monitoring Program to evaluate the potential impact to soil and groundwater by the RGS retention basins (see Section 3.3.2).

### DTSC

CH2M HILL visited the DTSC in January 1997. The file for the RGS contained copies of NPDES discharge monitoring reports and correspondence.

### Department of Fish and Game

The Department of Fish and Game, Region 5 was contacted for information related to any citations issued to Edison for the RGS. Based on a computer search and physical searches of the files, the Department of Fish and Game reported no citations related to the RGS.

### Redondo Beach Fire Department

CH2M HILL reviewed the file for the RGS at the Redondo Beach Fire Department in January 1997. The file contained copies of inspection reports, hazardous material and chemical inventory documents, and miscellaneous correspondence.

### City of Redondo Beach Building Department

The file for the RGS was reviewed at the City of Redondo Beach Building Department in January 1997. The file contained copies of permits and fees for building, electrical, and plumbing.

Based on the information reviewed at the regulatory agencies listed above, no additional areas of potential concern have been identified at the RGS.

## 2.4 Summary of Investigated Site Features

CH2M HILL performed a Phase I ESA at the RGS facility in 1997. This assessment revealed evidence of a number of recognized environmental conditions and areas of potential concern. During the data evaluation and personnel interviews conducted in preparation for the Phase II ESA subsurface investigation, evidence of additional areas of potential concern beyond those identified in the Phase I ESA was revealed at the RGS. A summary of the site features investigated at the RGS as part of the Phase II ESA, the issues addressed, the investigations performed, results of the investigations, and the recommendations subsequently made for each site feature are presented in Table 1.

## 2.5 Basis of Work and Field Activities

The Phase II ESA investigation was performed in accordance with the *Sampling and Analysis Plan and Quality Assurance Project Plan, Phase II Environmental Site Assessments, SCE Generating Stations*, dated October 18, 1996, prepared by Hydro-Search, Inc., CH2M HILL, and Geraghty & Miller, Inc. (SAP/QAPP) (Hydro-Search, Inc., et al., 1996), and CH2M HILL Addendum No. 1 to the SAP/QAPP dated January 24, 1997.

As indicated in the SAP/QAPP, the majority of the site features to be investigated, as presented in Table 1, can be assigned to one of the following general categories of site features that comprise a typical electric generating station:

- Cooling towers
- Underground storage tanks
- Belowgrade tanks and sumps
- Aboveground tanks
- Switchyard(s)
- Power blocks
- Transformers

- Retention basins
- Pipelines, either above- or belowgrade, abandoned or in use
- Fuel pumping areas

The site features at the RGS that required investigation as part of the Phase II ESA and that could be assigned to one of the general categories listed above were investigated in accordance with the guidelines presented in Table 2. These guidelines were established in the SAP/QAPP to provide a consistent approach for each similar site feature with respect to the number of soil borings per area, soil sample collection depths, and the minimum analytical requirements.

Some features common to the generating stations, such as oil/water separators, lube oil tanks, transformers, and hazardous material storage tanks, are located within the power block area. This area is generally inaccessible to subsurface investigations. Therefore, soil borings were drilled and groundwater samples collected from as close to, and downgradient from, these features as practicable.

In addition to the typical areas of potential concern identified in Table 2 for electric generating stations, features that are unique to the RGS facility and may pose a threat to human health or the environment were also identified for investigation. As indicated in the SAP/QAPP, three unique site features were proposed for investigation at the RGS. These areas are the Hazardous Waste Storage Area, Solvent Wash Station Area, and Oil/Gas Separator Area. Specific issues associated with each of these unique site features and a description of the investigation activities performed as part of the Phase II ESA are presented below.

- **Hazardous Waste Storage Area**—This area stores potentially hazardous liquids such as lubricating oil drums; solvent drums; and, at one time, oil containing PCBs. No soil or groundwater data were available for this area. Therefore, CH2M HILL conducted soil and downgradient groundwater sampling at this area. Samples were analyzed for volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), California Assessment Manual (CAM) metals, and total petroleum hydrocarbons (TPH).

- **Solvent Wash Station Area**—Potentially hazardous liquids such as cleaning solvents were used in this area. No soil or groundwater data were available for this area. Therefore, CH2M HILL conducted soil and downgradient groundwater sampling at the solvent wash station area. Samples were analyzed for VOCs, CAM metals, and TPH.

- **Oil/Gas Separator Area**—This area was investigated in 1991 (All American Soils, Inc., 1991c). Potentially impacted soil and groundwater were encountered during this investigation and it was recommended that additional subsurface investigations and groundwater monitoring be performed. Therefore, CH2M HILL collected soil and downgradient groundwater samples at the oil/gas separator area. Samples were analyzed for VOCs, PCBs, CAM metals, and TPH.

The locations and rationale for the soil and groundwater samples collected during the Phase II ESA investigation are presented in Table 3. Sample locations are shown in Figure 3. In general, the soil and groundwater samples collected during performance of the Phase II ESA investigation were analyzed in accordance with the following standard laboratory analytical test methods. Soil samples were analyzed for volatile organic compounds, in accordance with EPA Method 8260; total petroleum hydrocarbons-diesel, in

accordance with EPA Method 8015, modified to detect diesel; benzene, toulene, ethylbenzene, and xylenes, and TPH-gasoline, in accordance with EPA Method 8020 and Method 8015, modified to detect gasoline; California Assessment Manual metals, in accordance with EPA Methods 200.7, 6010, 7471, and 7841, as noted in Appendix C; polychlorinated biphenyls, in accordance with EPA Method 8080; and pH, in accordance with EPA Method 1501. Groundwater samples were analyzed for volatile organic compounds, in accordance with EPA Method 524.2; total petroleum hydrocarbons-diesel, in accordance with EPA Method 8015, modified to detect diesel; benzene, toluene, ethylbenzene, and xylenes, and TPH-gasoline, in accordance with EPA Method 8020 and Method 8015, modified to detect gasoline; California Assessment Manual metals, in accordance with EPA Methods 200.7, 6010, 7471, and 7841, as noted in Appendix C; polychlorinated biphenyls in accordance with EPA Method 8080; and pH, in accordance with EPA Method 1501.

As indicated above, the Phase II ESA investigation was performed in accordance with the SAP/QAPP and CH2M HILL Addendum No. 1 to the SAP/QAPP dated January 24, 1997. Modifications and deviations from the SAP/QAPP and the rationale for the deviations are summarized below.

- If VOCs were detected in the head space of a soil sampling tube above concentrations of about 50 parts per million (ppm), the soil sample collected from that boring location with the highest head-space reading was analyzed for VOCs in addition to the compounds identified in the SAP/QAPP. The additional analysis was performed in an attempt to identify the source constituents of the head-space reading. Further, if a groundwater sample was to be collected from the given location, the groundwater sample was also analyzed for VOC content in addition to the compounds identified in the SAP/QAPP. The rationale for using a value of about 50 ppm is based on the actual range of values measured in the field that were representative of locations where sampling occurred. A headspace measurement of 50 ppm was selected to optimize the frequency and number of additional samples collected and analyzed for VOCs at the RGS.
- At the request of Edison, four additional hand auger borings were advanced adjacent to fuel oil tanks Nos. 1- 4. Soil samples were collected and analyzed for total petroleum hydrocarbons-diesel (TPH-D).
- Three additional borings within the oil/gas separator area were advanced to explore potentially impacted soil and groundwater. Soil samples were collected and analyzed for TPH-D, total petroleum hydrocarbons-gasoline ($TPH_{(C4-C10)}$), PCBs, and VOCs.

The actual number of samples collected, sample depths, and analysis performed are presented for each site feature investigated in Section 3.0.

# 3.0 Subsurface Investigation Results and Data Evaluation

This section presents a description of the local topography, and the general geologic and hydrogeologic setting; a brief summary of the specific sampling activities performed at each area investigated at the RGS during performance of the Phase II ESA; soil and groundwater sample analytical results; and data validation documentation. This section also presents the criteria used to screen the Phase II ESA analytical data and an assessment of the RGS environmental conditions.

## 3.1 Site Topography, Geology, and Hydrogeology

The topography at the RGS facility is generally flat with the surrounding area topography sloping to the west. Review of existing records and reports indicated that the RGS is a former marsh and low lying area that was filled and regraded to provide the present, relatively flat configuration. Three lithologic units are present, consisting of the Old Dune Sand aquifer, the marsh deposits that form an aquitard, and the underlying Gardena-Silverado aquifer.

The Old Dune Sand aquifer consists of medium-dense, fine-to-medium sand overlying fine-to-medium sand with minor gravel deposits. This aquifer is approximately 20 feet thick. Fill material placed in depressional zones of the Old Dune Sand formation is difficult to distinguish due to its similar sandy characteristics and color. Perched groundwater exists within this formation due to the low permeability of the underlying marsh deposits.

The marsh deposits form an aquitard composed of soft clay, silt, and peat. This low-permeability confining layer is up to 6 feet thick. Over the western portion of the RGS, this confining layer separates the perched groundwater in the Old Dune Sand aquifer from the confined groundwater of the Gardena-Silverado aquifer. However, the marsh deposits are discontinuous along the eastern portion of the RGS, where the Old Dune Sand aquifer is in direct contact with the underlying Gardena-Silverado aquifer.

The Gardena-Silverado aquifer consists of interbedded fine-to-coarse, dense sand with gravel, pebbles, and occasional wood fragments. This deposit is about 140 to 150 feet thick.

The municipal water district operates groundwater injection wells in the vicinity of the RGS. The resulting rise in the water table due to the injection well program has created a need for Edison to operate dewatering wells at the RGS. Currently, groundwater at the site is approximately 3 to 5 feet bgs in the fuel tank areas, where the ground surface elevation is about +8 feet to +12 feet mean sea level (msl). However, within the power block areas, where the average ground surface elevation is about +19 feet msl, groundwater is encountered at depths of about 10 to 13 feet bgs. Natural groundwater flow in the area of the RGS has been altered because of the operation of groundwater dewatering systems. The dewatering systems are designed to remove perched groundwater from the fuel tank and pump station areas. Prior to operation of these systems, groundwater flow was westerly, towards the ocean. Currently, however, shallow groundwater flows in a southeastern

direction, as shown in Figures 2 and 3. Since the groundwater in the area is brackish, no potable water wells are located in the vicinity of the RGS.

## 3.2 Analytical Data Screening Criteria

A set of screening criteria has been established for consistent evaluation of the analytical test results. Comparing sample results to the screening criteria analytical levels provides an indication of environmental conditions that may or may not require future action at the RGS (e.g., site assessment, risk analysis, remediation).

### Soil

Soil sample analytical results were compared to the screening criteria presented below.

- TPH and BTEX were compared to Soil Screening Levels published by the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB) in their May 1996 *Interim Site Assessment and Cleanup Guidebook*. These Soil Screening Levels are summarized in Table 4. Although these thresholds are not promulgated, they provide a conservative screening criteria for evaluation of TPH and BTEX analytical results.

  The RGS is located adjacent to the Pacific Ocean and, consequently, groundwater beneath the site has been impacted by saltwater intrusion. Total dissolved solids (TDS) have been measured in groundwater at concentrations up to 5,800 mg/L at the RGS, which is above the RWQCB exemption criteria (3,000 mg/L) for defining groundwater considered to be a drinking water resource or having beneficial uses under SWRCB Resolution 88-63. Consequently, in accordance with the LARWQCB's May 1996, Interim Site Assessment and Cleanup Guidebook, is evaluate TPH and BTEX concentrations in soil overlying a non-drinking water aquifer, regardless of depth, the "TPH for >150 feet "soil screening level category was used and, the soil BTEX screening levels were set at 100 times the respective MCLs.

  Note that results for soil and groundwater samples analyzed for total petroleum hydrocarbons-diesel (TPH-D) in accordance with EPA Method 8015, modified to detect diesel, are reported with respect to two carbon ranges, C10 to C24 and C25 to C40. The data is reported in accordance with these carbon ranges to differentiate the TPH sufficiently to compare the detected concentrations in soil against the LARWQCB soil screening levels for TPH. Consequently, when a sample was analyzed for TPH-D, the method is called out as such in the text. Likewise, if a given carbon range was detected, the results are identified in the text as "$TPH_{(C10-C24)}$" or "$TPH_{(C25-C40)}$", as appropriate. For samples analyzed for BTEX and TPH-gas in accordance with EPA Method 8015/8020, modified, the TPH-gas results are reported in the text as "$TPH_{(C4-C10)}$", in accordance with the respective carbon range, again to readily allow for comparison against the LARWQCB soil screening levels for TPH.

- The Toxic Substance Control Act (TSCA) cleanup threshold for total PCBs of 50 ppm was selected to evaluate PCB concentrations detected in soil. These screening levels are presented in Table 4.

- Concentrations of other constituents detected in the soil samples were compared to U.S. Environmental Protection Agency (EPA) Region IX generic Preliminary Remediation Goals (PRGs), if available, for soil under industrial land use conditions. These PRGs are

summarized in Table 4. In general, these PRGs are conservative, health-based standards (i.e., incremental cancer risk less than $10^{-6}$, and a noncancer hazard index less than one). In addition, these thresholds are also typically protective of groundwater resources. A site-specific risk assessment may demonstrate that less stringent PRGs would be appropriate at the RGS. It should be noted that soil naturally contains metals, so quantitative detected values are normal and expected.

As a secondary screening step for CAM metals, soil samples analytical results were compared to total threshold limit concentrations (TTLCs) California Title 22, 66261.24, that represent criteria for determining if a waste is hazardous.

Arsenic was frequently detected in soil samples during the RGS Phase II ESA investigation. In most cases, arsenic was the only CAM metal that exceeded the PRG screening criteria and was typically detected at concentrations less than 8 mg/kg. A report on element concentrations in soils of the conterminous United States prepared by the US Geological Survey indicates that the mean arsenic concentration in the western United States is 7 mg/kg and the typical range for background is <0.1 mg/kg to 97 mg/kg (USGS, 1984). These data suggest that in soil samples collected at the RGS where arsenic is the only CAM metal detected above the screening criteria and it was present at concentrations below about 8 mg/kg, these occurrences of arsenic may be attributable to naturally occurring background concentrations and, therefore, pose no material risk of harm to public health or the environment.

### PCBs

Wipe sample analytical results were compared to the TSCA cleanup requirements for large spills of low-concentration PCBs and all spills of high-concentration PCBs. Although these requirements are most likely not directly applicable to conditions at the RGS (primarily because they apply to spills that occurred prior to May 4, 1987), they are currently the only available numerical cleanup standards for wipe samples analyzed for PCBs. Consequently, they provide a quantitative criteria for evaluation of PCB concentrations detected in wipe samples from the RGS.

The wipe sample data were compared against a screening criteria of 100 micrograms (µg)/100 square centimeters ($cm^2$), which is the TSCA cleanup requirement for both solid surfaces in outdoor electrical substations and for low contact, outdoor surfaces in other restricted access (nonsubstation) areas.

### Groundwater

Groundwater analytical data were compared to the State of California Maximum Contaminant Levels (MCLs) for drinking water. A compilation of the applicable state and federal MCL drinking water standards is also provided in Table 4. Note that there is no criteria for TPH detected in groundwater. In the absence of state MCLs, the default value used is the Federal MCL drinking water standard.

Sample results for the RGS generating station were compared to these screening levels. The screening criteria for this Phase II ESA are <u>not</u> cleanup criteria. They are strictly for comparative purposes and to provide an indication of whether or not additional action should be considered.

# 3.3 Field Activities, Results, and An Assessment of Site Conditions

Focused soil and groundwater investigations were performed at a number of specific areas or features of the RGS as part of the Phase II ESA. A description of these investigations and the resulting data are presented in this section for each general area or site feature investigated during the Phase II ESA. The Phase II ESA investigation data and applicable pre-existing investigation data have been compared to the screening criteria presented above and the results are presented in the following subsections. An evaluation of the quality assurance/quality control data was performed and an assessment of the data quality for the RGS is presented in Section 3.3.24 below.

The Phase II ESA field investigation of the RGS was performed from October 21 through November 11, 1996, and January 28, 1997. Summaries of the constituents detected above the screening criteria in soil and groundwater samples collected from each area investigated during the Phase II ESA are presented in Tables 5 and 6, respectively. Complete summaries of the laboratory analytical results for soil and groundwater are presented in Tables 7 and 8, respectively. All sample collection locations are shown in Figure 3. Soil boring logs; sample location control measurements; laboratory analytical data, chain-of-custody forms, and the data validation packages are contained in Appendixes A, B, and C, respectively.

## 3.3.1 Displacement Oil Tank Area

The displacement oil tank area at RGS was investigated during the Phase II ESA. The location of the displacement oil tank is shown in Figure 2.

Two soil borings were advanced near the displacement oil tank at locations RBH15 and RBH16. Soil samples were collected from 0.5 and 5 feet bgs. Four soil samples were collected and analyzed for TPH-D. Soils encountered during soil boring near the displacement oil tank consisted of well graded sand and silty sand from the ground surface to total boring depths of about 5 feet bgs.

TPH-D was detected at concentrations below the screening criteria in the 5-feet bgs sample at location RBH15. TPH-D was not detected in the other soil samples.

Groundwater was sampled at location RBH15. One groundwater sample was collected and analyzed for TPH-D. Groundwater was encountered at a depth of 6.5 feet bgs at location RBH15 as measured on October 23, 1996.

$TPH_{(C10-C24)}$ and $TPH_{(C25-C40)}$ were detected in the groundwater sample at concentrations of 2.1 mg/L and 0.63 mg/L, respectively.

Based on this information, there is no evidence that the soil near the displacement oil tank has been impacted above the screening criteria by TPH-D. TPH-D was detected in groundwater near the displacement oil tank at low concentrations.

## 3.3.2 Retention Basins

Edison is currently implementing a subsurface investigation of surface impoundments, including retention basins, is currently being conducted by Edison in response to a corporate-wide negotiated order from DTSC. The investigation includes soil chemistry and groundwater sampling at the retention basins.

## 3.3.3 Former Underground Storage Tanks Area

### Evaluation of Previous Investigation Data

Three underground storage tanks were removed in 1986, and a subsurface investigation was subsequently conducted (Hinkle, 1986). The tanks were reported to contain 250 gallons of kerosene, naptha, and thinner-product solvents, respectively. Six borings were drilled and two monitoring wells were installed near the former UST area, shown in Figure 3. The soil consisted of well-graded and poorly graded sand. Soil samples from Borings 1 through 4 were analyzed for TPH, in accordance with EPA Method 418.1, and light hydrocarbons, in accordance with EPA Method 8015. TPH concentrations detected in soil ranged from 106 milligrams per kilogram (mg/kg) at 5 feet bgs to 17,800 mg/kg at 13 feet bgs. TPH concentrations detected in soil samples collected at 20 and 25 feet bgs were 190 mg/kg and 4 mg/kg, respectively. The Phase II ESA screening criterion for soil under the soil and groundwater conditions at the former UST locations is 10,000 mg/kg $TPH_{(C10-C20)}$.

Monitoring wells installed at two boring locations indicated groundwater at 13 feet bgs. The wells were purged for 1.5 hours, and samples were collected and analyzed for TPH. TPH was detected in groundwater samples at concentrations ranging from 6 milligrams per liter (mg/L), prior to purging, to 9 mg/L, after purging. These TPH concentrations are just above the method detection limit.

Based on this information, soil near the former UST area has been impacted by TPH at depths of 13 feet bgs. TPH was detected in groundwater at this location.

### Phase II ESA Investigation and Data Evaluation

One former underground storage tank (UST) area located at the RGS was investigated as part of the Phase II ESA. The former UST consisted of three 250-gallon tanks containing kerosene, naphtha, and thinner product, respectively. The area is referred to as the former UST area and is shown in Figure 3.

Two soil borings were advanced at locations RBH17 and RBH18. Soil samples were collected from depths near the estimated bottom of the tanks, 8 feet bgs, and also at approximately 13 feet bgs. Four soil samples and one duplicate sample were collected from locations near the former UST area and analyzed for TPH-D, benzene, toluene, ethylbenzene, and xylene (BTEX). Soil encountered in the borings near the UST area consisted of fine gravel fill and poorly graded sand from the ground surface to the total boring depth of 16 feet bgs at location RBH17 and 18 feet bgs at location RBH18. The 13-foot-bgs sample at location RBH17 contained TPH-D at a concentration below the screening criteria; TPH-D was not detected in the other soil samples. Soil samples collected from locations RBH17 and RBH18 did not contain BTEX.

Groundwater samples were collected at location RBH17, near the east and downgradient side of the former UST area, and were analyzed for TPH-D and BTEX. Groundwater was encountered at a depth of about 13.0 feet bgs in the vicinity of the former UST area, as measured on October 23, 1996.

Groundwater sampled at RBH17 contained $TPH_{(C25-C40)}$, at a concentration of 0.54 µg/L which is near the method detection limit. Toluene was detected below the screening criteria; no other VOCs were detected.

Based on this information, there is no evidence that soil at the former UST area has been impacted by BTEX or by TPH-D above the screening criteria at the locations investigated during the Phase II ESA. However, previous investigation data indicates that soil near the former UST area has been impacted by TPH-D to depths of up to 20 feet bgs. TPH-D was detected at a concentration near the detection limit in the groundwater sample collected at location RBH17. There is no evidence that groundwater has been impacted above the screening criteria by BTEX.

### 3.3.4 Fuel Oil Storage Tank No. 1 and Fuel Oil Heater Area

#### Evaluation of Previous Investigation Data

Subsurface investigations and a subsequent remediation of the fuel oil heater area were performed in 1991. Investigations consisted of drilling approximately 10 soil borings and excavating two test pits. Borings were drilled to as deep as 16 feet bgs, and the soil encountered was poorly graded, fine- and coarse-grained sand with pea gravel. Selected soil samples were analyzed for TPH. Concentrations of TPH detected in the soil samples ranged from 122 mg/kg to 5,000 mg/kg and extended to depths of 16 feet bgs. Areas of impacted soil were removed by Edison to depths of 1.5 to 5 feet bgs. Removal of all TPH impacted soil was reportedly not possible because of foundation stability concerns for nearby heavy structures. The estimated volume of impacted soil left in place below and around these structures was reported to be 15 cubic yards (All American Soils, Inc., 1991a, 1991b, 1992).

#### Phase II ESA Investigation and Data Evaluation

The fuel oil storage tank No. 1 and fuel oil heater area at RGS was investigated during the Phase II ESA. The location of this area is shown in Figure 2.

Three soil borings were advanced near the storage tank at locations RBH01, RBH02, and RBG58. Soil samples were collected from 0.5 feet bgs and about 3.5 feet bgs at locations RBH01 and RBH02; a soil sample from 5 feet bgs was also collected at location RBH02. At location RBH58, soil samples were collected from 1 and 4.5 feet bgs. Seven soil samples and one duplicate soil sample were collected and analyzed for TPH-D. Soils encountered during soil boring near fuel oil storage tank No. 1 consisted of poorly graded sand and silty sand from the ground surface to total boring depths of about 5 feet bgs.

TPH-D was detected at concentrations below the screening criteria at locations RBH01 and RBH02. TPH-D was not detected at location RBH58.

A temporary piezometer was installed at location RBH01 to collect groundwater samples. One groundwater sample was collected and analyzed for TPH-D. In addition, because elevated headspace measurements were observed at soil boring RBH01, the groundwater sample was also analyzed for VOCs. Groundwater was encountered at a depth of 4 feet bgs as measured on October 24, 1996.

TPH-D and VOCs were not detected in the groundwater sample collected at location RBH01.

Based on this information, there is no evidence that the soil near fuel oil tank No. 1 has been impacted above the screening criteria by TPH-D. In addition, there is no evidence that groundwater has been impacted above the screening criteria by TPH-D or VOCs.

### 3.3.5 Fuel Oil Storage Tank No. 2

The fuel oil storage tank No. 2 area RGS required subsurface investigation during the Phase II ESA. The location of this area is shown in Figure 2.

Four soil borings were advanced near the storage tank at locations RBH03, RBH04, RBH05, and RBH59. Soil samples were collected from 0.5 feet bgs and about 3.5 to 5 feet bgs at locations RBH03, RBH04, and RBH05. At location RBH59, soil samples were collected from 1 and 4.5 feet bgs. Eight soil samples and one duplicate soil sample were collected and analyzed for TPH-D. Soils encountered during soil boring near fuel oil storage tank No. 4 consisted of well and poorly graded sand from the ground surface to total boring depths of about 5 feet bgs.

TPH-D was detected at concentrations below the screening criteria at locations RBH04, RBH05, and RBH59. TPH-D was not detected at location RBH03.

Groundwater was sampled at RBH04. One groundwater sample and one duplicate sample were collected and analyzed for TPH-D. Groundwater was encountered at a depth of 5.6 feet bgs as measured on October 23, 1996.

TPH-D was not detected in the groundwater samples collected at location RBH04.

Based on this information, there is no evidence that the soil near fuel oil tank No. 2 has been impacted above the screening criteria by TPH-D. In addition, there is no evidence that groundwater at this location has been impacted by TPH-D.

### 3.3.6 Fuel Oil Storage Tank No. 3

The fuel oil storage tank No. 3 area at RGS required subsurface investigation during the Phase II ESA. The location of this area is shown in Figure 2.

Four soil borings were advanced near the storage tank at locations RBH06, RBH07, RBH08, and RBG60. Soil samples were collected from 0.5 feet bgs and about 3.5 to 5 feet bgs at locations RBH06, RBH07, RBH08, and RBH60. Eight soil samples were collected and analyzed for TPH-D. Soils encountered during soil boring near fuel oil storage tank No. 3 consisted of poorly graded sand and silty sand from the ground surface to total boring depths of about 5 feet bgs.

TPH-D was detected at concentrations below the screening criteria at locations RBH06, RBH07, and RBH08. TPH-D was not detected at location RBH60.

One groundwater sample was collected at RBH07 and analyzed for TPH-D. Groundwater was encountered at a depth of 5.5 feet bgs as measured on October 23, 1996.

$TPH_{(C25-C40)}$ was detected in the groundwater sample collected at location RBH07 at a concentration of 0.6 mg/L.

Based on this information, there is no evidence that the soil near fuel oil tank No. 3 has been impacted above the screening criteria by TPH-D. TPH-D was detected in groundwater near fuel oil tank No. 3 at a low concentration.

### 3.3.7 Fuel Oil Storage Tank No. 4

The fuel oil storage tank No. 4 area at RGS required subsurface investigation during the Phase II ESA. The location of this area is shown in Figure 2.

Four soil borings were advanced near the storage tank at locations RBH09, RBH10, RBH11, and RBG61. Soil samples were collected from 0.5 feet bgs and 5 feet bgs at locations RBH09, RBG10, and RBH11. At location RBH61, soil samples were collected from 1 and 4.5 feet bgs. Eight soil samples and one duplicate sample were collected and analyzed for TPH-D. Soils encountered during soil boring near fuel oil storage tank No. 4 consisted of well and poorly graded sand and silty sand from the ground surface to total boring depths of about 5 feet bgs.

TPH-D was detected at concentrations below the screening criteria at locations RBH09 and RBH11. TPH-D was not detected at locations RBH10 and RBH61.

No groundwater samples were collected at the fuel oil tank No. 4 area.

Based on this information, there is no evidence that the soil near fuel oil tank No. 4 has been impacted above the screening criteria by TPH-D.

### 3.3.8 Fuel Oil Storage Tank No. 5

The fuel oil storage tank No. 5 area at RGS required subsurface investigation during the Phase II ESA. The location of this area is shown in Figure 2.

Three soil borings were advanced near the storage tank at locations RBH12, RBH13, and RBH14. Soil samples were collected from 0.5 feet bgs and 5 feet bgs. Six soil samples and one duplicate soil sample were collected and analyzed for TPH-D. Soils encountered during soil boring near fuel oil storage tank No. 5 consisted of poorly graded sand from the ground surface to total boring depths of about 5 feet bgs.

TPH-D was detected at concentrations below the screening criteria at locations RBH12, RBH13, and RBH14.

Groundwater was sampled at RBH13. One groundwater sample was collected and analyzed for TPH-D. Groundwater was encountered at a depth of 9.2 feet bgs as measured on October 22, 1996.

$TPH_{(C10-C24)}$ and $TPH_{(C25-C40)}$ were detected in the groundwater sample at concentrations of 1.9 mg/L and 1.2 mg/L, respectively.

Based on this information, there is no evidence that the soil near fuel storage tank No. 5 has been impacted above the screening criteria by TPH-D. TPH-D was detected in groundwater near the displacement oil tank at low concentrations.

### 3.3.9 Oil/Gas Separator Area

#### Evaluation of Previous Investigation Data

Four soil borings, B-1 through B-4, were drilled to explore subsurface environmental conditions at the oil/gas separator area. The borings generally encountered brown silty sand to depths of about 11 feet bgs underlain by black silty sand and heavy black oil to a maximum boring depth of 18 feet bgs. Groundwater was encountered at approximately

14 feet bgs. Odors from an unknown substance were noted within the top 5 feet of soil during the exploration. Soil samples were collected at 0.5-foot, 2 feet, and 15 feet bgs and analyzed for TPH in accordance with EPA Method 8015. The 2-foot-bgs sample was also analyzed for PCBs in accordance with EPA Method 8080. Groundwater was not sampled during this investigation.

The 0.5-foot and 15-foot-bgs samples from borings B-2 and B-3 were composited and analyzed. The sample contained TPH at concentrations of 330 mg/kg and 16 mg/kg, respectively. Gasoline was detected at a concentration of 36 mg/kg in the 2-foot-bgs composited sample. Also, light hydrocarbons and diesel fuel were detected at concentrations of 300 mg/kg and 110 mg/kg, respectively, in the 2- and 15-foot-bgs composited samples. These TPH concentrations are below the Phase II screening criteria.

Based on this information, there is no evidence that soil near the oil/gas separator at boring locations B-2 and B-3 has been impacted above the screening criteria by gasoline or diesel fuel.

### Phase II ESA Investigation and Data Evaluation

The oil/gas separator area located at the RGS was investigated as part of the Phase II ESA. This area is shown in Figure 2.

One initial soil boring was advanced near the oil/gas separator area at location RBH54. Soil samples were collected at 8.5, 11.0, and at approximately 13.0 feet bgs and analyzed for TPH-D, $TPH_{(C4-C10)}$, VOCs, and PCBs. Based on visual observations, soil encountered at location RBH54 was impacted by an oily substance. Consequently, subsequent to the completion of RBH54, three borings were advanced at locations RBH55, RBH56, and RBH57 to further investigate the oil/gas separator area. Soil samples were collected at depths ranging from 5.0 to 15.0 feet bgs, and were analyzed for TPH-D, $TPH_{(C4-C10)}$, and PCBs. Soil encountered near the oil/gas separator area consisted of well-graded to poorly graded sand from the ground surface to a total boring depth of about 15 feet bgs. Boring locations RBH54 and RBH57 encountered a sand and oily/gasoline-like mixture at approximately 10 and 13 feet bgs, respectively.

PCBs were not detected in any of the soil samples collected from locations RBH54 through RBH57. TPH-D and VOCs were not detected in the soil samples collected at locations RBH55 and RBH56. At location RBH54, benzene was detected at a concentration of 740 µg/kg (screening criteria is 100 µg/kg) in the soil sample collected at 13 feet bgs. Benzene was also detected at a concentration of 640 µg/kg in the 15 foot bgs sample at location RBH57. $TPH_{(C4-C10)}$ (screening criteria is 1000 µg/kg) was detected in the 11 foot bgs sample at RBH54 at a concentration of 2900 µg/kg and in the 13 foot bgs sample at location RBH54 at a concentration of 4400 µg/kg. These samples also contained VOCs, $TPH_{(C4-C10)}$, and TPH-D below the screening criteria. At location RBH57, $TPH_{(C10-C24)}$ was detected in the 15-foot-bgs sample above the screening criteria (screening criteria is 10,000 mg/kg) at a concentration of 16,000 mg/kg.

Groundwater samples were collected at locations RBH54, RBH55, RBH56, and RBH57. Groundwater samples collected at location RBH54 were analyzed for VOCs and BTEX; at location RBH55 for $TPH_{(C4-10)}$, TPH-D, VOCs, and PCBs; at location RBH56 for TPH-D, $TPH_{(C4-C10)}$, VOCs, and PCBs; and at location RBH57 for VOCs. Groundwater was encountered at a depth of about 13.0 feet bgs at locations RBH54, RBH56, and RBH57 in the vicinity of the oil/gas separator area, as measured on October 24 and November 11, 1996.

Groundwater was encountered at a depth of about 22.0 feet bgs at location RBH55 in the vicinity of the oil/gas separator area, as measured on November 11, 1996.

The groundwater sample collected at location RBH54 contained benzene above the screening criteria (screening criteria is 1 µg/L) at a concentration of 550 µg/L and other VOC constituents below the screening criteria. This sample also contained 50 µg/L of $TPH_{(C4-C10)}$. The groundwater samples collected at locations RBH55 and RBH56 contained $TPH_{(C25-C40)}$ at concentrations of 380 mg/L and 20 mg/L, respectively. The groundwater sample collected at location RBH57 contained trace amounts of VOCs, including 1,1-dichloroethene, propylbenzene, and isopropylbenzene. PCBs were not detected in any of the groundwater samples.

Based on this information, soil near the oil/gas separator area has been impacted by VOCs and TPH-D at concentrations above the screening criteria near locations RBH54 and RBH57 to depths of up to 15 feet bgs. There is no evidence that soil near locations RBH55 and RBH56 has been impacted by VOCs, TPH-D, or PCBs. Groundwater near the oil/gas separator has been impacted by VOCs above the screening criteria, and by TPH-D. There is no evidence that groundwater has been impacted by PCBs.

### 3.3.10 Valve Pit/Oily Waste Sump, Units 7 and 8

No subsurface investigation was performed at this area as part of the Phase II ESA. Subsurface soil was investigated at this area in 1994 (Wallace, 1994). Two borings were drilled in this area. One boring was drilled through the bottom of the oily waste sump, and a soil sample was collected from below the sump bottom at approximately 17.5 feet bgs. Another boring was drilled through the bottom of the valve pit, approximately 5.5 feet bgs, and a soil sample was collected from below the pit bottom. The soil samples were analyzed for TPH, PCBs, VOCs, CAM metals, flammability, reactivity, pH, and toxicity. Results indicate soil beneath the valve pit has potentially been impacted by $TPH\text{-}D_{(C10-C24)}$ at approximately 17 feet bgs, at a concentration of 1300 mg/kg. PCBs and VOCs were not detected. Flammability, reactivity, pH, and toxicity were within the EPA's guidelines for nonhazardous materials. No constituents of potential concern were identified at the oily waste sump.

A groundwater sample was also collected below the bottom of the oily waste sump. The groundwater surface was measured at about 14 feet bgs. The groundwater sample was analyzed for TPH, PCBs, VOCs, pH, and toxicity. TPH, PCBs, and VOCs were not detected in the groundwater sample.

Based on this information, there is no evidence that soil beneath the valve pit at Units 7 and 8 has been impacted by TPH below the pit bottom. There is no evidence that soil or groundwater beneath the oily waste sump at Units 7 and 8 have been impacted by TPH, PCBs, or VOCs.

### 3.3.11 Transformers

The main transformers located near Units 1-4 and Units 5 and 6 at the RGS required investigation as part of the Phase II ESA. The transformer areas are shown in Figure 2.

Four wipe samples were collected of oily residue on concrete foundations supporting the transformers at locations RSS33 through RSS36. The wipe samples were analyzed for PCBs. In addition, soil samples were collected from near surface depths at locations RBH19,

RBH20, RBH21, RBH23, RBH24, RBH27, and RBH28 and were analyzed for PCBs. PCBs were not detected in the wipe samples of the oily residue or in the near surface soil samples.

Based on this information, there is no evidence that the concrete foundations located beneath the transformers in the area have been impacted by PCBs.

## 3.3.12 Power Block

### Phase II ESA Investigation and Data Evaluation

Three power block areas located at the RGS were investigated as part of the Phase II ESA. The power block areas are composed of generating station Units 1- 4, Units 5 and 6, and Units 7 and 8. The power block areas are shown in Figure 2.

### Power Block, Units 1-4

Four soil borings were advanced near Units 1-4 at locations RBH19 through RBH22. Soil samples were collected from about 1 foot bgs and 5 feet bgs. Eight soil samples and one duplicate sample were collected from locations near Units 1-4 and analyzed for TPH-D and CAM metals. Samples collected from boring locations RBH19 through RBH21, which were incorporated as part of the 66kV switchyard perimeter and transformer investigations, were also analyzed for PCBs. Soil encountered during soil boring near Units 1-4 consisted of well-graded to poorly graded sand from the ground surface to a total boring depth of about 14 feet bgs.

TPH-D and CAM metals were detected at concentrations below the screening criteria in soil samples collected at locations RBH19 through RBH22. PCBs were not detected in any of the soil samples collected.

Groundwater samples were collected at locations RBH20 and RBH21, near Units 1-4 and were analyzed for TPH-D and CAM metals. Since RBH20 and RBH21 were advanced next to transformers and the 66kV switchyard perimeter, groundwater samples collected from these locations were also analyzed for PCBs. Groundwater was encountered at a depth of about 13.0 feet bgs in the vicinity of Units 1-4, as measured on October 23, 1996.

TPH-D and PCBs were not detected in any of the groundwater samples. Mercury, was detected above the screening criteria (screening criteria is 0.002 mg/L) at locations RBH20 and RBH21, at concentrations of 0.005 and 0.006 mg/L, respectively. Thallium was detected above the screening criteria (screening criteria is 0.002 µg/kg) at location RBH20 at a concentration of 0.007 µg/kg. However, groundwater beneath the RGS has been impacted by saltwater intrusion and is not considered to have a beneficial use.

### Power Block, Units 5 and 6

Four soil borings were advanced near Units 5 and 6 at locations RBH23 through RBH26. The soil samples were collected from about 0.5-foot bgs and 5 feet bgs. Eight soil samples and two duplicate samples were collected from locations near Units 5 and 6 and analyzed for TPH-D and CAM metals. Samples from boring locations RBH23 and RBH24 were also analyzed for PCBs since these borings were located next to transformers. Soil encountered near Units 5 and 6 consisted of silty gravel to poorly graded sand and silty sand from the ground surface to total boring depths of about 6 and 17 feet bgs.

TPH-D was detected at concentrations below the screening criteria in soil samples collected at locations RBH23 through RBH26. One CAM metal, arsenic, was detected above the screening criteria (screening criteria is 2.4 mg/kg) at locations RBH25 (2.4 mg/kg in the 0.5-foot-bgs sample) and RBH26 (2.6 to 2.9 mg/kg in the 5-foot-bgs and duplicate samples). The arsenic concentrations may be representative of naturally occurring background levels (typical background range is <0.1 to 97 mg/kg). PCBs were not detected in any of the soil samples collected.

Groundwater samples were collected at locations RBH23 and RBH24, near Units 5 and 6 and were analyzed for CAM metals. Because RBH23 and RBH24 were advanced next to transformers, groundwater samples collected from these locations were also analyzed for PCBs. Groundwater was encountered at a depth of about 13.0 feet bgs in the vicinity of Units 5 and 6, as measured on October 23, 1996.

TPH-D and PCBs were not detected in any of the groundwater samples. All detectable concentrations of CAM metals were below the screening criteria except for thallium that was detected at 0.007 mg/L at RBH23 and 0.008 mg/L at RBH24 (screening criteria is 0.002 mg/L). However, groundwater beneath the RGS has been impacted by saltwater intrusion and is not considered to have a beneficial use.

### Power Block, Units 7 and 8

Four soil borings were advanced near Units 7 and 8 at locations RBH27 through RBH30. Boring RBH31, identified in the SAP/QAPP, was attempted but could not be completed due to a utility obstruction. In general, soil samples were collected from about 0.5-foot and 5 feet bgs. Samples at RBH29 were collected at 0.5-foot, 5, 7.5, and 10 feet bgs. Nine soil samples and one duplicate sample were collected from locations near Units 7 and 8 and analyzed for TPH-D and CAM metals. In addition, a soil sample collected at RBH29 was also analyzed for VOCs. Soil encountered during soil boring near Units 7 and 8 consisted of well to poorly graded sand from the ground surface to total boring depths of about 7 and 12 feet.

Tetrachloroethylene (PCE) was detected below the screening criteria in the soil sample collected at a depth of 10 feet bgs at location RBH29; no other VOCs were detected in this sample. TPH-D was detected at concentrations below the screening criteria in soil samples collected at locations RBH27 through RBH29; TPH-D was not detected in soil at location RBH30. At location RBH25, arsenic was detected at the screening criteria (screening criteria is 2.4 mg/kg). This arsenic level may be attributable to naturally occurring background levels (typical range is <0.1 to 97 mg/kg). PCBs were not detected in any of the soil samples analyzed.

A groundwater sample was collected at location RBH29, near Units 7 and 8, and analyzed for TPH-D and CAM metals. Groundwater was encountered at a depth of about 11 feet bgs in the vicinity of Units 7 and 8, as measured on October 23, 1996.

TPH-D and PCBs were not detected in any of the groundwater samples. Several CAM metals including barium, beryllium, cadmium, chromium, lead, mercury, and nickel, were detected at concentrations above the screening criteria (see Table 6).

Based on the information presented above, there is no evidence that soil in the vicinity of the power block units has been impacted by PCBs or impacted above the screening criteria by TPH-D. With the exception of arsenic, which was detected at or above the screening

criteria at Units 5 and 6 and Units 7 and 8, there is no evidence that soil in the vicinity of the power block units has been impacted above the screening criteria by CAM metals or VOCs (VOCs analyzed at RBH29 only). The presence of arsenic in soil may be attributable to naturally occurring background soil concentrations (typical background range is <0.1 to 97 mg/kg). In addition, there is no evidence that groundwater has been impacted by TPH-D or PCBs. Groundwater in the vicinity of the RGS Units 7 and 8 power block area contains metal concentrations above the Phase II ESA screening criteria (MCLs).

### 3.3.13 Pipelines

The vast majority of pipelines at the RGS are located aboveground, and no apparent leaks or spills from the pipelines have been observed or documented. Because there was no evidence that the aboveground pipelines present a material risk of harm to human health or the environment, a subsurface investigation was not specifically performed for the pipelines.

### 3.3.14 Primary Fuel Oil Pumping Area

The primary fuel oil pump area at the RGS was investigated as part subsurface investigation for the Phase II ESA. This area is shown in Figure 2. One soil boring was advanced at the primary fuel oil pump area, at location RBH38. Soil samples were collected from a depth near the bottom of the sump, approximately 13.0 feet bgs. Boring RBH37 identified in the SAP/QAPP was not completed in this area due to collapsing borehole conditions. One soil sample and one duplicate sample were collected from the location near the sump (RBH38) and analyzed for TPH-D. Soil encountered in the boring near the sump consisted of well and poorly graded sand from the ground surface to the total boring depth of 14 feet bgs. $TPH_{(C25-C40)}$ was detected below the screening criteria in soil sampled approximately 1 foot below the sump bottom in location RBH38; $TPH_{(C10-C24)}$ was not detected in the soil sample.

Groundwater was collected at location RBH38 near the sump and analyzed for TPH-D. Groundwater was encountered at a depth of about 11.1 feet bgs in the vicinity of the sump, as measured on October 24, 1996. TPH-D was not detected in the groundwater sample collected at this location.

Based on this information, there is no evidence that soil below the primary fuel oil pump sump area has been impacted above the screening criteria by TPH-D. In addition, there is no evidence that groundwater has been impacted by TPH-D at this location.

### 3.3.15 Fuel Oil Pipeline

Edison reported that a fuel oil pipeline located on the north side of the central retention basin at the RGS had leaked oily water and had undergone repair and soil remediation in the past. No documentation was available describing any further details of an investigation or cleanup of the area. It was reported that the south side of the retention basin may still have some residual contamination as a result of the pipeline leak. Investigation of this area, is included within the retention basin investigation currently being conducted by Edison in response to a corporate-wide negotiated order from DTSC. The investigation includes soil chemistry and groundwater sampling at the retention basins. Investigation or assessment of the retention basins is outside the scope of this Phase II ESA.

### 3.3.16 Resin Tanks

Subsurface investigation of surface impoundments and the demineralization area at RGS would include the area of the resin tanks adjacent the central retention basin. This investigation is currently being conducted by Edison in response to a corporate-wide negotiated order from DTSC. The investigation includes soil chemistry and groundwater sampling at the retention basins and resin tank area. Investigation or assessment of the retention basins is outside the scope of this Phase II ESA.

### 3.3.17 Hazardous Waste Storage Area

The hazardous waste storage area located at the RGS was investigated as part of the Phase II ESA. This area is shown in Figure 2.

Two soil borings were advanced near the hazardous waste storage area at location RBH32 and RBH62. Soil samples were collected at 0.5-foot and at approximately 5 feet bgs. Two soil samples and one duplicate sample were collected and analyzed RBH32 for TPH-D, VOCs, PCBs, and CAM metals. An additional two samples and one duplicate sample from RBH62 were analyzed for VOCs and CAM metals. Soil encountered during soil boring near this area consisted of well-graded and poorly graded sand from the ground surface to a total boring depth of about 15.5 feet bgs.

TPH-D and CAM metals were detected below the screening criteria in the soil samples collected at location RBH32. PCBs and VOCs were not detected in the soil samples collected at location RBH32. CAM metals were detected above the screening criteria in the soil samples collected at location RBH62. Arsenic was detected at a concentration of 6.4 mg/kg (screening criteria is 2.4 mg/kg) at a depth of about 6.0 feet bgs. This arsenic level may be attributable to naturally occurring background levels (typical range <0.1 to 97 mg/kg). Lead was detected at a concentration of 2,550 mg/kg (screening criteria is 1,000 mg/kg). This concentration also exceeds the total threshold limit concentration (TTLC) for lead of 1,000 mg/kg.

Groundwater samples were collected at location RBH32 and analyzed for TPH-D, CAM metals, PCBs, and VOCs. Groundwater was also collected at location RBH62 and analyzed for CAM metals and VOCs. Groundwater was encountered at a depth of about 12.5 feet bgs in the vicinity of the hazardous waste storage area, as measured on November 1, 1996 and at 11.7 feet bgs as measured on January 28, 1997.

VOCs were detected below the screening criteria in the groundwater sample collected at location RBH32. 1,1-Dichloroethene was detected at concentration of 22 µg/L above the screening criteria of 5 µg/L in the groundwater sample collected at RBH62. CAM metals (mercury, beryllium, cadmium, and lead) were detected above the screening criteria in groundwater at RBH62 at concentrations of 0.002 mg/L, 0.02 mg/L, 0.014 mg/L, and 0.027 mg/L respectively. The screening criteria for mercury, beryllium, cadmium, and lead are 0.002 mg/L, 0.004 mg/L, 0.014 mg/L, and 0.015 mg/L respectively. CAM metals mercury and beryllium were detected above the screening criteria in groundwater at RBH32 at concentrations of 0.004 mg/L and 0.005 mg/L respectively. $TPH_{(C25-C40)}$ was detected just above the method detection limit at a concentration of 0.6 mg/L. PCBs were not detected in the groundwater sample.

Based on this information, there is no evidence that soil in the hazardous waste storage area has been impacted by VOCs or PCBs or impacted above the screening criteria by TPH-D.

Groundwater in the hazardous waste storage area has potentially been impacted by carbon tetrachloride above the screening criteria (0.5 µg/L) at a concentration of 13.6 µg/L at RBH62. There is no evidence that groundwater has been impacted by PCBs. Groundwater has, however, been impacted above the screening criteria by VOCs. TPH-D was detected near the detection limit in the groundwater sample collected at this location. In addition, CAM metals, mercury, beryllium, cadmium, and lead were detected at, or above the screening criteria in groundwater. However, groundwater beneath the RGS has been impacted by saltwater intrusion and is not considered to have a beneficial use.

### 3.3.18 Secondary Fuel Oil Pumping Area

The secondary fuel oil pump area at the RGS was investigated as part of the Phase II ESA. This area is shown in Figure 2. Two soil borings were advanced at the secondary fuel oil pump area, at locations RBH39 and RBH40. Soil samples were collected from depths near the bottom of the sump, 5.5 feet bgs, and also at approximately 9.0 feet bgs. Two soil samples were collected from each location near the sump bottom and analyzed for TPH-D. Soils encountered during the soil borings near the sump area consisted mainly of well and poorly graded sand from the ground surface to the total boring depth of about 12.0 feet bgs. Some clayey sand was encountered within the top 3 feet of boring location RBH40. TPH-D was not detected in soil samples obtained from borings RBH39 and RBH40.

Groundwater was collected at location RBH40, which is downgradient from the sump area, and analyzed for TPH-D. Groundwater was encountered at a depth of about 10.4 feet bgs in the vicinity of the sump area, as measured on October 24, 1996. The groundwater sampling location is generally downgradient from the secondary fuel pump sumps.

$TPH_{(C10-C24)}$ and $TPH_{(C25-C40)}$ were detected just above the method detection limit in groundwater collected at location RBH40 at concentrations of 0.7 mg/L and 0.6 mg/L, respectively.

Based on this information, there is no evidence that soil near the secondary fuel oil pump area has been impacted by TPH-D. TPH-D was detected in groundwater collected at a location downgradient from this area at concentrations just above the method detection limit.

### 3.3.19 Fuel Oil Pumping Station

The fuel oil pump station area located at the RGS was investigated as part of the Phase II ESA. The fuel oil pump station area is shown in Figure 2.

Two soil borings were advanced near the fuel oil pump station area at locations RBH41 and RBH42. The soil samples were collected at 0.5-foot and at approximately 5 feet bgs. Four soil samples were collected and analyzed for TPH-D. Soil encountered during soil boring near the pump station consisted of well to poorly graded sand from the ground surface to a total boring depth of about 5 feet bgs. TPH-D was detected at concentrations below the screening criteria in the soil samples obtained from locations RBH41 and RBH42.

A groundwater sample was collected at location RBH42 and analyzed for TPH-D. Groundwater was encountered at a depth of about 1.3 feet bgs in the vicinity of the fuel pump station area, as measured on October 23, 1996. TPH-D was not detected in the groundwater sample collected at location RBH42.

Based on this information, there is no evidence that soil within the fuel oil pump station area has been impacted above the screening criteria by TPH-D. In addition, there is no evidence that groundwater at this location has been impacted by TPH-D.

### 3.3.20 Switchyard

There are two switchyard areas located at the RGS that were investigated as part of the Phase II ESA. The 66 kilovolt (kV) and 220kV switchyard perimeters are shown in Figure 2.

Ten soil borings were advanced at locations RBH19 through RBH21, RBH43 through RBH45, and RBH46 through RBH49 near the 66kV and 220kV switchyard perimeters, respectively. Soil samples were collected from depths near the ground surface and at 2 to 3 feet bgs. Borings advanced at locations RBH19 through RBH21 were also incorporated as part of the power block investigation and, consequently, were extended to depths of about 8 feet bgs, 16 feet bgs, and 14 feet bgs, respectively. Twelve soil samples and three duplicate samples were collected from locations near the 66kV switchyard perimeter, and eight soil samples and one duplicate sample were collected from locations near the 220kV switchyard perimeter. These samples were analyzed for TPH-D and PCBs. Samples collected from locations RBH19 through RBH21, incorporated as part of the power block locations, were also analyzed for CAM metals. Soils encountered during soil boring near the switchyard perimeters consisted of well-graded and poorly graded sand and silty sand from the ground surface to the total boring depths of about 3 feet, 8 feet, and 15 feet bgs.

TPH-D was detected in soil samples collected from all switchyard perimeter boring locations RBH19 through RBH21 and RBH43 through RBH49. However, these concentrations were below the screening criteria. PCBs were not detected in any of the soil samples collected from the perimeter of the switchyards. No CAM metals were detected above the screening criteria at locations RBH19 through RBH21.

Groundwater samples were collected at locations RBH20 and RBH21 (incorporated as part of Power Block investigation) near the 66kV switchyard west perimeter and were analyzed for TPH-D, PCBs, and CAM metals. Groundwater was encountered at a depth of about 13 feet bgs in the vicinity of the 66kV switchyard west perimeter, as measured on October 23, 1996.

TPH-D and PCBs were not detected in any of the groundwater samples. One CAM metal, mercury, was detected above the screening criteria (screening criteria is 0.002 mg/L) at locations RBH20 and RBH21 at concentrations of 0.005 and 0.006 mg/L, respectively.

Based on this information, there is no evidence that soil near the switchyard perimeter has been impacted by PCBs or impacted above the screening criteria by TPH-D or CAM metals. There is no evidence that groundwater has been impacted by TPH-D or PCBs at locations sampled adjacent to the power block areas. One CAM metal, mercury, was detected above the screening criteria in groundwater. However, groundwater beneath the RGS has been impacted by saltwater intrusion and is not considered to have a beneficial use.

### 3.3.21 Demineralizer Sump Area

The demineralizer sump area was investigated as part of the Phase II ESA. The location of this area is shown in Figure 2. One soil boring was advanced at the demineralizer sump area, at location RBH51. Soil samples were collected from depths near the bottom of the sump, 10.0 feet bgs, and also at approximately 12.0 feet bgs. Contrary to what was

proposed in the SAP/QAPP, a boring was not drilled at location RBH50 due to inaccessibility caused by a subsurface obstruction. Two soil samples and one duplicate sample were collected from location RBH51 near the sump bottom and analyzed for CAM metals. Soil encountered during soil boring near the sump area consisted of well-graded and poorly graded sand from the ground surface to the total boring depth of 15 feet.

CAM metals were detected below the screening criteria in soil samples collected at 10 and 12 feet bgs at location RBH51.

Groundwater was collected at location RBH51, which is downgradient from the sump area, and analyzed for CAM metals. Groundwater was encountered at a depth of about 13.7 feet bgs in the vicinity of the sump area, as measured on October 23, 1996.

CAM metals were detected below the screening criteria in groundwater at location RBH51. Groundwater pH was determined to be 7.46.

Based on this information, there is evidence that soil or groundwater near the demineralizer sump area has been impacted above the screening criteria by CAM metals.

### 3.3.22 Solvent Wash Station

The solvent wash station area located at the RGS was investigated as part of the Phase II ESA. The solvent wash station area is shown in Figure 2.

Three soil borings were advanced near the solvent wash station area at locations RBH52, RBH63, and RBH64. The soil samples were collected approximately 0.5-foot and 5.0 feet bgs. Two soil samples and one duplicate sample were collected and analyzed for TPH-D, CAM metals, and VOCs. Two additional soil samples were collected and analyzed for VOCs and CAM metals. Soil encountered during soil boring near this area consisted of well-graded and poorly graded sand from the ground surface to a total boring depth ranging from 12.5 to 15.8 feet bgs.

TPH-D, VOCs, and CAM metals were detected below the screening criteria in the soil samples at this location.

Groundwater samples were collected from the solvent wash station area at locations RBH52, RBH63, and RBH64 and were analyzed for CAM metals and VOCs. Location RBH52 was also analyzed for TPH-D. Groundwater was encountered at a depth of about 12.0 feet bgs in the vicinity of the solvent wash station area, as measured on October 23, 1996 and January 28, 1997.

Trichloroethylene (TCE) was detected above the screening criteria (screening criteria is 5 µg/L) at a concentration of 36.7 µg/L in the groundwater sample collected at location RBH52. Benzene was detected above the screening criteria (screening criteria is 1 µg/L) at a concentration of 12.7 µg/L in the groundwater sample collected at location RBH63. CAM metals (lead, mercury, and thallium) were detected above the screening criteria (0.05, 0.002 mg/L and 0.002 mg/L, respectively) at maximum concentrations of 0.067, 0.009 mg/L, and 0.003 mg/L, respectively. $TPH_{(C10-C24)}$ was detected just above the method detection limit at a concentration of 0.6 mg/L in the groundwater sample. No other VOCs, CAM metals, or TPH-D were detected in the soil samples.

Based on this information, there is no evidence that soil near the solvent wash station area has been impacted above the screening criteria by TPH-D, CAM metals, or VOCs.

Groundwater has been impacted by VOCs and CAM metals above the screening criteria at this location. TPH-D was detected in groundwater at a concentration just above the detection limit. However, groundwater beneath the RGS has been impacted by saltwater intrusion and is not considered to have a beneficial use.

### 3.3.23 Pig Launching Area

The pig launching area at the RGS required subsurface investigation as part of the Phase II ESA. The location of this area is shown in Figure 2. One soil boring was advanced at the pig launching area at location RBH53. Soil samples were collected from 0.5-foot bgs and approximately 4.5 feet bgs. The two soil samples were analyzed for TPH-D. Soil encountered near the pig launching area consisted of fine gravel and poorly graded sand from the ground surface to the total boring depth of 8 feet bgs.

Soil samples collected at 1 foot and 4.5 feet bgs at location RBH53 contained TPH-D at concentrations below the screening criteria. TPH-D was not otherwise detected in the soil samples.

Based on this information, there is no evidence that soil near the pig launching has been impacted above the screening criteria by TPH-D.

### 3.3.24 Quality Assurance/Quality Control Sample Analytical Results

The following summary is based on a detailed analysis of the results for approximately 10 percent of the samples taken at the RGS. Samples were analyzed by CH2M HILL Analytical Services Laboratory in Redding, California, and by Crosby Laboratories, Inc. in Placentia, California. Detailed reports for each laboratory delivery group that was evaluated are contained in Appendix C. Specific issues and summaries are presented below. Overall, the data are of acceptable quality and the completeness objectives have been met.

#### Chain of Custody

Chain-of-custody procedures have been followed and appropriate signatures are available for each sample transfer step.

#### Holding Times

The laboratories analyzed all samples within the method and/or contractual holding times.

#### Initial and Continuing Calibration

No calibration issues that affected data usability were observed in the data or discussed in the laboratory case narratives.

#### Method Blanks

Method blanks were performed at the required frequency and no data are qualified due to laboratory contamination.

#### Quantitation and Sensitivity

It was necessary, on occasion, to dilute some samples due to either interfering substances or high target values. No data are qualified because of dilution.

### Surrogate Recovery

In some cases, the complexity in the matrix characteristics or high concentrations of target analytes of the samples under investigation resulted in interference in the recovery of surrogates in some cases.

### Method Spike Sample

This QC sample is used to assess the agreement between the experimental determination of analytes and the true value of the parameter being measured by measuring the recovery of spiked solutions into a normal environmental sample. Although some other monitored parameters in this report indicate a complex and potentially interfering matrix, no data are specifically qualified because of matrix spike performance.

### Completeness

No data were rejected for quality control exceedances. The overall completeness objective of 95 percent was met.

### Field QC Samples

Equipment blanks, trip blanks and ambient blanks were collected and analyzed. No data are qualified because of these analyses.

### Chromatographic Patterns for Petroleum Hydrocarbons

In a few cases, the hydrocarbon "fingerprint" for diesel or diesel range organics did not match the calibration standard. In these few cases, the analyte levels are an approximation. The hydrocarbons exist, but their exact concentration is not known due to the pattern recognition analysis. See Report 96100018 - SW8015M-E for details and samples affected.

### Coelution Interference

Coelution of analytes or unidentified hydrocarbons affected the quantitation of sample numbers RBH54BS0102 and RBH54BS0103 in the BTEX analysis. See Report 96100018 - SW8015-P/Aromatics for details. Analyte levels are estimated in these samples.

### Conclusions

The following conclusions can be drawn from the data quality evaluation process:

- The laboratories analyzed the samples according to the work plan as demonstrated by acceptable laboratory QC sample performance.
- Spike recoveries results indicate a complex sample matrix.
- None of the analytical data was rejected during the data review and validation process.

These data can be used in the project decision making process without further qualification.

# 4.0 Conclusions and Recommendations

The primary objective of the Phase II ESA performed at the RGS was to determine whether any action is necessary to address hazardous substances or petroleum products at the investigated site features. To assess whether a release has occurred that might require future action, a conservative set of analytical screening criteria was established based on state and federal regulations and guidance policies. Pre-existing investigation data and results from the Phase II ESA investigation were compared to the analytical screening criteria to provide an indication of the environmental conditions at each of the site features investigated. The following is a summary of this comparative analysis. The conclusions drawn from this comparative analysis are presented below.

The recommendations provided below are based on the results of this Phase II ESA. For areas where contamination was either not detected or was detected at de minimis concentrations, and the investigation was adequate and complete for the purpose of this Phase II ESA, no further action is recommended. De minimis conditions are defined herein as soil concentrations below: 1) soil screening levels published by the LARWQCB (1996), 2) the TSCA cleanup threshold for total PCBs, and 3) EPA Region IX generic Preliminary Remediation Goals (PRGs); and groundwater concentrations below State of California MCLs. Also, areas where constituents were detected above the Phase II ESA analytical screening criteria, but remediation may not be required by a regulatory agency, have been identified. In connection with these areas, it is recommended that Edison undertake a screening evaluation for demonstrating the safety of the site for industrial use and/or approach appropriate agency for a letter which confirms that no risk management or remediation is needed for continued industrial use. Finally, site features that were either not readily accessible for subsurface investigation or access to the areas was restricted were either not investigated or the investigation performed was limited as described below. No further action is recommended for these areas at this time. However, agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of facility decommissioning.

The following conclusions and recommendations are organized and presented in accordance with the list of investigated site features identified in Table 1.

## Displacement Oil Tank Area

Soil near the displacement oil tank has been impacted above the screening criteria by TPH-D. TPH-D was detected in the groundwater sample collected from this location at a concentration just above the method detection limit. No further action is recommended at this time. However, due to accessibility limitation beneath the tank, agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

## Retention Basins

Investigation or assessment of the retention basins is outside the scope of this Phase II ESA. Subsurface investigation of surface impoundments, including retention basins, is currently

being conducted by Edison in response to a corporate wide negotiated order from DTSC. The investigation includes soil chemistry and groundwater sampling at the retention basins.

## Former Underground Storage Tanks Area

There is no evidence that soil at the former UST location has been impacted above the screening criteria by TPH-D or BTEX at the locations sampled during the Phase II ESA. However, based on information from previous investigations of the area, it appears that soil near the former UST area has potentially been impacted by TPH-D to depths up to 20 feet bgs. Groundwater has also potentially been impacted by TPH and TPH-D at this location. There is no evidence that groundwater has been impacted above the screening criteria by BTEX. It is recommended that Edison undertake a screening evaluation for demonstrating the safety of the site for industrial use and/or approach appropriate agency for a letter which confirms that no risk management or remediation is needed for continued industrial use.

## Fuel Oil Storage Tank No. 1 and Fuel Oil Heater Area

There is no evidence that soil near fuel oil tank No. 1 has been impacted above the screening criteria by TPH-D. In addition, groundwater sampled near fuel oil tank No. 1 was not impacted by TPH-D or VOCs. No further action at this time is recommended. However, due to accessibility limitations beneath the tank, agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

Edison previously investigated the fuel oil heater area and performed remediation of TPH contaminated soils in 1991. Removal of all of the reported TPH contaminated soils was not possible due to the reported inaccessibility of the soil beneath the pipeline and the instability of nearby foundations that would result from excavation. Based on this information, no further action at this time is recommended for the fuel oil pipeline area. However, due to accessibility limitations the pipeline area, agency negotiation, additional sampling, and/or remediation may be necessary as part of decommissioning.

## Fuel Storage Tank No. 2

There is no evidence that the soil near fuel oil tank No. 2 has been impacted above the screening criteria by TPH-D. In addition, there is no evidence that groundwater at this location has been impacted by TPH-D. No further action is recommended for this tank area at this time. However, due to accessibility limitations beneath the tank, agency negotiation, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

## Fuel Oil Storage Tank No. 3

There is no evidence that the soil near fuel tank No. 3 has been impacted above the screening criteria by TPH-D. TPH-D was detected in groundwater near fuel oil tank No. 3 at a low concentration. However, due to accessibility limitations beneath the tank, agency negotiation, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

## Fuel Oil Storage Tank No. 4

There is no evidence that soil near fuel oil tank No. 4 has been impacted above the screening criteria by TPH-D. No further action is recommended for this tank area at this time. However, due to accessibility limitations beneath the tank, agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

## Fuel Oil Storage Tank No. 5

There is no evidence that the soil near fuel storage tank No. 5 has been impacted above the screening criteria by TPH-D. TPH-D was detected in groundwater near the displacement oil tank at low concentrations. However, agency negotiation, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

## Oil/Gas Separator Area

Soil near the oil/gas separator has potentially been impacted by TPH-D ($C_4$-$C_{10}$) and VOCs (Benzene) to depths of 15 feet bgs. Groundwater has also potentially been impacted by TPH-D and VOCs (benzene) at this location. It is recommended that Edison undertake a screening evaluation for demonstrating the safety of the site for industrial use and/or approach appropriate agency for a letter which confirms that no risk management or remediation is needed for continued industrial use. It is our understanding that Edison has approached the DTSC regarding this site feature.

## Valve Pit/Oily Waste Sump, Units 7 and 8

Based on information from a previous investigation of the valve pit at Units 7 and 8, there is no evidence that soil has been impacted by PCBs or VOCs, or that groundwater has been impacted by TPH, PCBs, or VOCs. No further action at this time is recommended for the valve pit at Units 7 and 8. However, due to accessibility limitations beneath the tank valve pit, agency negotiation, additional sampling, and/or remediation may be necessary as part of decommissioning.

Based on information from a previous investigation, there is no evidence that soil and groundwater beneath the oily waste sump at Units 7 and 8 have been impacted by TPH, PCBs, or VOCs. No further action at this time is recommended for the oily waste sump at Units 7 and 8. However, due to accessibility limitations beneath the sump, agency negotiation, additional sampling, and/or remediation may be necessary as part of decommissioning.

## Transformers

There is no evidence that the concrete foundations located beneath the transformers have been impacted by PCBs. In addition, there is no evidence that groundwater has been impacted by PCBs at the transformer locations. No further action is recommended for the power block main transformers.

## Power Block

There is no evidence that soil in the vicinity of the power block units has been impacted by PCBs or impacted above the screening criteria by TPH-D. With the exception of arsenic, which was detected at or above the screening criteria at Units 5 and 6 and Units 7 and 8, there is no evidence that soil in the vicinity of the power block units has been impacted

above the screening criteria by CAM metals or VOCs (VOCs analyzed at RBH23 only). There is no evidence that groundwater has been impacted by TPH-D or PCBs. Several CAM metals were detected above the screening criteria in the groundwater samples. No further action at this time is recommended for the power blocks area. However, due to accessibility limitations beneath the power block area, agency negotiation, additional sampling, and/or remediation may be necessary as part of decommissioning

## Pipelines

The vast majority of pipelines at the RGS are located aboveground, and no apparent leaks or spills from the pipelines have been observed or documented. Because there was no evidence that the aboveground pipelines present a material risk of harm to public health or the environment, a subsurface investigation was not performed specifically for the pipelines part of the Phase II ESA. No further action is recommended for the pipelines.

## Primary Fuel Oil Pumping Area

There is no evidence that soil in the primary fuel pump sump area has been impacted above the screening criteria by TPH-D, or that groundwater has been impacted by TPH-D. No further action is recommended at this time for the primary fuel oil pumping area. However, due to accessibility limitations beneath the pumping area, agency negotiation, additional sampling, and/or remediation may be necessary as part of decommissioning.

## Fuel Oil Pipeline

Subsurface investigation of surface impoundments and the demineralization area at the RGS would include the fuel oil pipeline adjacent to the retention basins. This investigation is currently being conducted by Edison in response to a corporate wide negotiated order from DTSC. The investigation includes soil chemistry and groundwater sampling at the retention basins and fuel oil pipeline area. Investigation or assessment of the fuel oil pipeline is outside the scope of this Phase II ESA.

## Resin Tanks

Subsurface investigation of surface impoundments, including the resin tank and retention basins, is currently being conducted by Edison in response to a corporate wide negotiated order from DTSC. The investigation includes soil chemistry and groundwater sampling at the retention basins and resin tank. Investigation or assessment of the resin tank is outside the scope of this Phase II ESA.

## Hazardous Waste Storage Area

There is no evidence that soil in the hazardous waste storage area has been impacted by PCBs or impacted above the screening criteria by VOCs or TPH-D. Soils in the hazardous waste storage area have potentially been impacted above the screening criteria by CAM metals. Soil in the hazardous waste storage area have also exceeded the TTLC value for lead and any soil excavation and/or removal in this area may required additional sampling prior to disposal offsite. There is no evidence that groundwater has been impacted by PCBs. TPH-D was detected in the groundwater sample collected from this location at a concentration just above the method detection limit. VOCs and CAM metals were detected above the screening criteria and have potentially impacted the groundwater at this location. Lead exceeded the TTLC value in one sample at one location at RGS (RBH62). Therefore, if

future excavation activities occur at this location, the waste generated may be classified as hazardous due to lead concentrations above the TTLC. No further action at this time is recommended for the hazardous waste storage area. However, due to accessibility limitation beneath the storage area, agency negotiation, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. It must be noted that the oil/gas separator area may be a potential source of subsurface contamination affecting the hazardous waste storage area.

### Secondary Fuel Pumping Area

There is no evidence that soil near the secondary fuel pump area has been impacted by TPH-D. TPH-D was detected in the groundwater sample collected from this location at a concentration just above the method detection limit. No further action is recommended for the secondary fuel pump area.

### Fuel Oil Pumping Station

There is no evidence that soil within the fuel oil pump station area has been impacted above the screening criteria by TPH-D. In addition, there is no evidence that groundwater has been impacted by TPH-D in this area. No further action at this time is recommended for the fuel oil pump station area. However, due to accessibility limitation beneath the pumping station, agency negotiation, additional sampling, and/or remediation may be necessary as part of decommissioning.

### Switchyard

There is no evidence that soil near the switchyard perimeters has been impacted by PCBs or impacted above the screening criteria by TPH-D or CAM metals. In addition, there is no evidence that groundwater has been impacted by TPH-D or PCBs; however, groundwater may have been impacted by CAM metals at this location. No further action at this time is recommended for the switchyard areas. However, agency negotiation, additional sampling, and/or remediation may be necessary as part of decommissioning.

### Demineralizer Sump Area

There is no evidence that soil or groundwater near the demineralizer sump area has been impacted above the screening criteria by CAM metals. No further action at this time is recommended for the demineralizer sump area. However, due to accessibility limitations inside the switchyard area, agency negotiation, additional sampling, and/or remediation may be necessary as part of decommissioning.

### Solvent Wash Station

There is no evidence that soil near the solvent wash station area has been impacted above the screening criteria by TPH-D, VOCs, or CAM metals. Groundwater has been impacted by VOCs and CAM metals near the solvent wash station. TPH-D was detected in the groundwater sample collected from this location at a concentration just above the method detection limit. No further action at this time is recommended at the solvent wash station. However, due to accessibility limitations beneath the solvent wash station, agency negotiation, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. The solvent wash station was reported by Edison to be no longer in use.

## Pig Launching Area

Soil near the pig launching sump has not been impacted above the screening criteria by TPH. No further action is recommended for the pig launching area.

# 5.0 Limitations

This report has been prepared for the exclusive use of Edison for the specific purpose of evaluating the potential environmental liability associated with the RGS. No warranty, expressed or implied, is made. CH2M HILL makes no representation regarding whether this investigation constitutes "all appropriate inquiry into the previous ownership and uses of this property consistent with good commercial or customary practice" as defined in Section 101(35)(B) of Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). There are no beneficiaries of this report other than Edison, and no third party is entitled to rely upon this report without the written authorization of CH2M HILL, and a written agreement limiting CH2M HILL's liability.

CH2M HILL is not responsible for any claims, damages, or liabilities associated with the interpretation by third parties of these findings or reuse of the analysis, associated site data, or recommendations by third parties without the express written authorization of CH2M HILL. Limitations of this assessment may not be altered or waived without written consent of CH2M HILL.

It was beyond CH2M HILL's authorized scope of work to review: (1) materials containing asbestos, (2) the presence of radon, (3) the presence of lead-based paint, (4) lead in drinking water, (5) identification or delineation of jurisdictional wetlands, (6) issues associated with worker health and safety, (7) issues pertaining to compliance with environmental regulations, or (8) liabilities associated with the offsite management of solid or hazardous wastes. It was also beyond the scope of work to conduct interviews with local government officials. The exclusion of the above items is not a representation of the relevance of these nonscope considerations to the subject property.

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. These services were performed consistent with our agreement with our client. We also do not warrant the accuracy of information supplied by others nor the use of segregated portions of this report.

This is a technical report and is not a legal representation or interpretation of environmental laws, rules, regulations, or policies of local, state, or federal governmental agencies.

Any opinions or recommendations presented herein apply to site conditions existing when services were performed. CH2M HILL is unable to report on or accurately predict events that may change the site conditions after the described services are performed, whether occurring naturally or caused by external forces.

No investigation is thorough enough to exclude the presence of hazardous substances at a given site. If hazardous substances or hazardous conditions have not been identified during the assessment, such a finding should not therefore be construed as a guarantee of the absence of such substances or conditions, but rather as the result of the services performed within the scope and limitations of the work performed.

# Signature Page

The following CH2M HILL Environmental Professionals are primarily responsible for the Phase II ESA performed at the RGS.

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June 3, 1997
Date

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June 6, 97
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**TABLE 1**
**SUMMARY OF INVESTIGATED SITE FEATURES**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SITE FEATURE | ISSUE | PHASE II INVESTIGATION | PHASE II INVESTIGATION RESULTS | RECOMMENDATIONS |
|---|---|---|---|---|
| 1. Displacement Oil Tank Area | Oil seeping from soil above groundwater reported after remediation. | Soil and groundwater sampled and analyzed for TPH-D. Sample locations consisted of the following:<br>RBH15 soil/GW<br>RBH16 soil | TPH-D detected at de minimis concentrations in soil and groundwater.<br>Investigation limited due to restricted access. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. |
| 2. Retention Basins | Basin may have leaks potentially resulting in subsurface contamination. | Edison is currently implementing a Water subsurface investigation of surface impoundments, including retention basins, is currently being conducted by Edison in response to a corporate-wide negotiated order from DTSC. The investigation includes soil chemistry and groundwater sampling at the retention basins. | Not applicable. | Not applicable. |
| 3. Former USTs Area | Hydrocarbons were reportedly detected in soil between 11 and 16 feet bgs. | Soil and groundwater at the former UST were sampled and analyzed for TPH-D and BTEX. Sample locations consisted of the following:<br>RBH17 soil/GW<br>RBH18 soil | De minimis concentrations of TPH-D detected in soil and de minimis concentrations of TPH-D and toluene in groundwater.<br>TPH detected above screening criteria in soil during previous investigations. | Undertake a screening evaluation for demonstrating the safety of the site for industrial use and/or approach appropriate agency for a letter which confirms that no risk management or remediation is needed for continued industrial use. |

**TABLE 1**
**SUMMARY OF INVESTIGATED SITE FEATURES**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SITE FEATURE | ISSUE | PHASE II INVESTIGATION | PHASE II INVESTIGATION RESULTS | RECOMMENDATIONS |
|---|---|---|---|---|
| 4. Fuel Oil Storage Tank 1 and Fuel Oil Heater Area | Hydrocarbons were reportedly detected in soil below fuel heater unit. | Soil at Fuel Oil Tank No. 1 and the fuel heater area were sampled and analyzed for TPH-D. Added a temporary piezometer at location RBH01 groundwater collected and analyzed for TPH-D and VOCs. Sample locations consisted of the following:<br>RBH01 soil<br>RBH02 soil<br>RBH58 soil | TPH-D detected at de minimis concentrations in soil.<br>Investigation limited due to restricted access.<br>Previous soil remediation reports indicated residual TPH contaminated soil was left in the fuel oil heater area due to inaccessibility. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. |
| 5. Fuel Oil Storage Tank 2 | Corrosion protection oil and some localized spill locations are reportedly present. | Soil and groundwater at Fuel Oil Tank No. 2 were sampled and analyzed for TPH-D. Sample locations consisted of the following:<br>RBH03 soil<br>RBH04 soil/GW<br>RBH05 soil<br>RBH59 soil | TPH-D detected at de minimis concentrations in soil.<br>Investigation limited due to restricted access. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. |
| 6. Fuel Oil Storage Tank 3 | Corrosion protection oil and some localized spill locations are reportedly present. | Soil and groundwater at Fuel Oil Tank No. 3 were sampled and analyzed for TPH-D. Sample locations consisted of the following:<br>RBH06 soil<br>RBH07 soil/GW<br>RBH08 soil<br>RBH60 soil | TPH-D detected at de minimis concentrations in soil and groundwater.<br>Investigation limited due to restricted access. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. |

**TABLE 1**
**SUMMARY OF INVESTIGATED SITE FEATURES**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SITE FEATURE | ISSUE | PHASE II INVESTIGATION | PHASE II INVESTIGATION RESULTS | RECOMMENDATIONS |
|---|---|---|---|---|
| 7. Fuel Oil Storage Tank 4 | Reportedly tank previously overflowed; cleanup may have been conducted, but not documented. Potential exists for fuel oil to be present in subsurface. | Soil at Fuel Oil Tank No. 4 was sampled and analyzed for TPH-D. Sample locations consisted of the following:<br>RBH09 soil<br>RBH10 soil<br>RBH11 soil<br>RBH61 soil | TPH-D detected at de minimis concentrations in soil.<br>Investigation limited due to restricted access. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. |
| 8. Fuel Oil Storage Tank 5 | Corrosion protection oil and some localized spill locations are reportedly present. | Soil and groundwater at Fuel Oil Tank No. 5 were sampled and analyzed for TPH-D. Sample locations consisted of the following:<br>RBH12 soil<br>RBH13 soil/GW<br>RBH14 soil | TPH-D detected at de minimis concentrations in soil and groundwater.<br>Investigation limited due to restricted access. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. |
| 9. Oil/Gas Separator Area[1] | Discrepancies exist between field screening and laboratory data for soil samples. Potential soil contamination present. | Soil and groundwater at the oil/gas separator area were sampled and analyzed for TPH-D, TPH-G, VOCs, BTEX, and PCBs as specified in Table 5. Sample locations consisted of:<br>RBH54 soil/GW<br>RBH55 soil/GW<br>RBH56 soil/GW<br>RBH57 soil/GW | TPH and VOCs detected above screening criteria in soil.<br>VOCs detected above screening criteria in groundwater. TPH detected in groundwater. | Undertake a screening evaluation for demonstrating the safety of the site for industrial use and/or approach appropriate agency for a letter which confirms that no risk management or remediation is needed for continued industrial use. |

[1] Also referred to as the natural gas pit area, referenced in the Phase I ESA Report.

**TABLE 1**
**SUMMARY OF INVESTIGATED SITE FEATURES**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SITE FEATURE | ISSUE | PHASE II INVESTIGATION | PHASE II INVESTIGATION RESULTS | RECOMMENDATIONS |
|---|---|---|---|---|
| 10. Valve Pit/Oily Waste Sump at Units 7 & 8 | Leakage was reported to have occurred but was left in place due to the nonhazardous status of residuals and remediation difficulty. | Documentation of previous investigation obtained and reviewed during Phase II ESA. | Valve Pit:<br>TPH-D detected at de minimis concentrations in soil.<br>Investigation limited due to restricted access.<br><br>Oily Waste Sump:<br>No constituents of potential concern detected.<br>Investigation limited due to restricted access. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. |
| 11. Transformers | Transformer oil containing PCBs may have spilled or leaked. | The foundation surface was wipe sampled and analyzed for PCBs. Sample locations consisted of the following:<br>RSS33 surface soil<br>RSS34 surface soil<br>RSS35 surface soil<br>RSS36 surface soil | No PCBs detected. | No further action. |

**TABLE 1**
**SUMMARY OF INVESTIGATED SITE FEATURES**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SITE FEATURE | ISSUE | PHASE II INVESTIGATION | PHASE II INVESTIGATION RESULTS | RECOMMENDATIONS |
|---|---|---|---|---|
| 12. Power Block | Potential for soil and groundwater impacts beneath power block area. | Soil and groundwater at the power blocks were sampled and analyzed for TPH-D, CAM Metals, PCBs, and VOCs, as specified in Table 5. Investigation was limited to the perimeter of the power blocks and excluded areas directly below the power blocks. Sample locations consisted of the following:<br>Unit 1-4: RBH19 soil, RBH20 soil/GW, RBH21 soil/GW, RBH22 soil<br>Unit 5-6: RBH23 soil/GW, RBH24 soil/GW, RBH25 soil, RBH26 soil<br>Unit 7-8: RBH27 soil, RBH28 soil, RBH29 soil/GW, RBH30 soil (samples at RBH31 were not collected due at the direction of Edison.) | TPH-D and CAM Metals detected at de minimis concentrations in soil at Units 1-4 and 5-6.<br>CAM Metal arsenic detected above the screening criteria in soil at unit 5-6.<br>PCBs were not detected in soil or groundwater at Units 1-4 and 5-6.<br>CAM Metal (mercury) detected above the screening criteria in groundwater near units 1-4.<br>CAM Metal (thallium) detected above the screening criteria in groundwater at units 5-6.<br>CAM Metals barium, beryllium, cadmium, chromium, lead, mercury, and nickel detected above the screening criteria in groundwater at units 7-8. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. |

**TABLE 1**
**SUMMARY OF INVESTIGATED SITE FEATURES**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SITE FEATURE | ISSUE | PHASE II INVESTIGATION | PHASE II INVESTIGATION RESULTS | RECOMMENDATIONS |
|---|---|---|---|---|
| Power Block Perimeters (Cont'd) | | | TPH-D and VOCs were detected at de minimis concentrations at Units 7-8.<br>Investigation limited to the perimeter of power blocks. | |
| 13. Pipelines | Potential leaks in old, abandoned, or undocumented pipelines may have impacted soil or groundwater. | Most pipelines are above ground, including most wyes, elbows, valves, and connectors, and no evidence or documentation of a release was observed or obtained during performance of the Phase II ESA. Consequently, a subsurface investigation was not performed specifically for pipelines. However, selected pipelines were investigated simultaneously with other site features such as the pump and transfer stations, as indicated below. | Specific pipes investigated simultaneously with specific areas or features. | No further action. |
| 14. Primary Fuel Oil Pumping Area | Potential for impacted soil reportedly exists. | Soil and groundwater were sampled and analyzed for TPH-D. Sample locations consisted of the following:<br>RBH37 soil - Samples not collected due to collapsing borehole.<br>RBH38 soil/GW | TPH-D detected at de minimis concentrations in soil.<br>Investigation limited due to restricted access. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. |

**TABLE 1**
**SUMMARY OF INVESTIGATED SITE FEATURES**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SITE FEATURE | ISSUE | PHASE II INVESTIGATION | PHASE II INVESTIGATION RESULTS | RECOMMENDATIONS |
|---|---|---|---|---|
| 15. Fuel Oil Pipeline | Reported pipeline leak at south side of central retention basin; residual contamination may be present. | Edison reported that a fuel oil pipeline located on the north side of the central retention basin at the RGS had leaked oily water and had undergone repair and soil remediation in the past. No documentation was available describing any further details of an investigation or cleanup of the area. It was reported that the south side of the retention basin may still have some residual contamination as a result of the pipeline leak. Investigation of this area, is included within the retention basin investigation currently being conducted by Edison in response to a corporate-wide negotiated order from DTSC. The investigation includes soil chemistry and groundwater sampling at the retention basins. Investigation or assessment of the retention basins is outside the scope of this Phase II ESA. | Not applicable. | Not applicable. |
| 16. Resin Tanks | Reported potential for subsurface contamination from retention pond. | Subsurface investigation of surface impoundments at RGS including the area of the resin tanks adjacent the central retention basin is currently being conducted by Edison in response to a corporate-wide negotiated order from DTSC. The investigation includes soil chemistry and groundwater sampling at the retention basins and resin tank area. Investigation or assessment of the retention basins is outside the scope of this Phase II ESA. | Not applicable. | Not applicable. |

**TABLE 1**
**SUMMARY OF INVESTIGATED SITE FEATURES**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SITE FEATURE | ISSUE | PHASE II INVESTIGATION | PHASE II INVESTIGATION RESULTS | RECOMMENDATIONS |
|---|---|---|---|---|
| 17. Hazardous Waste Storage Area | Spill(s) of hazardous waste may have occurred in this area, resulting in potential impact to soil and/or groundwater. | Soil and groundwater at the hazardous materials storage area were sampled and analyzed for TPH-D, CAM Metals, PCBs, and VOCs. The sample locations are: RBH32 soil/GW, RBH62 soil/GW | TPH-D and VOCS detected at de minimis concentrations in soil. PCBs not detected in soil. CAM metals (lead) detected above the screening criteria in soil.<br>VOCs and CAM metals detected at above the screening criteria in groundwater. TPH-D detected at de minimis concentrations in groundwater.<br>Investigation limited due to restricted access. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. |
| 18. Secondary Fuel Pumping Area | Oil observed on soil and concrete. Potential exists for impact to soil and groundwater. | Soil and groundwater were sampled and analyzed for TPH-D. The sample locations consisted of the following:<br>RBH39 soil<br>RBH40 soil/GW | TPH-D detected at de minimis concentrations in soil and groundwater. | No further action. |
| 19. Fuel Oil Pumping Station | Oil observed on soil and concrete. Potential exists for impact to soil and groundwater. | Soil and groundwater were sampled and analyzed for TPH-D. The sample locations consisted of the following:<br>RBH41 soil<br>RBH42 soil/GW | TPH-D detected at de minimis concentrations in soil.<br>Investigation limited due to restricted access. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. |

**TABLE 1**
**SUMMARY OF INVESTIGATED SITE FEATURES**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SITE FEATURE | ISSUE | PHASE II INVESTIGATION | PHASE II INVESTIGATION RESULTS | RECOMMENDATIONS |
|---|---|---|---|---|
| 20. Switchyard | Transformer oil containing PCBs may have spilled. | Soil was sampled and analyzed for TPH-D and PCBs. Investigation limited to perimeter of switchyards and excluded areas within switchyard. The sample locations consisted of the following:<br>66kV switchyard: RBH43 soil, RBH44 soil, RBH45 soil<br>220kV switchyard: RBH46 soil, RBH47 soil, RBH48 soil, RBH49 soil | TPH-D detected at de minimis concentrations in soil. PCB not detected in soils. CAM Metals detected (mercury) above screening criteria in groundwater.<br>Investigation limited to perimeter of switchyards. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. |
| 21. Demineralizer Sump Area | Below ground sumps may have leaked in past. | Soil and groundwater were sampled and analyzed for pH and CAM Metals. The sample locations consisted of the following:<br>RBH50 soil - Samples not collected due to subsurface obstruction.<br>RBH51 soil/GW | CAM Metals detected at de minimis concentrations in soil and groundwater.<br>Investigation limited due to restricted access. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. |
| 22. Solvent Wash Station | Solvent sump/basin may have leaked in past. | Soil and groundwater were sampled and analyzed for TPH-D, VOCs, and CAM Metals. The sample locations are:<br>RBH52 soil/GW, RBH63 soil/GW, RBH64 soil/GW | VOCs, TPH-D, and CAM metals detected at de minimis concentrations in soil. VOCs and CAM Metals detected above screening criteria in groundwater. | No further action at this time. Agency negotiation, additional sampling and/or remediation may be necessary or appropriate as part of decommissioning. The solvent wash station was reported by Edison to be no longer in use. |

**TABLE 1**
**SUMMARY OF INVESTIGATED SITE FEATURES**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SITE FEATURE | ISSUE | PHASE II INVESTIGATION | PHASE II INVESTIGATION RESULTS | RECOMMENDATIONS |
|---|---|---|---|---|
| 23. Pig Launching Area | Subsurface oil sump/pit may have leaked in the past. | Soil was sampled and analyzed for TPH-D. The sample location is: RBH53 soil | TPH-D detected at de minimis concentrations in soil. | No further action. |

Note: No investigation or data evaluation was conducted for areas where the recommendation is indicated to be "not applicable." Also, no investigation or limited investigation was conducted in areas of the facility that either were not readily accessible for investigation or access to the area was restricted. The recommendation provided for these areas is no further action at this time. However, agency negotiation, sampling and/or remediation may be necessary or appropriate for these areas as part of decommissioning.

De minimis conditions are defined herein as soil concentrations below: 1) soil screening levels published by the LARWQCB (1996), 2) the TSCA cleanup threshold for total PCBs, and 3) EPA Region IX generic Preliminary Remediation Goals (PRGs); and groundwater concentrations below State of California MCLs.

**TABLE 2**
**STANDARDIZED GUIDELINES FOR SOIL SAMPLING AND ANALYSIS**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| POTENTIAL AREA OF CONCERN | NUMBER OF SOIL BORINGS | SAMPLE DEPTH(S) FEET BGS | SOIL LABORATORY ANALYSIS |
|---|---|---|---|
| Cooling Tower | 2-4 | 0.5', 3'-5' | CAM Metals (200.7, 6010, 7060, 7421, 7470, 7471)<br>pH (150.1, 9045) |
| Underground Storage Tanks | 2 | See Note 1 | See Note 3 |
| Belowgrade Tanks and Sumps | 1-2 | See Note 1 | See Note 3 |
| Fuel Oil Aboveground Storage Tanks | 3 | See Note 2 | TPH-D (8015M) |
| Distillate Aboveground Storage Tanks | 2 | See Note 2 | TPH-D (8015M) |
| Switch Yard Perimeter | 4 | 0.5', 3' | PCBs (8080)<br>TPH-D (8015M) |
| Power Block Perimeter | 4 | See Note 2 | CAM Metals (200.7, 6010, 7060, 7421, 7470, 7471)<br>TPH-D (8015M) |
| Transformer(s) | <1-2 | 0.5', 3' | PCBs (8080)<br>TPH-D (8015M) |
| Demineralizer and/or Evaporation Pond | 2 | See Note 2 | pH (150.1, 9045)<br>CAM Metals (200.7, 6010, 7060, 7421, 7470, 7471) |
| Underground Piping | 1-5 | Below pipe invert | TPH-D (8015M) |
| Aboveground Tank Outlet | 2 per site | 0.5', 3'-5' | TPH-D (8015M) |
| Fuel Pumping Area | 2 | 0.5', 3'-5' | TPH-D (8015M) |

Notes:
1. Two samples collected: (1) near tank/sump bottom, and (2) 3 to 5 feet below tank/sump bottom.
2. Soil samples collected at 0.5-feet bgs and at 5-foot intervals thereafter until groundwater, refusal, or maximum depth of 20 feet bgs is encountered.
3. Analysis is dependent on tank content or potential source areas that discharge to sump. See Table 3.
bgs = below ground surface.
NA = Not applicable.

**TABLE 3**
**SITE INVESTIGATION METHODS AND RATIONALE**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SAMPLE LOCATION | SAMPLE MATRIX/DEPTH | SAMPLING METHOD | RATIONALE |
|---|---|---|---|
| **Fuel Oil Storage Tank 1** | Soil/Groundwater | Direct Push | No available soil data |
| RBH01 soil/GW | 0.5', 3.0', (4.5'), GW@4'bgs | Hand Auger | PID>10ppm at RBH01 |
| RBH02 soil | 0.5', 4.0', 5.0' | | |
| RBH58 soil | 1.0', 4.5' | | |
| **Fuel Oil Storage Tank 2** | Soil/Groundwater | Direct Push | No available soil or groundwater data |
| RBH03 soil | 0.5', 4.5' | Hand Auger | |
| RBH04 soil/GW | 0.5', 5.0' GW@4'bgs | | |
| RBH05 soil | 0.5', 3.5' | | |
| RBH59 soil | 1.0', 4.5' | | |
| **Fuel Oil Storage Tank 3** | Soil/Groundwater | Direct Push | No available soil or groundwater data |
| RBH06 soil | 0.5', 5.0' | Hand Auger | |
| RBH07 soil/GW | 0.5', 3.5', (5.0'), GW@4.2'bgs | | |
| RBH08 soil | 0.5', 5.0' | | |
| RBH60 soil | 1.0', 4.5' | | |
| **Fuel Oil Storage Tank 4** | Soil | Direct Push | No available soil data |
| RBH09 soil | 0.5', 5.0' | Hand Auger | |
| RBH10 soil | 0.5', 5.0' | | |
| RBH11 soil | 0.5', 5.0' | | |
| RBH61 soil | 1.0', 4.5' | | |
| **Fuel Oil Storage Tank 5** | Soil | Direct Push | No available soil or groundwater data |
| RBH12 soil | 0.5', 5.0', (6.0') | | |
| RBH13 soil/GW | 0.5', 5.0' GW@9.2'bgs | | |
| RBH14 soil | 0.5', 5.0', (7.0') | | |
| **Displacement Oil Tank Area** | Soil /Groundwater 0.5', | Direct Push | No available soil or groundwater data |
| RBH15 soil/GW | 5.0' GW@6.5'bgs | | |
| RBH16 soil | 0.5', 5.0' | | |

**TABLE 3**
**SITE INVESTIGATION METHODS AND RATIONALE**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SAMPLE LOCATION | SAMPLE MATRIX/DEPTH | SAMPLING METHOD | RATIONALE |
|---|---|---|---|
| **Former USTs Area**<br>RBH17 soil/GW<br>RBH18 soil | Soil/Groundwater<br>8.0', 13.0' GW@13'bgs<br>8.0', 14.0' | Direct Push | Reported hydrocarbons at 11 to 16 feet bgs, not environmentally closed |
| **Powerblocks**<br>**Units 1-4**<br>RBH19 soil<br>RBH20 soil/GW<br>RBH21 soil/GW<br>**Units 5-6**<br>RBH23 soil/GW<br>RBH24 soil/GW<br>**Units 7-8**<br>RBH27 soil<br>RBH28 soil | Soil/Groundwater<br><br>1.0', 5.0'<br>1.5', 5.0' GW@12.9'bgs<br>0.7', 5.0' GW@13'bgs<br><br>0.5', 5.0' GW@12.5'bgs<br>0.5', 5.0', (10.0'), GW@12.9'bgs<br><br>0.5', 5.2'<br>0.5', 4.5' | Direct Push,<br>Hand Auger | No available soil or groundwater data, samples to be collected near power blocks and transformers. |
| **Powerblocks**<br>**Units 1-4**<br>RBH22 soil<br>**Units 5-6**<br>RBH25 soil<br>RBH26 soil<br>**Units 7-8**<br>RBH29 soil/GW<br>RBH30 soil<br>RBH31 soil/GW | Soil /Groundwater<br><br>1.0', 5.0'<br><br>0.5', 5.5'<br>0.5', 5.0'<br><br>0.5', 5.0', (7.5'),<br>10.0'GW@11'bgs<br>0.5', 5.0'<br>Not sampled because of utility obstructions | Direct Push,<br>Hand Auger | No available soil or groundwater data, samples to be collected from near power blocks.<br><br>PID>10ppm in sample sleeve |

**TABLE 3**
**SITE INVESTIGATION METHODS AND RATIONALE**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SAMPLE LOCATION | SAMPLE MATRIX/DEPTH | SAMPLING METHOD | RATIONALE |
|---|---|---|---|
| **Hazardous Materials Storage Area** | Soil /Groundwater | Direct Push | No available soil or groundwater data |
| RBH32 soil/GW | 0.5', 5.0', GW@12.5'bgs | | |
| RBH62 soil/GW | 0.5', 4.8', 10.0', GW@11.65' bgs | | |
| **Transformers** | Surficial wipes of oily stains on concrete foundations supporting transformers | Wipe sample | No available data |
| **Units 1-4, 1-main block A** | | | |
| RSS33 surface wipe | | | |
| **Units 1-4, 3-main block A** | | | |
| RSS34 surface wipe | | | |
| **Unit 5** | | | |
| RSS35 surface wipe | | | |
| **Unit 6** | | | |
| RSS36 surface wipe | | | |
| **Primary Fuel Pumping Areas** | Soil/Groundwater | Direct Push | No available soil or groundwater data |
| RBH37 soil | Not conducted | | |
| RBH38 soil/GW | 13.0', GW@11.1'bgs | | |
| **Secondary Fuel Pumping Area** | Soil /Groundwater | Direct Push | No available soil or groundwater data |
| RBH39 soil | 5.5', 8.3' | | |
| RBH40 soil/GW | 5.5', 9.8', GW@10.4'bgs | | |
| **Fuel Oil Pumping Station** | Soil/Groundwater | Hand Auger | No available soil or groundwater data |
| RBH41 soil | 0.5', 3.5' | | |
| RBH42 soil/GW | 0.5', 4.0', GW@1.3'bgs | | |

**TABLE 3**
**SITE INVESTIGATION METHODS AND RATIONALE**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SAMPLE LOCATION | SAMPLE MATRIX/DEPTH | SAMPLING METHOD | RATIONALE |
|---|---|---|---|
| **Switchyards 66kV** | Soil | Direct Push<br>Hand Auger | No available soil data |
| RBH43 soil | 0.2', 2.0' | | |
| RBH44 soil | 0.5', 2.5' | | |
| RBH45 soil | 0.5', 2.6' | | |
| **Switchyards 220kV** | Soil | Direct Push | No available soil data |
| RBH46 soil | 0.5', 3.0' | | |
| RBH47 soil | 0.5', 3.0' | | |
| RBH48 soil | 0.5', 3.0' | | |
| RBH49 soil | 0.5', 3.0' | | |
| **Demineralizer Sumps Area** | Soil/Groundwater | Direct Push | Sump integrity results limited to 3.0' below sump, results are pending |
| RBH50 soil | Not Conducted/Obstruction | | |
| RBH51 soil/GW | 10.0', 12.0', GW@13.7'bgs | | |
| **Solvent Wash Station** | Soil/Groundwater | Direct Push | No available soil or groundwater data |
| RBH52 soil/GW | 1.0' , 5.2', GW@12.5'bgs | | |
| RBH63 soil/GW | 1.4', 5.2', 10.0', GW@11.3' bgs | | |
| RBH64 soil/GW | 1.0', 5.0', 11.4', GW@11.8" bgs | | |
| **Pig Launching Area Sump Area** | Soil | Direct Push | No available soil data |
| RBH53 soil | 0.5', 4.5' | | |
| **Oil/Gas Separator Area** | Soil/Groundwater | Hand Auger<br>Direct Push | Edison reported potentially contaminated soil in the area.<br>No available soil or groundwater data |
| RBH54 soil/GW | 8.5', 11.0', 13.0', GW@12.5'bgs | | |
| RBH55 soil/GW | 13.0', GW@22.0'bgs | | |
| RBH56 soil/GW | 8.9', 15.0, GW@13.4'bgs | | |
| RBH57 soil/GW | 5.0', 8.0', 15.0', GW@12.5'bgs | | |

**TABLE 3**
**SITE INVESTIGATION METHODS AND RATIONALE**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SAMPLE LOCATION | SAMPLE MATRIX/DEPTH | SAMPLING METHOD | RATIONALE |
|---|---|---|---|

Note:
Soil and groundwater samples analyzed in accordance with analytical methods identified in Tables 5 and 6.
( ) Indicates sample was collected, but not analyzed.

TABLE 4
Summary of Analytical Screening Criteria
Redondo Generating Station
Edison Phase II ESA

| Analyte | Soil Screening Criteria [a] | Water Screening Criteria [b] |
|---|---|---|
| **Petroleum Hydrocarbons [c]** | | |
| $TPH_{(C4-C10)}$ | 1,000 mg/kg | -- |
| $TPH_{(C10-C22)}$ | 10,000 mg/kg | -- |
| $TPH_{(C25-C40)}$ | 50,000 mg/kg | -- |
| **Metals** | | |
| Antimony | 680 mg/kg | 0.006 mg/L |
| Arsenic | 2.4 mg/kg | 0.05 mg/L |
| Barium | 100,000 mg/kg | 1 mg/L |
| Beryllium | 1.1 mg/kg | 0.004 mg/L |
| Cadmium | 850 mg/kg | 0.005 mg/L |
| Chromium, VI | 64 mg/kg | -- |
| Chromium, total | 450 mg/kg | 0.05 mg/L |
| Cobalt | 97,000 mg/kg | -- |
| Copper | 63,000 mg/kg | -- |
| Lead | 1,000 mg/kg | 0.015 mg/L |
| Mercury(inorganic) | -- | 0.002 mg/L |
| Molybdenum | 8,500 mg/kg | -- |
| Nickel (soluble salts) | 34,000 mg/kg | 0.1 mg/L |
| Nickel Subsulfide | 11,000 mg/kg | -- |
| Selenium | 8,500 mg/kg | 0.05 mg/L |
| Silver | 8,500 mg/kg | -- |
| Thallium | -- | 0.002 mg/L |
| Vanadium | 12,000 mg/kg | -- |
| Zinc | 100,000 mg/kg | -- |
| **Polychlorinated Biphenyls [d]** | | |
| PCB 1016 | 50,000 ug/kg | 0.5 ug/L |
| PCB 1221 | 50,000 ug/kg | 0.5 ug/L |
| PCB 1232 | 50,000 ug/kg | 0.5 ug/L |
| PCB 1242 | 50,000 ug/kg | 0.5 ug/L |

TABLE 4
Summary of Analytical Screening Criteria
Redondo Generating Station
Edison Phase II ESA

| Analyte | Soil Screening Criteria [a] | Water Screening Criteria [b] |
|---|---|---|
| PCB 1248 | 50,000 ug/kg | 0.5 ug/L |
| PCB 1254 | 50,000 ug/kg | 0.5 ug/L |
| PCB 1260 | 50,000 ug/kg | 0.5 ug/L |
| **Volatile Organic Compounds** | | |
| Benzene | 100 ug/kg [c] | 1 ug/L [c] |
| Bromobenzene | -- | -- |
| Bromochloromethane | -- | -- |
| Bromodichloromethane | 1,400 ug/kg | 100 ug/L |
| Bromoform | 240,000 ug/kg | 100 ug/L |
| Bromomethane | 23,000 ug/kg | -- |
| n-Butylbenzene | -- | -- |
| sec-Butylbenzene | -- | -- |
| tert-Butylbenzene | -- | -- |
| Carbon tetrachloride | 500 ug/kg | 0.5 ug/L |
| Chlorobenzene | 220,000 ug/kg | 70 ug/L |
| Chloroethane | 1,600,000 ug/kg | -- |
| Chloroform | 530 ug/kg | 100 ug/L |
| Chloromethane | 2,600 ug/kg | -- |
| 2-Chlorotoluene | -- | -- |
| 4-Chlorotoluene | -- | -- |
| Dibromochloromethane | 23,000 ug/kg | 100 ug/L |
| 1,2-Dibromo-3-chloropropane | 1,400 ug/kg | 0.2 ug/L |
| 1,2-Dibromoethane | 20 ug/kg | 0.05 ug/L |
| Dibromomethane | 6,800,000 ug/kg | -- |
| 1,2-Dichlorobenzene | 700,000 ug/kg | 600 ug/L |
| 1,3-Dichlorobenzene | 860,000 ug/kg | -- |
| 1,4-Dichlorobenzene | 8,500 ug/kg | 5 ug/L |
| Dichlorodifluoromethane | 310,000 ug/kg | -- |
| 1,1-Dichloroethane | 1,700,000 ug/kg | 5 ug/L |

TABLE 4
Summary of Analytical Screening Criteria
Redondo Generating Station
Edison Phase II ESA

| Analyte | Soil Screening Criteria [a] | Water Screening Criteria [b] |
|---|---|---|
| 1,2-Dichloroethane | 550 ug/kg | 0.5 ug/L |
| 1,1-Dichloroethene | 80 ug/kg | 6 ug/L |
| cis-1,2-Dichloroethene | 100,000 ug/kg | 6 ug/L |
| trans-1,2-Dichloroethene | 270,000 ug/kg | 10 ug/L |
| 1,2-Dichloropropane | 680 ug/kg | 5 ug/L |
| 1,3-Dichloropropane | -- | -- |
| 2,2-Dichloropropane | -- | -- |
| 1,1-Dichloropropene | -- | -- |
| cis-1,3-Dichloropropene | 550 ug/kg | .05 ug/L |
| trans-1,3-Dichloropropene | 550 ug/kg | .05 ug/L |
| Ethylbenzene | 70,000 ug/kg [c] | 700 ug/L [c] |
| Hexachlorobutadiene | 24,000 ug/kg | -- |
| Isopropylbenzene | -- | -- |
| p-Isopropyltoluene | -- | -- |
| Methylene chloride | 18,000 ug/kg | 5 ug/L |
| Naphthalene | -- | -- |
| n-Propylbenzene | -- | -- |
| Styrene | 680,000 ug/kg | 100 ug/L |
| 1,1,1,2-Tetrachloroethane | 5,400 ug/kg | -- |
| 1,1,2,2-Tetrachloroethane | 1,100 ug/kg | 1 ug/L |
| Tetrachloroethene | 17,000 ug/kg | 5 ug/L |
| Toluene | 15,000 ug/kg [c] | 150 ug/L [c] |
| 1,2,3-Trichlorobenzene | -- | -- |
| 1,2,4-Trichlorobenzene | 5,500,000 ug/kg | 70 ug/L |
| 1,1,1-Trichloroethane | 3,000,000 ug/kg | 200 ug/L |
| 1,1,2-Trichloroethane | 1,500 ug/kg | 5 ug/L |
| Trichloroethene | 7,000 ug/kg | 5 ug/L |
| Trichlorofluoromethane | 1,300,000 ug/kg | 150 ug/L |
| 1,2,3-Trichloropropane | 3.1 ug/kg | -- |

TABLE 4
Summary of Analytical Screening Criteria
Redondo Generating Station
Edison Phase II ESA

| Analyte | Soil Screening Criteria [a] | Water Screening Criteria [b] |
|---|---|---|
| 1,2,4-Trimethylbenzene | -- | -- |
| 1,3,5-Trimethylbenzene | -- | -- |
| Vinyl chloride | 35 ug/kg | 0.5 ug/L |
| o-Xylene | 175,000 ug/kg [c] | 1,750 ug/L [c] |
| m,p-Xylenes | 175,000 ug/kg | 1,750 ug/L |

Notes:
[a] Soil screening criteria are EPA Region IX generic Preliminary Remediation Goals (PRGs) for industrial setting unless otherwise noted.
[b] Groundwater screening criteria are the lower of State and Federal Maximum Contaminant Levels (MCLs) unless otherwise noted.
[c] Soil screening criteria for TPH and benzene, toluene, ethylbenzene, and xylene (BTEX) are screening levels published in the LARWQCB *Interim Site Assessment and Cleanup Guidebook*, May 1996.
[d] Soil screening criteria for PCBs is the TSCA cleanup threshold for total PCBs of 50 ppm.
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
mg/L = milligrams per liter
µg/L = micrograms per liter
MCL = Maximum Contaminant Limit
"--" indicates PRG, or Primary Federal or State MCL does not exist for this constituent
1. Analytical methods include TPH-8015M, CAM metals-200.7, 6010, 7060, 7421, 7470, and 7471; PCBs - EPA 8080; VOCs - 8260; pH - 150.1, and 9045

**Table 5**
**Constituents of Concern in Soil**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 7 & 8 |
|---|---|---|---|---|---|
| | Boring Number: | RBH25 | RBH26 | RBH26 | RBH29 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | 5.5 to 6 ft. | .5 to .8 ft. |
| | Sample ID: | RBH25BS0101 | RBH26BS0102 | RBH26BS0122 | RBH29BS0101 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| | | | | | |
| PETROLEUM HYDROCARBONS | | | | | |
| TPH (C10 to C24) | mg/kg | | | | |
| | | | | | |
| BTEX | | | | | |
| BENZENE | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| METALS | | | | | |
| ARSENIC | mg/kg | 2.4 = | 2.9 = | 2.6 = | 2.4 = |
| LEAD | mg/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 5**
**Constituents of Concern in Soil**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area | Hazardous Materials Stroage Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH54 | RBH54 | RBH57 | RBH62 |
| | Sample Depth: | 11 to 11.5 ft. | 13 to 13.5 ft. | 15 to 15.5 ft. | .5 to 1.2 ft. |
| | Sample ID: | RBH54BS0102 | RBH54BS0103 | RBH57BS0103 | RBH62BS0201 |
| | Collection Date: | 10/24/96 | 10/24/96 | 11/11/96 | 01/28/97 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | 640 = | |
| | | | | | |
| PETROLEUM HYDROCARBONS | | | | | |
| TPH (C10 to C24) | mg/kg | | | 16000 = | |
| | | | | | |
| BTEX | | | | | |
| BENZENE | ug/kg | | 740 = | | |
| TPH (C4 - C10) | ug/kg | 2900 = | 4400 = | | |
| | | | | | |
| METALS | | | | | |
| ARSENIC | mg/kg | | | | 2.4 = |
| LEAD | mg/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 5**
**Constituents of Concern in Soil**
**Redondo Generating Station**
**Edison Phase II ESA**

| | | | | | |
|---|---|---|---|---|---|
| | **Facility Location:** | **Hazardous Materials Stroage Area** | | | |
| | **Boring Number:** | **RBH62** | | | |
| | **Sample Depth:** | **5.4 to 6 ft.** | | | |
| | **Sample ID:** | **RBH62BS0222** | | | |
| | **Collection Date:** | **01/28/97** | | | |
| **Analyte** | **Units** | | | | |
| **VOC** | | | | | |
| BENZENE | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| TPH (C10 to C24) | mg/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **METALS** | | | | | |
| ARSENIC | mg/kg | 6.4 = | | | |
| LEAD | mg/kg | 2550 = | | | |

Note: N/A - Not Analyzed U - Undetected = - Detected

**Table 5**
**Constituents of Concern in Soil**
**Redondo Generating Station**
**Edison Phase II ESA**

| | | | | |
|---|---|---|---|---|
| | **Facility Location:** | | | |
| | **Boring Number:** | | | |
| | **Sample Depth:** | | | |
| | **Sample ID:** | | | |
| | **Collection Date:** | | | |
| **Analyte** | **Units** | | | |
| **VOC** | | | | |
| BENZENE | ug/kg | | | |
| | | | | |
| **PETROLEUM HYDROCARBONS** | | | | |
| TPH (C10 to C24) | mg/kg | | | |
| | | | | |
| **BTEX** | | | | |
| BENZENE | ug/kg | | | |
| TPH (C4 - C10) | ug/kg | | | |
| | | | | |
| **METALS** | | | | |
| ARSENIC | mg/kg | | | |
| LEAD | mg/kg | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 6**
**Constituents of Concern in Water**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 3 | Fuel Storage Tank 3 | Fuel Storage Tank 5 | Displacement Oil Tank |
|---|---|---|---|---|---|
| | Boring Number: | RBH07 | RBH07 | RBH13 | RBH15 |
| | Sample Depth: | 4.2 ft. | 4.2 ft. | 9.2 ft. | 6.5 ft. |
| | Sample ID: | RBH07BW0104 | RBH07BW0124 | RBH13BW0104 | RBH15BW0104 |
| | Collection Date: | 10/24/96 | 10/24/96 | 10/24/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| **VOC** | | | | | |
| BENZENE | ug/l | | | | |
| CARBON TETRACHLORIDE | ug/l | | | | |
| 1,1-DICHLOROETHANE | ug/l | | | | |
| TRICHLOROETHYLENE (TCE) | ug/l | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/l | | | | |
| TPH (C4 - C10) | ug/l | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| TPH (C10 to C24) | mg/l | | | 1.9 = | 2.1 = |
| TPH (C25 to C40) | mg/l | .6 = | .5 = | 1.2 = | .63 = |
| | | | | | |
| **METALS** | | | | | |
| BARIUM | mg/l | | | | |
| BERYLLIUM | mg/l | | | | |
| CADMIUM | mg/l | | | | |
| CHROMIUM, TOTAL | mg/l | | | | |
| LEAD | mg/l | | | | |
| MERCURY | mg/l | | | | |
| NICKEL | mg/l | | | | |
| THALLIUM | mg/l | | | | |
| | | | | | |
| | | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 6**
**Constituents of Concern in Water**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Former UST's | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 5 & 6 |
|---|---|---|---|---|---|
| | Boring Number: | RBH17 | RBH20 | RBH21 | RBH23 |
| | Sample Depth: | 13 ft. | 12.9 ft. | 13 ft. | 12.5 ft. |
| | Sample ID: | RBH17BW0104 | RBH20BW0104 | RBH21BW0104 | RBH23BW0104 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/l | | | | |
| CARBON TETRACHLORIDE | ug/l | | | | |
| 1,1-DICHLOROETHANE | ug/l | | | | |
| TRICHLOROETHYLENE (TCE) | ug/l | | | | |
| | | | | | |
| BTEX | | | | | |
| BENZENE | ug/l | | | | |
| TPH (C4 - C10) | ug/l | | | | |
| | | | | | |
| PETROLEUM HYDROCARBONS | | | | | |
| TPH (C10 to C24) | mg/l | | | | |
| TPH (C25 to C40) | mg/l | .54 = | | | |
| | | | | | |
| METALS | | | | | |
| BARIUM | mg/l | | | | |
| BERYLLIUM | mg/l | | | | |
| CADMIUM | mg/l | | | | |
| CHROMIUM, TOTAL | mg/l | | | | |
| LEAD | mg/l | | | | |
| MERCURY | mg/l | | .005 = | 006 = | |
| NICKEL | mg/l | | | | |
| THALLIUM | mg/l | | .007 = | | .007 = |
| | | | | | |
| | | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 6**
**Constituents of Concern in Water**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 5 & 6 | Power Block Units 7 & 8 | HAZMAT Storage Area | HAZMAT Storage Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH24 | RBH29 | RBH32 | RBH32 |
| | Sample Depth: | 12.9 ft. | 11 ft. | 12.5 ft. | 12.5 ft. |
| | Sample ID: | RBH24BW0104 | RBH29BW0104 | RBH32BW0104 | RBH32BW0104D |
| | Collection Date: | 10/23/96 | 10/23/96 | 11/01/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/l | | | | |
| CARBON TETRACHLORIDE | ug/l | | | | |
| 1,1-DICHLOROETHANE | ug/l | | | | |
| TRICHLOROETHYLENE (TCE) | ug/l | | | | |
| | | | | | |
| BTEX | | | | | |
| BENZENE | ug/l | | | | |
| TPH (C4 - C10) | ug/l | | | | |
| | | | | | |
| PETROLEUM HYDROCARBONS | | | | | |
| TPH (C10 to C24) | mg/l | | | | |
| TPH (C25 to C40) | mg/l | | | .6 = | |
| | | | | | |
| METALS | | | | | |
| BARIUM | mg/l | | 1.4 = | | |
| BERYLLIUM | mg/l | | .0049 = | .005 = | .005 = |
| CADMIUM | mg/l | | .025 = | | |
| CHROMIUM, TOTAL | mg/l | | 2 = | | |
| LEAD | mg/l | | .72 = | | |
| MERCURY | mg/l | | .0029 = | .003 = | .004 = |
| NICKEL | mg/l | | .42 = | | |
| THALLIUM | mg/l | .008 = | | | |
| | | | | | |
| | | | | | |

Note NA - Not Analized U - Undetected = - Detected

**Table 6**
**Constituents of Concern in Water**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Secondary Fuel Pump Area | Solvent Wash Station | Oil/Gas Separator Area | Oil/Gas Separator Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH40 | RBH52 | RBH54 | RBH55 |
| | Sample Depth: | 10.4 ft. | 12.5 ft. | 15 ft. | 22 ft. |
| | Sample ID: | RBH40BW0104 | RBH52BW0104 | RBH54BW0104 | RBH55BW0106 |
| | Collection Date: | 10/24/96 | 10/23/96 | 10/24/96 | 11/11/96 |
| **Analyte** | **Units** | | | | |
| **VOC** | | | | | |
| BENZENE | ug/l | | | 469 = | |
| CARBON TETRACHLORIDE | ug/l | | | | |
| 1,1-DICHLOROETHANE | ug/l | | | | |
| TRICHLOROETHYLENE (TCE) | ug/l | | 36.7 = | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/l | | | 550 = | |
| TPH (C4 - C10) | ug/l | | | 50 = | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| TPH (C10 to C24) | mg/l | .7 = | | | |
| TPH (C25 to C40) | mg/l | .6 = | .6 = | | 380 = |
| | | | | | |
| **METALS** | | | | | |
| BARIUM | mg/l | | | | |
| BERYLLIUM | mg/l | | | | |
| CADMIUM | mg/l | | | | |
| CHROMIUM, TOTAL | mg/l | | | | |
| LEAD | mg/l | | .06 = | | |
| MERCURY | mg/l | | .009 = | | |
| NICKEL | mg/l | | | | |
| THALLIUM | mg/l | | .003 = | | |
| | | | | | |
| | | | | | |

Note NA - Not Analized U - Undetected = - Detected

**Table 6**
**Constituents of Concern in Water**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Hazardous Materials Stroage Area | Solvent Wash Area | Solvent Wash Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH56 | RBH62 | RBH63 | RBH63 |
| | Sample Depth: | 13.4 ft. | 11.7 ft. | 11.3 ft. | 11.3 ft. |
| | Sample ID: | RBH56BW0106 | RBH62BW0201 | RBH63BW0201 | RBH63BW0221 |
| | Collection Date: | 11/11/96 | 01/28/97 | 01/28/97 | 01/28/97 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/l | | | | 12.7 = |
| CARBON TETRACHLORIDE | ug/l | | 13.6 = | | |
| 1,1-DICHLOROETHANE | ug/l | | 22 = | | |
| TRICHLOROETHYLENE (TCE) | ug/l | | | | |
| | | | | | |
| BTEX | | | | | |
| BENZENE | ug/l | | | | |
| TPH (C4 - C10) | ug/l | | | | |
| | | | | | |
| PETROLEUM HYDROCARBONS | | | | | |
| TPH (C10 to C24) | mg/l | | | | |
| TPH (C25 to C40) | mg/l | 20 = | | | |
| | | | | | |
| METALS | | | | | |
| BARIUM | mg/l | | | | |
| BERYLLIUM | mg/l | | .02 = | | |
| CADMIUM | mg/l | | .014 = | | |
| CHROMIUM, TOTAL | mg/l | | | | |
| LEAD | mg/l | | .027 = | .025 = | .067 = |
| MERCURY | mg/l | | .002 = | .003 = | |
| NICKEL | mg/l | | | | |
| THALLIUM | mg/l | | | | |
| | | | | | |
| | | | | | |

Note: N.A. - Not Analyzed U - Undetected = - Detected

# Table 7
## Soil Analytical Results
## Redondo Generating Station
## Edison Phase II ESA

| | Facility Location: | Fuel Storage Tank 1 | Fuel Storage Tank 1 | Fuel Storage Tank 1 | Fuel Storage Tank 1 |
|---|---|---|---|---|---|
| | Boring Number: | RBH01 | RBH01 | RBH02 | RBH02 |
| | Sample Depth: | .5 to 1 ft. | 3 to 3.5 ft. | .5 to 1 ft. | 4 to 4.25 ft. |
| | Sample ID: | RBH01BS0101 | RBH01BS0102 | RBH02BS0101 | RBH02BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 1 | Fuel Storage Tank 1 | Fuel Storage Tank 1 | Fuel Storage Tank 1 |
|---|---|---|---|---|---|
| | Boring Number: | RBH01 | RBH01 | RBH02 | RBH02 |
| | Sample Depth: | .5 to 1 ft. | 3 to 3.5 ft. | .5 to 1 ft. | 4 to 4.25 ft. |
| | Sample ID: | RBH01BS0101 | RBH01BS0102 | RBH02BS0101 | RBH02BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 5 U | 5 U | 250 U | 6100 = |
| TPH (C25 to C40) | mg/kg | 10 = | 6.6 = | 330 = | 780 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 1 | Fuel Storage Tank 1 | Fuel Storage Tank 1 | Fuel Storage Tank 1 |
|---|---|---|---|---|---|
| | Boring Number: | RBH01 | RBH01 | RBH02 | RBH02 |
| | Sample Depth: | .5 to 1 ft. | 3 to 3.5 ft. | .5 to 1 ft. | 4 to 4.25 ft. |
| | Sample ID: | RBH01BS0101 | RBH01BS0102 | RBH02BS0101 | RBH02BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |
| | | | | | |
| | | | | | |
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Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 1 | Fuel Storage Tank 1 | Fuel Storage Tank 2 | Fuel Storage Tank 2 |
|---|---|---|---|---|---|
| | Boring Number: | RBH02 | RBH02 | RBH03 | RBH03 |
| | Sample Depth: | 5 to 5.3 ft. | 5.5 to 5.8 ft. | .5 to 1 ft. | 4.5 to 5 ft. |
| | Sample ID: | RBH02BS0103 | RBH02BS0104 | RBH03BS0101 | RBH03BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 1 | Fuel Storage Tank 1 | Fuel Storage Tank 2 | Fuel Storage Tank 2 |
|---|---|---|---|---|---|
| | Boring Number: | RBH02 | RBH02 | RBH03 | RBH03 |
| | Sample Depth: | 5 to 5.3 ft. | 5.5 to 5.8 ft. | .5 to 1 ft. | 4.5 to 5 ft. |
| | Sample ID: | RBH02BS0103 | RBH02BS0104 | RBH03BS0101 | RBH03BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/22/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 750 = | 50 U | 5 U | 5 U |
| TPH (C25 to C40) | mg/kg | 100 U | 50 U | 5 U | 5 U |
| | | | | | |
| PCBs | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 1 | Fuel Storage Tank 1 | Fuel Storage Tank 2 | Fuel Storage Tank 2 |
|---|---|---|---|---|---|
| | Boring Number: | RBH02 | RBH02 | RBH03 | RBH03 |
| | Sample Depth: | 5 to 5.3 ft. | 5.5 to 5.8 ft. | .5 to 1 ft. | 4.5 to 5 ft. |
| | Sample ID: | RBH02BS0103 | RBH02BS0104 | RBH03BS0101 | RBH03BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/22/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |
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Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 2 | Fuel Storage Tank 2 | Fuel Storage Tank 2 | Fuel Storage Tank 2 |
|---|---|---|---|---|---|
| | Boring Number: | RBH04 | RBH04 | RBH05 | RBH05 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 3.5 to 4 ft. |
| | Sample ID: | RBH04BS0101 | RBH04BS0102 | RBH05BS0101 | RBH05BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 2 | Fuel Storage Tank 2 | Fuel Storage Tank 2 | Fuel Storage Tank 2 |
|---|---|---|---|---|---|
| | Boring Number: | RBH04 | RBH04 | RBH05 | RBH05 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 3.5 to 4 ft. |
| | Sample ID: | RBH04BS0101 | RBH04BS0102 | RBH05BS0101 | RBH05BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 120 U | 5 U | 5 U | 5 U |
| TPH (C25 to C40) | mg/kg | 120 U | 12 = | 5.1 = | 5 U |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 2 | Fuel Storage Tank 2 | Fuel Storage Tank 2 | Fuel Storage Tank 2 |
|---|---|---|---|---|---|
| | Boring Number: | RBH04 | RBH04 | RBH05 | RBH05 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 3.5 to 4 ft. |
| | Sample ID: | RBH04BS0101 | RBH04BS0102 | RBH05BS0101 | RBH05BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |
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Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 3 | Fuel Storage Tank 3 | Fuel Storage Tank 3 | Fuel Storage Tank 3 |
|---|---|---|---|---|---|
| | Boring Number: | RBH06 | RBH06 | RBH07 | RBH07 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 3.5 to 4 ft. |
| | Sample ID: | RBH06BS0101 | RBH06BS0102 | RBH07BS0101 | RBH07BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 3 | Fuel Storage Tank 3 | Fuel Storage Tank 3 | Fuel Storage Tank 3 |
|---|---|---|---|---|---|
| | Boring Number: | RBH06 | RBH06 | RBH07 | RBH07 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 3.5 to 4 ft. |
| | Sample ID: | RBH06BS0101 | RBH06BS0102 | RBH07BS0101 | RBH07BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/23/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 1800 = | 5 U | 5.7 = | 5 U |
| TPH (C25 to C40) | mg/kg | 1700 = | 13 = | 11 = | 9.4 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 3 | Fuel Storage Tank 3 | Fuel Storage Tank 3 | Fuel Storage Tank 3 |
|---|---|---|---|---|---|
| | Boring Number: | RBH06 | RBH06 | RBH07 | RBH07 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 3.5 to 4 ft. |
| | Sample ID: | RBH06BS0101 | RBH06BS0102 | RBH07BS0101 | RBH07BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 3 | Fuel Storage Tank 3 | Fuel Storage Tank 4 | Fuel Storage Tank 4 |
|---|---|---|---|---|---|
| | Boring Number: | RBH08 | RBH08 | RBH09 | RBH09 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH08BS0101 | RBH08BS0102 | RBH09BS0101 | RBH09BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 3 | Fuel Storage Tank 3 | Fuel Storage Tank 4 | Fuel Storage Tank 4 |
|---|---|---|---|---|---|
| | Boring Number: | RBH08 | RBH08 | RBH09 | RBH09 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH08BS0101 | RBH08BS0102 | RBH09BS0101 | RBH09BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 25 U | 5 U | 5.4 = | 120 U |
| TPH (C25 to C40) | mg/kg | 25 U | 5.5 = | 11 = | 120 U |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 3 | Fuel Storage Tank 3 | Fuel Storage Tank 4 | Fuel Storage Tank 4 |
|---|---|---|---|---|---|
| | Boring Number: | RBH08 | RBH08 | RBH09 | RBH09 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH08BS0101 | RBH08BS0102 | RBH09BS0101 | RBH09BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |
| | | | | | |
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| | | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 4 | Fuel Storage Tank 4 | Fuel Storage Tank 4 | Fuel Storage Tank 4 |
|---|---|---|---|---|---|
| | Boring Number: | RBH10 | RBH10 | RBH11 | RBH11 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH10BS0101 | RBH10BS0102 | RBH11BS0101 | RBH11BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 4 | Fuel Storage Tank 4 | Fuel Storage Tank 4 | Fuel Storage Tank 4 |
|---|---|---|---|---|---|
| | Boring Number: | RBH10 | RBH10 | RBH11 | RBH11 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH10BS0101 | RBH10BS0102 | RBH11BS0101 | RBH11BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 5 U | 25 U | 5 U | 11 = |
| TPH (C25 to C40) | mg/kg | 5 U | 25 U | 5 U | 25 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 4 | Fuel Storage Tank 4 | Fuel Storage Tank 4 | Fuel Storage Tank 4 |
|---|---|---|---|---|---|
| | Boring Number: | RBH10 | RBH10 | RBH11 | RBH11 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH10BS0101 | RBH10BS0102 | RBH11BS0101 | RBH11BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM. TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 5 | Fuel Storage Tank 5 | Fuel Storage Tank 5 | Fuel Storage Tank 5 |
|---|---|---|---|---|---|
| | Boring Number: | RBH12 | RBH12 | RBH13 | RBH13 |
| | Sample Depth: | .5 to .75 ft. | 5 to 5.3 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH12BS0101 | RBH12BS0102 | RBH13BS0101 | RBH13BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 5 | Fuel Storage Tank 5 | Fuel Storage Tank 5 | Fuel Storage Tank 5 |
|---|---|---|---|---|---|
| | Boring Number: | RBH12 | RBH12 | RBH13 | RBH13 |
| | Sample Depth: | .5 to .75 ft. | 5 to 5.3 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH12BS0101 | RBH12BS0102 | RBH13BS0101 | RBH13BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/23/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 25 U | 5 U | 6.5 = | 5 U |
| TPH (C25 to C40) | mg/kg | 25 U | 9.7 = | 8.2 = | 7.6 = |
| | | | | | |
| PCBs | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 5 | Fuel Storage Tank 5 | Fuel Storage Tank 5 | Fuel Storage Tank 5 |
|---|---|---|---|---|---|
| | Boring Number: | RBH12 | RBH12 | RBH13 | RBH13 |
| | Sample Depth: | .5 to .75 ft. | 5 to 5.3 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH12BS0101 | RBH12BS0102 | RBH13BS0101 | RBH13BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/23/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 5 | Fuel Storage Tank 5 | Fuel Storage Tank 5 | Displacement Oil Tank |
|---|---|---|---|---|---|
| | Boring Number: | RBH13 | RBH14 | RBH14 | RBH15 |
| | Sample Depth: | 5 to 5.5 ft. | .5 to .75 ft. | 5 to 5.3 ft. | .5 to 1 ft. |
| | Sample ID: | RBH13BS0122 | RBH14BS0101 | RBH14BS0102 | RBH15BS0101 |
| | Collection Date: | 10/23/96 | 10/21/96 | 10/21/96 | 10/22/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 5 | Fuel Storage Tank 5 | Fuel Storage Tank 5 | Displacement Oil Tank |
|---|---|---|---|---|---|
| | Boring Number: | RBH13 | RBH14 | RBH14 | RBH15 |
| | Sample Depth: | 5 to 5.5 ft. | .5 to .75 ft. | 5 to 5.3 ft. | .5 to 1 ft. |
| | Sample ID: | RBH13BS0122 | RBH14BS0101 | RBH14BS0102 | RBH15BS0101 |
| | Collection Date: | 10/23/96 | 10/21/96 | 10/21/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 5.1 = | 5 U | 5 U | 5 U |
| TPH (C25 to C40) | mg/kg | 8.7 = | 5.6 = | 5 U | 5 U |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 5 | Fuel Storage Tank 5 | Fuel Storage Tank 5 | Displacement Oil Tank |
|---|---|---|---|---|---|
| | Boring Number: | RBH13 | RBH14 | RBH14 | RBH15 |
| | Sample Depth: | 5 to 5.5 ft. | .5 to .75 ft. | 5 to 5.3 ft. | .5 to 1 ft. |
| | Sample ID: | RBH13BS0122 | RBH14BS0101 | RBH14BS0102 | RBH15BS0101 |
| | Collection Date: | 10/23/96 | 10/21/96 | 10/21/96 | 10/22/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |

Note NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Displacement Oil Tank | Displacement Oil Tank | Displacement Oil Tank | Former UST's |
|---|---|---|---|---|---|
| | Boring Number: | RBH15 | RBH16 | RBH16 | RBH17 |
| | Sample Depth: | 5 to 5.5 ft. | .5 to 1 ft. | 5 to 5.5 ft. | 8 to 8.3 ft. |
| | Sample ID: | RBH15BS0102 | RBH16BS0101 | RBH16BS0102 | RBH17BS0101 |
| | Collection Date: | 10/22/96 | 10/21/96 | 10/21/96 | 10/22/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Displacement Oil Tank | Displacement Oil Tank | Displacement Oil Tank | Former UST's |
|---|---|---|---|---|---|
| | Boring Number: | RBH15 | RBH16 | RBH16 | RBH17 |
| | Sample Depth: | 5 to 5.5 ft. | .5 to 1 ft. | 5 to 5.5 ft. | 8 to 8.3 ft. |
| | Sample ID: | RBH15BS0102 | RBH16BS0101 | RBH16BS0102 | RBH17BS0101 |
| | Collection Date: | 10/22/96 | 10/21/96 | 10/21/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | 005 U |
| ETHYLBENZENE | mg/kg | | | | .005 U |
| METHYLTERTBUTYLETHER | mg/kg | | | | .005 U |
| TOLUENE | mg/kg | | | | .005 U |
| XYLENES, TOTAL | mg/kg | | | | .005 U |
| TPH (C10 to C24) | mg/kg | 22 = | 250 U | 5 U | 5 U |
| TPH (C25 to C40) | mg/kg | 7.2 = | 250 U | 5 U | 5 U |
| | | | | | |
| PCBs | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Displacement Oil Tank | Displacement Oil Tank | Displacement Oil Tank | Former UST's |
|---|---|---|---|---|---|
| | Boring Number: | RBH15 | RBH16 | RBH16 | RBH17 |
| | Sample Depth: | 5 to 5.5 ft. | .5 to 1 ft. | 5 to 5.5 ft. | 8 to 8.3 ft. |
| | Sample ID: | RBH15BS0102 | RBH16BS0101 | RBH16BS0102 | RBH17BS0101 |
| | Collection Date: | 10/22/96 | 10/21/96 | 10/21/96 | 10/22/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |
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Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Former UST's | Former UST's | Former UST's | Former UST's |
|---|---|---|---|---|---|
| | Boring Number: | RBH17 | RBH18 | RBH18 | RBH18 |
| | Sample Depth: | 13 to 13.3 ft. | 8 to 8.3 ft. | 8.6 to 8.9 ft. | 14 to 14.5 ft. |
| | Sample ID: | RBH17BS0102 | RBH18BS0101 | RBH18BS0121 | RBH18BS0102 |
| | Collection Date: | 10/22/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Former UST's | Former UST's | Former UST's | Former UST's |
|---|---|---|---|---|---|
| | Boring Number: | RBH17 | RBH18 | RBH18 | RBH18 |
| | Sample Depth: | 13 to 13.3 ft. | 8 to 8.3 ft. | 8.6 to 8.9 ft. | 14 to 14.5 ft. |
| | Sample ID: | RBH17BS0102 | RBH18BS0101 | RBH18BS0121 | RBH18BS0102 |
| | Collection Date: | 10/22/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | .005 U | .005 U | .005 U | .005 U |
| ETHYLBENZENE | mg/kg | .005 U | .005 U | .005 U | .005 U |
| METHYLTERTBUTYLETHER | mg/kg | .005 U | .005 U | .005 U | .005 U |
| TOLUENE | mg/kg | .005 U | .005 U | .005 U | .005 U |
| XYLENES, TOTAL | mg/kg | .005 U | .005 U | .005 U | .005 U |
| TPH (C10 to C24) | mg/kg | 5 U | 5 U | 5 U | 5 U |
| TPH (C25 to C40) | mg/kg | 5 = | 5 U | 5 U | 5 U |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Former UST's | Former UST's | Former UST's | Former UST's |
|---|---|---|---|---|---|
| | Boring Number: | RBH17 | RBH18 | RBH18 | RBH18 |
| | Sample Depth: | 13 to 13.3 ft. | 8 to 8.3 ft. | 8.6 to 8.9 ft. | 14 to 14.5 ft. |
| | Sample ID: | RBH17BS0102 | RBH18BS0101 | RBH18BS0121 | RBH18BS0102 |
| | Collection Date: | 10/22/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |
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Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 1 - 4 |
|---|---|---|---|---|---|
| | Boring Number: | RBH19 | RBH19 | RBH20 | RBH20 |
| | Sample Depth: | 0 to 2 ft. | 5 to 5.4 ft. | 1.5 to 2 ft. | 5 to 5.3 ft. |
| | Sample ID: | RBH19BS0101 | RBH19BS0102 | RBH20BS0101 | RBH20BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 1 - 4 |
|---|---|---|---|---|---|
| | Boring Number: | RBH19 | RBH19 | RBH20 | RBH20 |
| | Sample Depth: | 0 to 2 ft. | 5 to 5.4 ft. | 1.5 to 2 ft. | 5 to 5.3 ft. |
| | Sample ID: | RBH19BS0101 | RBH19BS0102 | RBH20BS0101 | RBH20BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 10 = | 12 = | 5 U | 5 U |
| TPH (C25 to C40) | mg/kg | 38 = | 34 = | 5 U | 5 U |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1221 (AROCHLOR 1221) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1232 (AROCHLOR 1232) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1242 (AROCHLOR 1242) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1248 (AROCHLOR 1248) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1254 (AROCHLOR 1254) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1260 (AROCHLOR 1260) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 1 - 4 |
|---|---|---|---|---|---|
| | Boring Number: | RBH19 | RBH19 | RBH20 | RBH20 |
| | Sample Depth: | 0 to 2 ft. | 5 to 5.4 ft. | 1.5 to 2 ft. | 5 to 5.3 ft. |
| | Sample ID: | RBH19BS0101 | RBH19BS0102 | RBH20BS0101 | RBH20BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | 2 U | 9 U | 9 U | 9 U |
| ARSENIC | mg/kg | .9 = | 1.9 = | .8 = | 1 = |
| BARIUM | mg/kg | 31.4 = | 63.1 = | 6.8 = | 5.9 = |
| BERYLLIUM | mg/kg | 1 U | 1 U | 1 U | 1 U |
| CADMIUM | mg/kg | 1 U | 1 U | 1 U | 1 U |
| CHROMIUM, TOTAL | mg/kg | 3 U | 4.1 = | 3.8 = | 2.5 = |
| COBALT | mg/kg | 5.1 = | 3 U | 3 U | 3 U |
| COPPER | mg/kg | 5.4 = | 6.8 = | 2 U | 2.5 = |
| LEAD | mg/kg | 3 U | 57.9 = | 10 U | 10 U |
| MERCURY | mg/kg | .7 = | 4.1 = | .3 = | .2 = |
| MOLYBDENUM | mg/kg | 4.3 = | 3 U | 3 U | 3 U |
| NICKEL | mg/kg | 10 U | 4 U | 4 U | 4 U |
| SELENIUM | mg/kg | .5 U | .9 = | .5 U | .5 U |
| SILVER | mg/kg | 9 U | 2.7 = | 2 U | 2 U |
| THALLIUM | mg/kg | .7 = | .8 = | .7 = | .1 U |
| VANADIUM | mg/kg | 11.2 = | 6.6 = | 4.6 = | 3.5 = |
| ZINC | mg/kg | 38.2 = | 73.8 = | 5.7 = | 4.9 = |
| | | | | | |
| pH | units | | | | |
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Note. NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 1 - 4 |
|---|---|---|---|---|---|
| | Boring Number: | RBH20 | RBH21 | RBH21 | RBH22 |
| | Sample Depth: | 5.3 to 5.6 ft. | .7 to 1 ft. | 5 to 5.4 ft. | 1 to 1.3 ft. |
| | Sample ID: | RBH20BS0122 | RBH21BS0101 | RBH21BS0102 | RBH22BS0101 |
| | Collection Date: | 10/22/96 | 10/23/96 | 10/23/96 | 10/22/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 1 - 4 |
|---|---|---|---|---|---|
| | Boring Number: | RBH20 | RBH21 | RBH21 | RBH22 |
| | Sample Depth: | 5.3 to 5.6 ft. | .7 to 1 ft. | 5 to 5.4 ft. | 1 to 1.3 ft. |
| | Sample ID: | RBH20BS0122 | RBH21BS0101 | RBH21BS0102 | RBH22BS0101 |
| | Collection Date: | 10/22/96 | 10/23/96 | 10/23/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 18 = | 5 = | 6 = | 5 U |
| TPH (C25 to C40) | mg/kg | 150 = | 21 = | 5 U | 36 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | 50 U | 50 U | 50 U | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 1 - 4 |
|---|---|---|---|---|---|
| | Boring Number: | RBH20 | RBH21 | RBH21 | RBH22 |
| | Sample Depth: | 5.3 to 5.6 ft. | .7 to 1 ft. | 5 to 5.4 ft. | 1 to 1.3 ft. |
| | Sample ID: | RBH20BS0122 | RBH21BS0101 | RBH21BS0102 | RBH22BS0101 |
| | Collection Date: | 10/22/96 | 10/23/96 | 10/23/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | 9 U | 9 U | 9 U | |
| ARSENIC | mg/kg | 1.8 = | 1.1 = | 1.2 = | |
| BARIUM | mg/kg | 23.7 = | 4.7 = | 12.9 = | |
| BERYLLIUM | mg/kg | 1 U | .5 U | .5 U | |
| CADMIUM | mg/kg | 1 U | 1 U | 1 U | |
| CHROMIUM, TOTAL | mg/kg | 6.4 = | 2.9 = | 3.1 = | |
| COBALT | mg/kg | 3 U | 3 U | 3 U | |
| COPPER | mg/kg | 6.2 = | 2 U | 2.4 = | |
| LEAD | mg/kg | 10 U | 10 U | 10 U | |
| MERCURY | mg/kg | .2 = | .1 = | 2.2 = | |
| MOLYBDENUM | mg/kg | 3 U | 3 U | 3 U | |
| NICKEL | mg/kg | 4.3 = | 4 U | 4 U | |
| SELENIUM | mg/kg | .5 U | .5 U | .5 U | |
| SILVER | mg/kg | 2 U | 3.7 = | 3.8 = | |
| THALLIUM | mg/kg | .9 = | 1.1 = | .1 U | |
| VANADIUM | mg/kg | 16.3 = | 7.4 = | 5.7 = | |
| ZINC | mg/kg | 13.4 = | 4 U | 8.2 = | |
| | | | | | |
| pH | units | | | | |

Note NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 1 - 4 | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 5 & 6 |
|---|---|---|---|---|---|
| | Boring Number: | RBH22 | RBH23 | RBH23 | RBH23 |
| | Sample Depth: | 5 to 5.3 ft. | .5 to 1 ft. | 5 to 5.5 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH22BS0102 | RBH23BS0101 | RBH23BS0102 | RBH23BS0121 |
| | Collection Date: | 10/22/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 1 - 4 | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 5 & 6 |
|---|---|---|---|---|---|
| | Boring Number: | RBH22 | RBH23 | RBH23 | RBH23 |
| | Sample Depth: | 5 to 5.3 ft. | .5 to 1 ft. | 5 to 5.5 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH22BS0102 | RBH23BS0101 | RBH23BS0102 | RBH23BS0121 |
| | Collection Date: | 10/22/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 20 = | 5 U | 5 U | 5 U |
| TPH (C25 to C40) | mg/kg | 30 = | 9 = | 5 U | 11 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | 50 U | 50 U | 50 U |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | 50 U | 50 U | 50 U |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | 50 U | 50 U | 50 U |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | 50 U | 50 U | 50 U |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | 50 U | 50 U | 50 U |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | 50 U | 50 U | 50 U |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | 50 U | 50 U | 50 U |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

# Table 7
## Soil Analytical Results
## Redondo Generating Station
## Edison Phase II ESA

| | Facility Location: | Power Block Units 1 - 4 | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 5 & 6 |
|---|---|---|---|---|---|
| | Boring Number: | RBH22 | RBH23 | RBH23 | RBH23 |
| | Sample Depth: | 5 to 5.3 ft. | .5 to 1 ft. | 5 to 5.5 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH22BS0102 | RBH23BS0101 | RBH23BS0102 | RBH23BS0121 |
| | Collection Date: | 10/22/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | | 9 U | 9 U | 9 U |
| ARSENIC | mg/kg | | 1 = | 1.2 = | 1.1 = |
| BARIUM | mg/kg | | 279 = | 24.2 = | 29.6 = |
| BERYLLIUM | mg/kg | | .5 U | .5 U | .5 U |
| CADMIUM | mg/kg | | 1.8 = | 1 U | 1 U |
| CHROMIUM, TOTAL | mg/kg | | 19.3 = | 3.2 = | 3.8 = |
| COBALT | mg/kg | | 18.3 = | 3 U | 3 U |
| COPPER | mg/kg | | 21.8 = | 2.7 = | 3.9 = |
| LEAD | mg/kg | | 10 U | 10 U | 10 U |
| MERCURY | mg/kg | | 1.1 = | .5 U | .5 U |
| MOLYBDENUM | mg/kg | | 2.1 = | 3 U | 1.1 = |
| NICKEL | mg/kg | | 29.6 = | 11.2 = | 10.8 = |
| SELENIUM | mg/kg | | 2.4 = | .5 U | .5 U |
| SILVER | mg/kg | | 7.9 = | 3.8 = | 3.9 = |
| THALLIUM | mg/kg | | .9 = | .1 U | .1 U |
| VANADIUM | mg/kg | | 42.1 = | 30.7 = | 30.6 = |
| ZINC | mg/kg | | 70.5 = | 32.5 = | 12.3 = |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 5 & 6 |
|---|---|---|---|---|---|
| | Boring Number: | RBH24 | RBH24 | RBH25 | RBH25 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 5.5 to 6 ft. |
| | Sample ID: | RBH24BS0101 | RBH24BS0102 | RBH25BS0101 | RBH25BS0102 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 5 & 6 |
|---|---|---|---|---|---|
| | Boring Number: | RBH24 | RBH24 | RBH25 | RBH25 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 5.5 to 6 ft. |
| | Sample ID: | RBH24BS0101 | RBH24BS0102 | RBH25BS0101 | RBH25BS0102 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/22/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| PETROLEUM HYDROCARBONS | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 13 = | 5 = | 25 U | 5 U |
| TPH (C25 to C40) | mg/kg | 48 = | 23 = | 25 U | 5.8 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | 50 U | 50 U | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | 50 U | 50 U | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | 50 U | 50 U | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | 50 U | 50 U | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | 50 U | 50 U | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | 50 U | 50 U | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | 50 U | 50 U | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 5 & 6 |
|---|---|---|---|---|---|
| | Boring Number: | RBH24 | RBH24 | RBH25 | RBH25 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | .5 to 1 ft. | 5.5 to 6 ft. |
| | Sample ID: | RBH24BS0101 | RBH24BS0102 | RBH25BS0101 | RBH25BS0102 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/22/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | 1.7 = | 9 U | 9 U | 9 U |
| ARSENIC | mg/kg | 1.6 = | 1.6 = | 2.4 = | 2.2 = |
| BARIUM | mg/kg | 12.1 = | 6.3 = | 41.7 = | 15.9 = |
| BERYLLIUM | mg/kg | .5 U | .5 U | .5 U | .5 U |
| CADMIUM | mg/kg | 1 U | 1 U | 1 U | 1 U |
| CHROMIUM, TOTAL | mg/kg | 2.5 = | 3.3 = | 10.1 = | 5.8 = |
| COBALT | mg/kg | 3 U | 3 U | 4.2 = | 3 U |
| COPPER | mg/kg | 4.1 = | 6.8 = | 9.9 = | 5 = |
| LEAD | mg/kg | 10 U | 10 U | 10 U | 10 U |
| MERCURY | mg/kg | 2.4 = | .11 = | .11 = | .08 U |
| MOLYBDENUM | mg/kg | 2 = | 3 U | 3 U | 3 U |
| NICKEL | mg/kg | 4 U | 4 U | 8.5 = | 4 U |
| SELENIUM | mg/kg | .5 U | .5 U | .4 U | .4 U |
| SILVER | mg/kg | 3.7 = | 4.4 = | 2 U | 2 U |
| THALLIUM | mg/kg | .5 = | .1 U | .44 U | .44 U |
| VANADIUM | mg/kg | 6.6 = | 7.3 = | 26.5 = | 12.5 = |
| ZINC | mg/kg | 10.1 = | 5.7 = | 41.3 = | 11 = |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 7 & 8 |
|---|---|---|---|---|---|
| | Boring Number: | RBH26 | RBH26 | RBH26 | RBH27 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | 5.5 to 6 ft. | .5 to 1 ft. |
| | Sample ID: | RBH26BS0101 | RBH26BS0102 | RBH26BS0122 | RBH27BS0101 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 7 & 8 |
|---|---|---|---|---|---|
| | Boring Number: | RBH26 | RBH26 | RBH26 | RBH27 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | 5.5 to 6 ft. | .5 to 1 ft. |
| | Sample ID: | RBH26BS0101 | RBH26BS0102 | RBH26BS0122 | RBH27BS0101 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 5.7 = | 5 U | 5 U | 34 = |
| TPH (C25 to C40) | mg/kg | 15 = | 5 U | 5 U | 120 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | 50 U |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | 50 U |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | 50 U |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | 50 U |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | 50 U |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | 50 U |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | 50 U |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 5 & 6 | Power Block Units 7 & 8 |
|---|---|---|---|---|---|
| | Boring Number: | RBH26 | RBH26 | RBH26 | RBH27 |
| | Sample Depth: | .5 to 1 ft. | 5 to 5.5 ft. | 5.5 to 6 ft. | .5 to 1 ft. |
| | Sample ID: | RBH26BS0101 | RBH26BS0102 | RBH26BS0122 | RBH27BS0101 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/23/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | 9 U | 9 U | 9 U | 9 U |
| ARSENIC | mg/kg | 2.1 = | 2.9 = | 2.6 = | 1.2 = |
| BARIUM | mg/kg | 32.9 = | 37.1 = | 11.9 = | 13.2 = |
| BERYLLIUM | mg/kg | .5 U | .5 U | .5 U | .5 U |
| CADMIUM | mg/kg | 1 U | 1 U | 1 U | 1 U |
| CHROMIUM, TOTAL | mg/kg | 9.4 = | 7.6 = | 5.1 = | 3.6 = |
| COBALT | mg/kg | 3 U | 3.7 = | 3 U | 3 U |
| COPPER | mg/kg | 5.7 = | 4.9 = | 3.5 = | 2.5 = |
| LEAD | mg/kg | 10 U | 10 U | 10 U | 10 U |
| MERCURY | mg/kg | .1 = | .08 U | .08 U | .5 U |
| MOLYBDENUM | mg/kg | 3 U | 3 U | 3 U | 1.8 = |
| NICKEL | mg/kg | 4.4 = | 5.2 = | 4 U | 4 U |
| SELENIUM | mg/kg | .4 U | .4 U | .4 U | .5 U |
| SILVER | mg/kg | 2 U | 2 U | 2 U | 4.5 = |
| THALLIUM | mg/kg | .44 U | .44 U | .44 U | .1 U |
| VANADIUM | mg/kg | 11.2 = | 15.1 = | 12.2 = | 9.1 = |
| ZINC | mg/kg | 17.6 = | 14 = | 8.6 = | 15 = |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 7 & 8 | Power Block Units 7 & 8 | Power Block Units 7 & 8 | Power Block Units 7 & 8 |
|---|---|---|---|---|---|
| | Boring Number: | RBH27 | RBH28 | RBH28 | RBH29 |
| | Sample Depth: | 5.2 to 5.5 ft. | 0 to .5 ft. | 4.5 to 5 ft. | .5 to .8 ft. |
| | Sample ID: | RBH27BS0102 | RBH28BS0101 | RBH28BS0102 | RBH29BS0101 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: N/A - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 7 & 8 | Power Block Units 7 & 8 | Power Block Units 7 & 8 | Power Block Units 7 & 8 |
|---|---|---|---|---|---|
| | Boring Number: | RBH27 | RBH28 | RBH28 | RBH29 |
| | Sample Depth: | 5.2 to 5.5 ft. | 0 to .5 ft. | 4.5 to 5 ft. | .5 to .8 ft. |
| | Sample ID: | RBH27BS0102 | RBH28BS0101 | RBH28BS0102 | RBH29BS0101 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 55 = | 120 = | 48 = | 5 U |
| TPH (C25 to C40) | mg/kg | 210 = | 29 = | 180 = | 14 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | 50 U | 50 U | 50 U | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 7 & 8 | Power Block Units 7 & 8 | Power Block Units 7 & 8 | Power Block Units 7 & 8 |
|---|---|---|---|---|---|
| | Boring Number: | RBH27 | RBH28 | RBH28 | RBH29 |
| | Sample Depth: | 5.2 to 5.5 ft. | 0 to .5 ft. | 4.5 to 5 ft. | .5 to .8 ft. |
| | Sample ID: | RBH27BS0102 | RBH28BS0101 | RBH28BS0102 | RBH29BS0101 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | 9 U | 9 U | 9 U | 9 U |
| ARSENIC | mg/kg | 1.3 = | 1.7 = | 1.3 = | 2.4 = |
| BARIUM | mg/kg | 12.9 = | 8.9 = | 34.1 = | 13.9 = |
| BERYLLIUM | mg/kg | .5 U | .5 U | .5 U | .5 U |
| CADMIUM | mg/kg | 1 U | 1 U | 1 U | 1 U |
| CHROMIUM, TOTAL | mg/kg | 4.1 = | 3.9 = | 4 = | 5.5 = |
| COBALT | mg/kg | 3 U | 3 U | 3 U | 3 U |
| COPPER | mg/kg | 3.3 = | 2 U | 2 U | 7.2 = |
| LEAD | mg/kg | 10 U | 10 U | 10 U | 10 U |
| MERCURY | mg/kg | .5 U | .5 U | .5 U | .08 U |
| MOLYBDENUM | mg/kg | 1.4 = | 3 U | 3 U | 3 U |
| NICKEL | mg/kg | 4 U | 4 U | 4 U | 6 = |
| SELENIUM | mg/kg | .5 U | .5 U | .5 U | .4 U |
| SILVER | mg/kg | 4.2 = | 5.4 = | 12.2 = | 2 U |
| THALLIUM | mg/kg | .1 U | .5 = | .1 U | .44 U |
| VANADIUM | mg/kg | 10.9 = | 9.7 = | 9.5 = | 13.2 = |
| ZINC | mg/kg | 13.9 = | 8.3 = | 11.7 = | 15.3 = |
| | | | | | |
| pH | units | | | | |

Note NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 7 & 8 | Power Block Units 7 & 8 | Power Block Units 7 & 8 | Power Block Units 7 & 8 |
|---|---|---|---|---|---|
| | Boring Number: | RBH29 | RBH29 | RBH30 | RBH30 |
| | Sample Depth: | 5 to 5.5 ft. | 10 to 10.5 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH29BS0102 | RBH29BS0105 | RBH30BS0101 | RBH30BS0102 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | 2 U | | |
| BROMOBENZENE | ug/kg | | 2 U | | |
| BROMOCHLOROMETHANE | ug/kg | | 5 U | | |
| BROMODICHLOROMETHANE | ug/kg | | 2 U | | |
| BROMOFORM | ug/kg | | 5 U | | |
| BROMOMETHANE | ug/kg | | 5 U | | |
| n-BUTYLBENZENE | ug/kg | | 2 U | | |
| SEC-BUTYLBENZENE | ug/kg | | 2 U | | |
| tert-BUTYLBENZENE | ug/kg | | 2 U | | |
| CARBON TETRACHLORIDE | ug/kg | | 5 U | | |
| CHLOROBENZENE | ug/kg | | 2 U | | |
| CHLOROETHANE | ug/kg | | 5 U | | |
| CHLOROFORM | ug/kg | | 2 U | | |
| CHLOROMETHANE | ug/kg | | 5 U | | |
| 2-CHLOROTOLUENE | ug/kg | | 2 U | | |
| 4-CHLOROTOLUENE | ug/kg | | 2 U | | |
| DIBROMOCHLOROMETHANE | ug/kg | | 2 U | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | 10 U | | |
| 1,2-DIBROMOETHANE | ug/kg | | 2 U | | |
| DIBROMOMETHANE | ug/kg | | 5 U | | |
| 1,2-DICHLOROBENZENE | ug/kg | | 2 U | | |
| 1,3-DICHLOROBENZENE | ug/kg | | 2 U | | |
| 1,4-DICHLOROBENZENE | ug/kg | | 2 U | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | 5 U | | |
| 1,1-DICHLOROETHANE | ug/kg | | 2 U | | |
| 1,2-DICHLOROETHANE | ug/kg | | 2 U | | |
| 1,1-DICHLOROETHENE | ug/kg | | 2 U | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | 2 U | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | 2 U | | |
| 1,2-DICHLOROPROPANE | ug/kg | | 2 U | | |
| 1,3-DICHLOROPROPANE | ug/kg | | 2 U | | |
| 2,2-DICHLOROPROPANE | ug/kg | | 5 U | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | 2 U | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | 2 U | | |
| ETHYLBENZENE | ug/kg | | 2 U | | |
| HEXACHLOROBUTADIENE | ug/kg | | 2 U | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | 2 U | | |
| p-ISOPROPYLTOLUENE | ug/kg | | 2 U | | |
| METHYLENE CHLORIDE | ug/kg | | 10 U | | |
| NAPHTHALENE | ug/kg | | 2 U | | |
| n-PROPYLBENZENE | ug/kg | | 2 U | | |
| STYRENE | ug/kg | | 2 U | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | 2 U | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 7 & 8 | Power Block Units 7 & 8 | Power Block Units 7 & 8 | Power Block Units 7 & 8 |
|---|---|---|---|---|---|
| | Boring Number: | RBH29 | RBH29 | RBH30 | RBH30 |
| | Sample Depth: | 5 to 5.5 ft. | 10 to 10.5 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH29BS0102 | RBH29BS0105 | RBH30BS0101 | RBH30BS0102 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/22/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | 2 U | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | 81 = | | |
| TOLUENE | ug/kg | | 2 U | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | 2 U | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | 2 U | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | 2 U | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | 2 U | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | 2 U | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | 2 U | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | 2 U | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | 2 U | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | 2 U | | |
| VINYL CHLORIDE | ug/kg | | 5 U | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | 2 U | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | 2 U | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | 2 U | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 5 U | | 5 U | 5 U |
| TPH (C25 to C40) | mg/kg | 5 U | | 5 U | 5 U |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 7 & 8 | Power Block Units 7 & 8 | Power Block Units 7 & 8 | Power Block Units 7 & 8 |
|---|---|---|---|---|---|
| | Boring Number: | RBH29 | RBH29 | RBH30 | RBH30 |
| | Sample Depth: | 5 to 5.5 ft. | 10 to 10.5 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH29BS0102 | RBH29BS0105 | RBH30BS0101 | RBH30BS0102 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/22/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | 9 U | | 9 U | 9 U |
| ARSENIC | mg/kg | 2 = | | 2.2 = | 1.8 = |
| BARIUM | mg/kg | 9.8 = | | 17.4 = | 9.4 = |
| BERYLLIUM | mg/kg | .5 U | | .5 U | .5 U |
| CADMIUM | mg/kg | 1 U | | 1 U | 1 U |
| CHROMIUM, TOTAL | mg/kg | 3.8 = | | 5.3 = | 4.2 = |
| COBALT | mg/kg | 3 U | | 3 U | 3 U |
| COPPER | mg/kg | 2.3 = | | 3.8 = | 2.3 = |
| LEAD | mg/kg | 10 U | | 10 U | 10 U |
| MERCURY | mg/kg | .08 U | | .08 U | .08 U |
| MOLYBDENUM | mg/kg | 3 U | | 3 U | 3 U |
| NICKEL | mg/kg | 4 U | | 4 U | 4 U |
| SELENIUM | mg/kg | .4 U | | .4 U | .4 U |
| SILVER | mg/kg | 2 U | | 2 U | 2 U |
| THALLIUM | mg/kg | .44 U | | .44 U | .44 U |
| VANADIUM | mg/kg | 6.6 = | | 11.2 = | 8.5 = |
| ZINC | mg/kg | 12.4 = | | 11.7 = | 6.4 = |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 7 & 8 | HAZMAT Storage Area | HAZMAT Storage Area | HAZMAT Storage Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH30 | RBH32 | RBH32 | RBH32 |
| | Sample Depth: | 5 to 5.5 ft. | .5 to 1 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH30BS0122 | RBH32BS0101 | RBH32BS0121 | RBH32BS0102 |
| | Collection Date: | 10/22/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | 2 U | 2 U | 2 U |
| BROMOBENZENE | ug/kg | | 2 U | 2 U | 2 U |
| BROMOCHLOROMETHANE | ug/kg | | 5 U | 5 U | 5 U |
| BROMODICHLOROMETHANE | ug/kg | | 2 U | 2 U | 2 U |
| BROMOFORM | ug/kg | | 5 U | 5 U | 5 U |
| BROMOMETHANE | ug/kg | | 5 U | 5 U | 5 U |
| n-BUTYLBENZENE | ug/kg | | 2 U | 2 U | 2 U |
| SEC-BUTYLBENZENE | ug/kg | | 2 U | 2 U | 2 U |
| tert-BUTYLBENZENE | ug/kg | | 2 U | 2 U | 2 U |
| CARBON TETRACHLORIDE | ug/kg | | 5 U | 5 U | 5 U |
| CHLOROBENZENE | ug/kg | | 2 U | 2 U | 2 U |
| CHLOROETHANE | ug/kg | | 5 U | 5 U | 5 U |
| CHLOROFORM | ug/kg | | 2 U | 2 U | 2 U |
| CHLOROMETHANE | ug/kg | | 5 U | 5 U | 5 U |
| 2-CHLOROTOLUENE | ug/kg | | 2 U | 2 U | 2 U |
| 4-CHLOROTOLUENE | ug/kg | | 2 U | 2 U | 2 U |
| DIBROMOCHLOROMETHANE | ug/kg | | 2 U | 2 U | 2 U |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | 10 U | 10 U | 10 U |
| 1,2-DIBROMOETHANE | ug/kg | | 2 U | 2 U | 2 U |
| DIBROMOMETHANE | ug/kg | | 5 U | 5 U | 5 U |
| 1,2-DICHLOROBENZENE | ug/kg | | 2 U | 2 U | 2 U |
| 1,3-DICHLOROBENZENE | ug/kg | | 2 U | 2 U | 2 U |
| 1,4-DICHLOROBENZENE | ug/kg | | 2 U | 2 U | 2 U |
| DICHLORODIFLUOROMETHANE | ug/kg | | 5 U | 5 U | 5 U |
| 1,1-DICHLOROETHANE | ug/kg | | 2 U | 2 U | 2 U |
| 1,2-DICHLOROETHANE | ug/kg | | 2 U | 2 U | 2 U |
| 1,1-DICHLOROETHENE | ug/kg | | 2 U | 2 U | 2 U |
| cis-1,2-DICHLOROETHENE | ug/kg | | 2 U | 2 U | 2 U |
| trans-1,2-DICHLOROETHENE | ug/kg | | 2 U | 2 U | 2 U |
| 1,2-DICHLOROPROPANE | ug/kg | | 2 U | 2 U | 2 U |
| 1,3-DICHLOROPROPANE | ug/kg | | 2 U | 2 U | 2 U |
| 2,2-DICHLOROPROPANE | ug/kg | | 5 U | 5 U | 5 U |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | 2 U | 2 U | 2 U |
| trans-1,3-DICHLOROPROPENE | ug/kg | | 2 U | 2 U | 2 U |
| ETHYLBENZENE | ug/kg | | 2 U | 2 U | 2 U |
| HEXACHLOROBUTADIENE | ug/kg | | 2 U | 2 U | 2 U |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | 2 U | 2 U | 2 U |
| p-ISOPROPYLTOLUENE | ug/kg | | 2 U | 2 U | 2 U |
| METHYLENE CHLORIDE | ug/kg | | 10 U | 10 U | 10 U |
| NAPHTHALENE | ug/kg | | 2 U | 2 U | 2 U |
| n-PROPYLBENZENE | ug/kg | | 2 U | 2 U | 2 U |
| STYRENE | ug/kg | | 2 U | 2 U | 2 U |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | 2 U | 2 U | 2 U |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 7 & 8 | HAZMAT Storage Area | HAZMAT Storage Area | HAZMAT Storage Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH30 | RBH32 | RBH32 | RBH32 |
| | Sample Depth: | 5 to 5.5 ft. | .5 to 1 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH30BS0122 | RBH32BS0101 | RBH32BS0121 | RBH32BS0102 |
| | Collection Date: | 10/22/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| 1.1.2.2-TETRACHLOROETHANE | ug/kg | | 2 U | 2 U | 2 U |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | 2 U | 2 U | 2 U |
| TOLUENE | ug/kg | | 2 U | 2 U | 2 U |
| 1.2.3-TRICHLOROBENZENE | ug/kg | | 2 U | 2 U | 2 U |
| 1.2.4-TRICHLOROBENZENE | ug/kg | | 2 U | 2 U | 2 U |
| 1.1.1-TRICHLOROETHANE | ug/kg | | 2 U | 2 U | 2 U |
| 1.1.2-TRICHLOROETHANE | ug/kg | | 2 U | 2 U | 2 U |
| TRICHLOROETHYLENE (TCE) | ug/kg | | 2 U | 2 U | 2 U |
| TRICHLOROFLUOROMETHANE | ug/kg | | 2 U | 2 U | 2 U |
| 1.2.3-TRICHLOROPROPANE | ug/kg | | 2 U | 2 U | 2 U |
| 1.2.4-TRIMETHYLBENZENE | ug/kg | | 2 U | 2 U | 2 U |
| 1.3.5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | 2 U | 2 U | 2 U |
| VINYL CHLORIDE | ug/kg | | 5 U | 5 U | 5 U |
| O-XYLENE (1.2-DIMETHYLBENZENE) | ug/kg | | 2 U | 2 U | 2 U |
| M.P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1.3-DIMETHYLBENZENE) | ug/kg | | 2 U | 2 U | 2 U |
| 1.2-DICHLOROPROPYLENE | ug/kg | | 2 U | 2 U | 2 U |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES. TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES. TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 5 U | 5 U | 11 = | 7 = |
| TPH (C25 to C40) | mg/kg | 5 U | 39 = | 53 = | 41 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | 50 U | 50 U | 50 U |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | 50 U | 50 U | 50 U |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | 50 U | 50 U | 50 U |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | 50 U | 50 U | 50 U |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | 50 U | 50 U | 50 U |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | 50 U | 50 U | 50 U |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | 50 U | 50 U | 50 U |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 7 & 8 | HAZMAT Storage Area | HAZMAT Storage Area | HAZMAT Storage Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH30 | RBH32 | RBH32 | RBH32 |
| | Sample Depth: | 5 to 5.5 ft. | .5 to 1 ft. | .5 to 1 ft. | 5 to 5.5 ft. |
| | Sample ID: | RBH30BS0122 | RBH32BS0101 | RBH32BS0121 | RBH32BS0102 |
| | Collection Date: | 10/22/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | 9 U | 9 U | 9 U | 9 U |
| ARSENIC | mg/kg | 1.6 = | .56 = | 1.6 = | 1.1 = |
| BARIUM | mg/kg | 7.5 = | 34.1 = | 22.1 = | 8.6 = |
| BERYLLIUM | mg/kg | .5 U | .5 U | .5 U | .5 U |
| CADMIUM | mg/kg | 1 U | 1 U | 1 U | 1 U |
| CHROMIUM, TOTAL | mg/kg | 3.3 = | 7.4 = | 4.5 = | 3.2 = |
| COBALT | mg/kg | 3 U | 3 U | 3 U | 3 U |
| COPPER | mg/kg | 2 U | 3.8 = | 2 U | 2 U |
| LEAD | mg/kg | 10 U | 10 U | 10 U | 10 U |
| MERCURY | mg/kg | .08 U | .015 = | .16 = | .5 U |
| MOLYBDENUM | mg/kg | 3 U | 3 U | 3 U | 3 U |
| NICKEL | mg/kg | 4 U | 4 U | 5.8 = | 4 U |
| SELENIUM | mg/kg | .4 U | .5 = | .6 = | .5 U |
| SILVER | mg/kg | 2 U | 4.8 = | 6.3 = | 3.9 = |
| THALLIUM | mg/kg | .44 U | .1 U | .1 U | .1 U |
| VANADIUM | mg/kg | 5.9 = | 15.1 = | 14.2 = | 5.1 = |
| ZINC | mg/kg | 5.5 = | 17.4 = | 13.7 = | 5.7 = |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Primary Fuel Pump Area | Primary Fuel Pump Area | Secondary Fuel Pump Area | Secondary Fuel Pump Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH38 | RBH38 | RBH39 | RBH39 |
| | Sample Depth: | 13 to 13.5 ft. | 13 to 13.5 ft. | 5.5 to 6 ft. | 8.25 to 8.75 ft. |
| | Sample ID: | RBH38BS0101 | RBH38BS0121 | RBH39BS0101 | RBH39BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Primary Fuel Pump Area | Primary Fuel Pump Area | Secondary Fuel Pump Area | Secondary Fuel Pump Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH38 | RBH38 | RBH39 | RBH39 |
| | Sample Depth: | 13 to 13.5 ft. | 13 to 13.5 ft. | 5.5 to 6 ft. | 8.25 to 8.75 ft. |
| | Sample ID: | RBH38BS0101 | RBH38BS0121 | RBH39BS0101 | RBH39BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 25 U | 25 U | 25 U | 500 U |
| TPH (C25 to C40) | mg/kg | 25 U | 32 = | 25 U | 500 U |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Primary Fuel Pump Area | Primary Fuel Pump Area | Secondary Fuel Pump Area | Secondary Fuel Pump Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH38 | RBH38 | RBH39 | RBH39 |
| | Sample Depth: | 13 to 13.5 ft. | 13 to 13.5 ft. | 5.5 to 6 ft. | 8.25 to 8.75 ft. |
| | Sample ID: | RBH38BS0101 | RBH38BS0121 | RBH39BS0101 | RBH39BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Secondary Fuel Pump Area | Secondary Fuel Pump Area | Fuel Oil Pump Station | Fuel Oil Pump Station |
|---|---|---|---|---|---|
| | Boring Number: | RBH40 | RBH40 | RBH41 | RBH41 |
| | Sample Depth: | 5.5 to 6 ft. | 9.75 to 10.25 ft. | .5 to 1 ft. | 3.5 to 4 ft. |
| | Sample ID: | RBH40BS0101 | RBH40BS0102 | RBH41BS0101 | RBH41BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Secondary Fuel Pump Area | Secondary Fuel Pump Area | Fuel Oil Pump Station | Fuel Oil Pump Station |
|---|---|---|---|---|---|
| | Boring Number: | RBH40 | RBH40 | RBH41 | RBH41 |
| | Sample Depth: | 5.5 to 6 ft. | 9.75 to 10.25 ft. | .5 to 1 ft. | 3.5 to 4 ft. |
| | Sample ID: | RBH40BS0101 | RBH40BS0102 | RBH41BS0101 | RBH41BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/23/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| PETROLEUM HYDROCARBONS | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 5 U | 25 U | 2300 = | 6.9 = |
| TPH (C25 to C40) | mg/kg | 10 = | 40 = | 1600 = | 20 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Secondary Fuel Pump Area | Secondary Fuel Pump Area | Fuel Oil Pump Station | Fuel Oil Pump Station |
|---|---|---|---|---|---|
| | Boring Number: | RBH40 | RBH40 | RBH41 | RBH41 |
| | Sample Depth: | 5.5 to 6 ft. | 9.75 to 10.25 ft. | .5 to 1 ft. | 3.5 to 4 ft. |
| | Sample ID: | RBH40BS0101 | RBH40BS0102 | RBH41BS0101 | RBH41BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/23/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |

Note NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Oil Pump Station | Fuel Oil Pump Station | Switchyard 66kV | Switchyard 66kV |
|---|---|---|---|---|---|
| | Boring Number: | RBH42 | RBH42 | RBH43 | RBH43 |
| | Sample Depth: | .5 to 1 ft. | 4 to 4.5 ft. | .2 to .5 ft. | .5 to .8 ft. |
| | Sample ID: | RBH42BS0101 | RBH42BS0102 | RBH43BS0101 | RBH43BS0112 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1 DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Oil Pump Station | Fuel Oil Pump Station | Switchyard 66kV | Switchyard 66kV |
|---|---|---|---|---|---|
| | Boring Number: | RBH42 | RBH42 | RBH43 | RBH43 |
| | Sample Depth: | .5 to 1 ft. | 4 to 4.5 ft. | .2 to .5 ft. | .5 to .8 ft. |
| | Sample ID: | RBH42BS0101 | RBH42BS0102 | RBH43BS0101 | RBH43BS0112 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/22/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 5 U | 51 = | 5 U | 12 = |
| TPH (C25 to C40) | mg/kg | 6.6 = | 85 = | 5 = | 42 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | 50 U | 50 U |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | 50 U | 50 U |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | 50 U | 50 U |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | 50 U | 50 U |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | 50 U | 50 U |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | 50 U | 50 U |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | 50 U | 50 U |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Oil Pump Station | Fuel Oil Pump Station | Switchyard 66kV | Switchyard 66kV |
|---|---|---|---|---|---|
| | Boring Number: | RBH42 | RBH42 | RBH43 | RBH43 |
| | Sample Depth: | .5 to 1 ft. | 4 to 4.5 ft. | .2 to .5 ft. | .5 to .8 ft. |
| | Sample ID: | RBH42BS0101 | RBH42BS0102 | RBH43BS0101 | RBH43BS0112 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Switchyard 66kV | Switchyard 66kV | Switchyard 66kV | Switchyard 66kV |
|---|---|---|---|---|---|
| | Boring Number: | RBH43 | RBH44 | RBH44 | RBH44 |
| | Sample Depth: | 2 to 3 ft. | .5 to 1 ft. | 2.2 to 2.5 ft. | 2.5 to 2.8 ft. |
| | Sample ID: | RBH43BS0102 | RBH44BS0101 | RBH44BS0122 | RBH44BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Switchyard 66kV | Switchyard 66kV | Switchyard 66kV | Switchyard 66kV |
|---|---|---|---|---|---|
| | Boring Number: | RBH43 | RBH44 | RBH44 | RBH44 |
| | Sample Depth: | 2 to 3 ft. | .5 to 1 ft. | 2.2 to 2.5 ft. | 2.5 to 2.8 ft. |
| | Sample ID: | RBH43BS0102 | RBH44BS0101 | RBH44BS0122 | RBH44BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 5 U | 20 = | 10 = | 9 = |
| TPH (C25 to C40) | mg/kg | 5 U | 63 = | 38 = | 37 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1221 (AROCHLOR 1221) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1232 (AROCHLOR 1232) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1242 (AROCHLOR 1242) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1248 (AROCHLOR 1248) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1254 (AROCHLOR 1254) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1260 (AROCHLOR 1260) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Switchyard 66kV | Switchyard 66kV | Switchyard 66kV | Switchyard 66kV |
|---|---|---|---|---|---|
| | Boring Number: | RBH43 | RBH44 | RBH44 | RBH44 |
| | Sample Depth: | 2 to 3 ft. | .5 to 1 ft. | 2.2 to 2.5 ft. | 2.5 to 2.8 ft. |
| | Sample ID: | RBH43BS0102 | RBH44BS0101 | RBH44BS0122 | RBH44BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM. TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Switchyard 66kV | Switchyard 66kV | Switchyard 220kV | Switchyard 220kV |
|---|---|---|---|---|---|
| | Boring Number: | RBH45 | RBH45 | RBH46 | RBH46 |
| | Sample Depth: | .5 to 1 ft. | 2.6 to 3 ft. | .5 to 1 ft. | 3 to 3.5 ft. |
| | Sample ID: | RBH45BS0101 | RBH45BS0102 | RBH46BS0101 | RBH46BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/21/96 | 10/21/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Switchyard 66kV | Switchyard 66kV | Switchyard 220kV | Switchyard 220kV |
|---|---|---|---|---|---|
| | Boring Number: | RBH45 | RBH45 | RBH46 | RBH46 |
| | Sample Depth: | .5 to 1 ft. | 2.6 to 3 ft. | .5 to 1 ft. | 3 to 3.5 ft. |
| | Sample ID: | RBH45BS0101 | RBH45BS0102 | RBH46BS0101 | RBH46BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/21/96 | 10/21/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 9 = | 5 U | 24 = | 5 U |
| TPH (C25 to C40) | mg/kg | 43 = | 14 = | 200 = | 53 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1221 (AROCHLOR 1221) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1232 (AROCHLOR 1232) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1242 (AROCHLOR 1242) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1248 (AROCHLOR 1248) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1254 (AROCHLOR 1254) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1260 (AROCHLOR 1260) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Switchyard 66kV | Switchyard 66kV | Switchyard 220kV | Switchyard 220kV |
|---|---|---|---|---|---|
| | Boring Number: | RBH45 | RBH45 | RBH46 | RBH46 |
| | Sample Depth: | .5 to 1 ft. | 2.6 to 3 ft. | .5 to 1 ft. | 3 to 3.5 ft. |
| | Sample ID: | RBH45BS0101 | RBH45BS0102 | RBH46BS0101 | RBH46BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/21/96 | 10/21/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Switchyard 220kV | Switchyard 220kV | Switchyard 220kV | Switchyard 220kV |
|---|---|---|---|---|---|
| | Boring Number: | RBH47 | RBH47 | RBH48 | RBH48 |
| | Sample Depth: | .5 to 1 ft. | 3 to 3.5 ft. | .5 to 1 ft. | 3 to 3.5 ft. |
| | Sample ID: | RBH47BS0101 | RBH47BS0102 | RBH48BS0101 | RBH48BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Switchyard 220kV | Switchyard 220kV | Switchyard 220kV | Switchyard 220kV |
|---|---|---|---|---|---|
| | Boring Number: | RBH47 | RBH47 | RBH48 | RBH48 |
| | Sample Depth: | .5 to 1 ft. | 3 to 3.5 ft. | .5 to 1 ft. | 3 to 3.5 ft. |
| | Sample ID: | RBH47BS0101 | RBH47BS0102 | RBH48BS0101 | RBH48BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| Analyte | Units | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| BTEX | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| PETROLEUM HYDROCARBONS | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 14 = | 14 = | 15 = | 5 U |
| TPH (C25 to C40) | mg/kg | 48 = | 66 = | 53 = | 8.8 = |
| | | | | | |
| PCBs | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1221 (AROCHLOR 1221) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1232 (AROCHLOR 1232) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1242 (AROCHLOR 1242) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1248 (AROCHLOR 1248) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1254 (AROCHLOR 1254) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1260 (AROCHLOR 1260) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Switchyard 220kV | Switchyard 220kV | Switchyard 220kV | Switchyard 220kV |
|---|---|---|---|---|---|
| | Boring Number: | RBH47 | RBH47 | RBH48 | RBH48 |
| | Sample Depth: | .5 to 1 ft. | 3 to 3.5 ft. | .5 to 1 ft. | 3 to 3.5 ft. |
| | Sample ID: | RBH47BS0101 | RBH47BS0102 | RBH48BS0101 | RBH48BS0102 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/21/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

# Table 7
## Soil Analytical Results
## Redondo Generating Station
## Edison Phase II ESA

| | Facility Location: | Switchyard 220kV | Switchyard 220kV | Switchyard 220kV | Demineralizer sumps |
|---|---|---|---|---|---|
| | Boring Number: | RBH49 | RBH49 | RBH49 | RBH51 |
| | Sample Depth: | .5 to .8 ft. | 2.8 to 3 ft. | 3 to 3.3 ft. | 10 to 10.5 ft. |
| | Sample ID: | RBH49BS0101 | RBH49BS0121 | RBH49BS0102 | RBH51BS0101 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/22/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note. NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Switchyard 220kV | Switchyard 220kV | Switchyard 220kV | Demineralizer sumps |
|---|---|---|---|---|---|
| | Boring Number: | RBH49 | RBH49 | RBH49 | RBH51 |
| | Sample Depth: | .5 to .8 ft. | 2.8 to 3 ft. | 3 to 3.3 ft. | 10 to 10.5 ft. |
| | Sample ID: | RBH49BS0101 | RBH49BS0121 | RBH49BS0102 | RBH51BS0101 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 5 U | 284 = | 152 = | |
| TPH (C25 to C40) | mg/kg | 16 = | 870 = | 550 = | |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | 50 U | 50 U | 50 U | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | 50 U | 50 U | 50 U | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Switchyard 220kV | Switchyard 220kV | Switchyard 220kV | Demineralizer sumps |
|---|---|---|---|---|---|
| | Boring Number: | RBH49 | RBH49 | RBH49 | RBH51 |
| | Sample Depth: | .5 to .8 ft. | 2.8 to 3 ft. | 3 to 3.3 ft. | 10 to 10.5 ft. |
| | Sample ID: | RBH49BS0101 | RBH49BS0121 | RBH49BS0102 | RBH51BS0101 |
| | Collection Date: | 10/21/96 | 10/21/96 | 10/21/96 | 10/22/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | | | | 9 U |
| ARSENIC | mg/kg | | | | 1.8 = |
| BARIUM | mg/kg | | | | 6.6 = |
| BERYLLIUM | mg/kg | | | | .5 U |
| CADMIUM | mg/kg | | | | 1 U |
| CHROMIUM, TOTAL | mg/kg | | | | 4.6 = |
| COBALT | mg/kg | | | | 3 U |
| COPPER | mg/kg | | | | 2.6 = |
| LEAD | mg/kg | | | | 10 U |
| MERCURY | mg/kg | | | | .08 U |
| MOLYBDENUM | mg/kg | | | | 3 U |
| NICKEL | mg/kg | | | | 4 U |
| SELENIUM | mg/kg | | | | .4 U |
| SILVER | mg/kg | | | | 2 U |
| THALLIUM | mg/kg | | | | .44 U |
| VANADIUM | mg/kg | | | | 9.2 = |
| ZINC | mg/kg | | | | 6.5 = |
| | | | | | |
| pH | units | | | | 7.33 = |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Demineralizer sumps | Demineralizer sumps | Solvent Wash Station | Solvent Wash Station |
|---|---|---|---|---|---|
| | Boring Number: | RBH51 | RBH51 | RBH52 | RBH52 |
| | Sample Depth: | 10 to 10.5 ft. | 12 to 12.5 ft. | .6 to 1.1 ft. | 5.2 to 5.5 ft. |
| | Sample ID: | RBH51BS0121 | RBH51BS0102 | RBH52BS0101 | RBH52BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | 2 U | 2 U |
| BROMOBENZENE | ug/kg | | | 2 U | 2 U |
| BROMOCHLOROMETHANE | ug/kg | | | 5 U | 5 U |
| BROMODICHLOROMETHANE | ug/kg | | | 2 U | 2 U |
| BROMOFORM | ug/kg | | | 5 U | 5 U |
| BROMOMETHANE | ug/kg | | | 5 U | 5 U |
| n-BUTYLBENZENE | ug/kg | | | 2 U | 2 U |
| SEC-BUTYLBENZENE | ug/kg | | | 2 U | 2 U |
| tert-BUTYLBENZENE | ug/kg | | | 2 U | 2 U |
| CARBON TETRACHLORIDE | ug/kg | | | 5 U | 5 U |
| CHLOROBENZENE | ug/kg | | | 2 U | 2 U |
| CHLOROETHANE | ug/kg | | | 5 U | 5 U |
| CHLOROFORM | ug/kg | | | 2 U | 2 U |
| CHLOROMETHANE | ug/kg | | | 5 U | 5 U |
| 2-CHLOROTOLUENE | ug/kg | | | 2 U | 2 U |
| 4-CHLOROTOLUENE | ug/kg | | | 2 U | 2 U |
| DIBROMOCHLOROMETHANE | ug/kg | | | 2 U | 2 U |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | 10 U | 10 U |
| 1,2-DIBROMOETHANE | ug/kg | | | 2 U | 2 U |
| DIBROMOMETHANE | ug/kg | | | 5 U | 5 U |
| 1,2-DICHLOROBENZENE | ug/kg | | | 2 U | 2 U |
| 1,3-DICHLOROBENZENE | ug/kg | | | 2 U | 2 U |
| 1,4-DICHLOROBENZENE | ug/kg | | | 2 U | 2 U |
| DICHLORODIFLUOROMETHANE | ug/kg | | | 5 U | 5 U |
| 1,1-DICHLOROETHANE | ug/kg | | | 2 U | 2 U |
| 1,2-DICHLOROETHANE | ug/kg | | | 2 U | 2 U |
| 1,1-DICHLOROETHENE | ug/kg | | | 2 U | 2 U |
| cis-1,2-DICHLOROETHENE | ug/kg | | | 2 U | 2 U |
| trans-1,2-DICHLOROETHENE | ug/kg | | | 2 U | 2 U |
| 1,2-DICHLOROPROPANE | ug/kg | | | 2 U | 2 U |
| 1,3-DICHLOROPROPANE | ug/kg | | | 2 U | 2 U |
| 2,2-DICHLOROPROPANE | ug/kg | | | 2 U | 2 U |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | 2 U | 2 U |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | 2 U | 2 U |
| ETHYLBENZENE | ug/kg | | | 2 U | 2 U |
| HEXACHLOROBUTADIENE | ug/kg | | | 2 U | 2 U |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | 2 U | 2 U |
| p-ISOPROPYLTOLUENE | ug/kg | | | 2 U | 2 U |
| METHYLENE CHLORIDE | ug/kg | | | 2 U | 2 U |
| NAPHTHALENE | ug/kg | | | 2 U | 2 U |
| n-PROPYLBENZENE | ug/kg | | | 2 U | 2 U |
| STYRENE | ug/kg | | | 2 U | 2 U |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | 2 U | 2 U |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Demineralizer sumps | Demineralizer sumps | Solvent Wash Station | Solvent Wash Station |
|---|---|---|---|---|---|
| | Boring Number: | RBH51 | RBH51 | RBH52 | RBH52 |
| | Sample Depth: | 10 to 10.5 ft. | 12 to 12.5 ft. | .6 to 1.1 ft. | 5.2 to 5.5 ft. |
| | Sample ID: | RBH51BS0121 | RBH51BS0102 | RBH52BS0101 | RBH52BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | 2 U | 2 U |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | 2 U | 2 U |
| TOLUENE | ug/kg | | | 2 U | 2 U |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | 2 U | 2 U |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | 2 U | 2 U |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | 2 U | 2 U |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | 2 U | 2 U |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | 2 U | 2 U |
| TRICHLOROFLUOROMETHANE | ug/kg | | | 2 U | 2 U |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | 2 U | 2 U |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | 2 U | 2 U |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | 2 U | 2 U |
| VINYL CHLORIDE | ug/kg | | | 5 U | 5 U |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | 2 U | 2 U |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | 10 U | 10 U |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | 2 U | 2 U |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | | | 130 = | 7 = |
| TPH (C25 to C40) | mg/kg | | | 150 = | 29 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Demineralizer sumps | Demineralizer sumps | Solvent Wash Station | Solvent Wash Station |
|---|---|---|---|---|---|
| | Boring Number: | RBH51 | RBH51 | RBH52 | RBH52 |
| | Sample Depth: | 10 to 10.5 ft. | 12 to 12.5 ft. | .6 to 1.1 ft. | 5.2 to 5.5 ft. |
| | Sample ID: | RBH51BS0121 | RBH51BS0102 | RBH52BS0101 | RBH52BS0102 |
| | Collection Date: | 10/22/96 | 10/22/96 | 10/22/96 | 10/22/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | 9 U | 9 U | 9 U | 9 U |
| ARSENIC | mg/kg | 1.4 = | 1.8 = | 1.5 = | .8 = |
| BARIUM | mg/kg | 4 = | 5.7 = | 72.8 = | 6.9 = |
| BERYLLIUM | mg/kg | .5 U | .5 U | 1 U | 1 U |
| CADMIUM | mg/kg | 1 U | 1 U | 1 U | 1 U |
| CHROMIUM, TOTAL | mg/kg | 4.6 = | 3.4 = | 7.2 = | 3.1 = |
| COBALT | mg/kg | 3 U | 3 U | 3 U | 3 U |
| COPPER | mg/kg | 2 = | 2.5 = | 6 = | 2 U |
| LEAD | mg/kg | 10 U | 10 U | 21.2 = | 10 U |
| MERCURY | mg/kg | .08 U | .08 U | .7 = | .2 = |
| MOLYBDENUM | mg/kg | 3 U | 3 U | 3 U | 3 U |
| NICKEL | mg/kg | 4 U | 4 U | 4.9 = | 4 U |
| SELENIUM | mg/kg | .4 U | .4 U | .5 U | .5 U |
| SILVER | mg/kg | 2 U | 2 U | 2 U | 2 U |
| THALLIUM | mg/kg | .44 U | .44 U | .8 = | .5 = |
| VANADIUM | mg/kg | 8.3 = | 6 = | 11.2 = | 3.9 = |
| ZINC | mg/kg | 5.7 = | 6.3 = | 15.3 = | 7.8 = |
| | | | | | |
| pH | units | 7.71 = | 7.61 = | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Solvent Wash Station | Pig Launching Area Sump | Pig Launching Area Sump | Oil/Gas Separator Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH52 | RBH53 | RBH53 | RBH54 |
| | Sample Depth: | 5.5 to 5.8 ft. | .5 to 1 ft. | 4.5 to 5 ft. | 8.5 to 9 ft. |
| | Sample ID: | RBH52BS0122 | RBH53BS0101 | RBH53BS0102 | RBH54BS0101 |
| | Collection Date: | 10/22/96 | 10/21/96 | 10/21/96 | 10/24/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | 2 U | | | 5 U |
| BROMOBENZENE | ug/kg | 2 U | | | 2 U |
| BROMOCHLOROMETHANE | ug/kg | 5 U | | | 5 U |
| BROMODICHLOROMETHANE | ug/kg | 2 U | | | 2 U |
| BROMOFORM | ug/kg | 5 U | | | 2 U |
| BROMOMETHANE | ug/kg | 5 U | | | 5 U |
| n-BUTYLBENZENE | ug/kg | 2 U | | | 2 U |
| SEC-BUTYLBENZENE | ug/kg | 2 U | | | 2 U |
| tert-BUTYLBENZENE | ug/kg | 2 U | | | 2 U |
| CARBON TETRACHLORIDE | ug/kg | 5 U | | | 2 U |
| CHLOROBENZENE | ug/kg | 2 U | | | 2 U |
| CHLOROETHANE | ug/kg | 5 U | | | 5 U |
| CHLOROFORM | ug/kg | 2 U | | | 2 U |
| CHLOROMETHANE | ug/kg | 5 U | | | 5 U |
| 2-CHLOROTOLUENE | ug/kg | 2 U | | | 2 U |
| 4-CHLOROTOLUENE | ug/kg | 2 U | | | 2 U |
| DIBROMOCHLOROMETHANE | ug/kg | 2 U | | | 2 U |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | 10 U | | | 2 U |
| 1,2-DIBROMOETHANE | ug/kg | 2 U | | | 2 U |
| DIBROMOMETHANE | ug/kg | 5 U | | | 2 U |
| 1,2-DICHLOROBENZENE | ug/kg | 2 U | | | 2 U |
| 1,3-DICHLOROBENZENE | ug/kg | 2 U | | | 2 U |
| 1,4-DICHLOROBENZENE | ug/kg | 2 U | | | 2 U |
| DICHLORODIFLUOROMETHANE | ug/kg | 5 U | | | 5 U |
| 1,1-DICHLOROETHANE | ug/kg | 2 U | | | 2 U |
| 1,2-DICHLOROETHANE | ug/kg | 2 U | | | 2 U |
| 1,1-DICHLOROETHENE | ug/kg | 2 U | | | 5 U |
| cis-1,2-DICHLOROETHENE | ug/kg | 2 U | | | 2 U |
| trans-1,2-DICHLOROETHENE | ug/kg | 2 U | | | 4 = |
| 1,2-DICHLOROPROPANE | ug/kg | 2 U | | | 2 U |
| 1,3-DICHLOROPROPANE | ug/kg | 2 U | | | 2 U |
| 2,2-DICHLOROPROPANE | ug/kg | 2 U | | | 2 U |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | 2 U | | | 2 U |
| trans-1,3-DICHLOROPROPENE | ug/kg | 2 U | | | 10 U |
| ETHYLBENZENE | ug/kg | 2 U | | | 2 U |
| HEXACHLOROBUTADIENE | ug/kg | 2 U | | | 2 U |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | 2 U | | | 2 U |
| p-ISOPROPYLTOLUENE | ug/kg | 2 U | | | 2 U |
| METHYLENE CHLORIDE | ug/kg | 2 U | | | 10 U |
| NAPHTHALENE | ug/kg | 2 U | | | 2 U |
| n-PROPYLBENZENE | ug/kg | 2 U | | | 2 U |
| STYRENE | ug/kg | 2 U | | | 2 U |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | 2 U | | | 2 U |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Solvent Wash Station | Pig Launching Area Sump | Pig Launching Area Sump | Oil/Gas Separator Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH52 | RBH53 | RBH53 | RBH54 |
| | Sample Depth: | 5.5 to 5.8 ft. | .5 to 1 ft. | 4.5 to 5 ft. | 8.5 to 9 ft. |
| | Sample ID: | RBH52BS0122 | RBH53BS0101 | RBH53BS0102 | RBH54BS0101 |
| | Collection Date: | 10/22/96 | 10/21/96 | 10/21/96 | 10/24/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | 2 U | | | 2 U |
| TETRACHLOROETHYLENE(PCE) | ug/kg | 2 U | | | 2 U |
| TOLUENE | ug/kg | 2 U | | | 3 = |
| 1,2,3-TRICHLOROBENZENE | ug/kg | 2 U | | | 10 U |
| 1,2,4-TRICHLOROBENZENE | ug/kg | 2 U | | | 2 U |
| 1,1,1-TRICHLOROETHANE | ug/kg | 2 U | | | 2 U |
| 1,1,2-TRICHLOROETHANE | ug/kg | 2 U | | | 2 U |
| TRICHLOROETHYLENE (TCE) | ug/kg | 2 U | | | 2 U |
| TRICHLOROFLUOROMETHANE | ug/kg | 2 U | | | 2 U |
| 1,2,3-TRICHLOROPROPANE | ug/kg | 2 U | | | 2 U |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | 2 U | | | 2 U |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | 2 U | | | 2 U |
| VINYL CHLORIDE | ug/kg | 5 U | | | 5 U |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | 4 = | | | 2 U |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | 10 U | | | 3 = |
| 1,2-DICHLOROPROPYLENE | ug/kg | 2 U | | | 2 U |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | 5 U |
| TOLUENE | ug/kg | | | | 5 U |
| ETHYLBENZENE | ug/kg | | | | 5 U |
| XYLENES, TOTAL | ug/kg | | | | 15 U |
| TPH (C4 - C10) | ug/kg | | | | 1000 U |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 5 U | 250 U | 15 = | 5 U |
| TPH (C25 to C40) | mg/kg | 17 = | 280 = | 5 U | 6 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | 50 U |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | 50 U |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | 50 U |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | 50 U |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | 50 U |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | 50 U |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | 50 U |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Solvent Wash Station | Pig Launching Area Sump | Pig Launching Area Sump | Oil/Gas Separator Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH52 | RBH53 | RBH53 | RBH54 |
| | Sample Depth: | 5.5 to 5.8 ft. | .5 to 1 ft. | 4.5 to 5 ft. | 8.5 to 9 ft. |
| | Sample ID: | RBH52BS0122 | RBH53BS0101 | RBH53BS0102 | RBH54BS0101 |
| | Collection Date: | 10/22/96 | 10/21/96 | 10/21/96 | 10/24/96 |
| **Analyte** | **Units** | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | 9 U | | | |
| ARSENIC | mg/kg | .7 = | | | |
| BARIUM | mg/kg | 6.6 = | | | |
| BERYLLIUM | mg/kg | 1 U | | | |
| CADMIUM | mg/kg | 1 U | | | |
| CHROMIUM, TOTAL | mg/kg | 2.8 = | | | |
| COBALT | mg/kg | 3 U | | | |
| COPPER | mg/kg | 2 U | | | |
| LEAD | mg/kg | 10 U | | | |
| MERCURY | mg/kg | .2 = | | | |
| MOLYBDENUM | mg/kg | 3 U | | | |
| NICKEL | mg/kg | 4 U | | | |
| SELENIUM | mg/kg | .5 U | | | |
| SILVER | mg/kg | 2 U | | | |
| THALLIUM | mg/kg | .1 U | | | |
| VANADIUM | mg/kg | 4.8 = | | | |
| ZINC | mg/kg | 6.8 = | | | |
| | | | | | |
| pH | units | | | | |

Note NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH54 | RBH54 | RBH55 | RBH56 |
| | Sample Depth: | 11 to 11.5 ft. | 13 to 13.5 ft. | 13 to 14 ft. | 8.9 to 9.4 ft. |
| | Sample ID: | RBH54BS0102 | RBH54BS0103 | RBH55BS0101 | RBH56BS0101 |
| | Collection Date: | 10/24/96 | 10/24/96 | 11/11/96 | 11/11/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | 5 U | 5 U | 2 U | 2 U |
| BROMOBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| BROMOCHLOROMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| BROMODICHLOROMETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| BROMOFORM | ug/kg | 2 U | 2 U | 5 U | 5 U |
| BROMOMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| n-BUTYLBENZENE | ug/kg | 2 U | 5740 = | 2 U | 2 U |
| SEC-BUTYLBENZENE | ug/kg | 2 U | 2686 = | 2 U | 2 U |
| tert-BUTYLBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| CARBON TETRACHLORIDE | ug/kg | 2 U | 2 U | 5 U | 5 U |
| CHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| CHLOROETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| CHLOROFORM | ug/kg | 2 U | 2 U | 2 U | 2 U |
| CHLOROMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| 2-CHLOROTOLUENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 4-CHLOROTOLUENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| DIBROMOCHLOROMETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | 2 U | 2 U | 10 U | 10 U |
| 1,2-DIBROMOETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| DIBROMOMETHANE | ug/kg | 2 U | 2 U | 5 U | 5 U |
| 1,2-DICHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,3-DICHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,4-DICHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| DICHLORODIFLUOROMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| 1,1 DICHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2-DICHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,1-DICHLOROETHENE | ug/kg | 5 U | 5 U | 2 U | 2 U |
| cis-1,2-DICHLOROETHENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| trans-1,2-DICHLOROETHENE | ug/kg | 2 U | 2520 = | 2 U | 2 U |
| 1,2-DICHLOROPROPANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,3-DICHLOROPROPANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 2,2-DICHLOROPROPANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| trans-1,3-DICHLOROPROPENE | ug/kg | 10 U | 10 U | 2 U | 2 U |
| ETHYLBENZENE | ug/kg | 2 U | 15840 = | 2 U | 2 U |
| HEXACHLOROBUTADIENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | 540 = | 3720 = | 2 U | 2 U |
| p-ISOPROPYLTOLUENE | ug/kg | 1053 = | 2388 = | 2 U | 2 U |
| METHYLENE CHLORIDE | ug/kg | 10 U | 10 U | 10 U | 10 U |
| NAPHTHALENE | ug/kg | 3191 = | 11406 = | 2 U | 2 U |
| n-PROPYLBENZENE | ug/kg | 1100 = | 11800 = | 2 U | 2 U |
| STYRENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH54 | RBH54 | RBH55 | RBH56 |
| | Sample Depth: | 11 to 11.5 ft. | 13 to 13.5 ft. | 13 to 14 ft. | 8.9 to 9.4 ft. |
| | Sample ID: | RBH54BS0102 | RBH54BS0103 | RBH55BS0101 | RBH56BS0101 |
| | Collection Date: | 10/24/96 | 10/24/96 | 11/11/96 | 11/11/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| TETRACHLOROETHYLENE(PCE) | ug/kg | 2 U | 2 U | 2 U | 2 U |
| TOLUENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2,3-TRICHLOROBENZENE | ug/kg | 10 U | 10 U | 2 U | 2 U |
| 1,2,4-TRICHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,1,1-TRICHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,1,2-TRICHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| TRICHLOROETHYLENE (TCE) | ug/kg | 2 U | 2 U | 2 U | 2 U |
| TRICHLOROFLUOROMETHANE | ug/kg | 2 U | 2 U | 5 U | 5 U |
| 1,2,3-TRICHLOROPROPANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | 500 = | 2 U | 2 U | 2 U |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | 884 = | 8760 = | 2 U | 2 U |
| VINYL CHLORIDE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | 2 U | 2 U | 2 U | 2 U |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | 2 U | 2520 = | 2 U | 2 U |
| 1,2-DICHLOROPROPYLENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | 5 U | 740 = | | |
| TOLUENE | ug/kg | 3700 = | 610 = | | |
| ETHYLBENZENE | ug/kg | 21000 = | 34000 = | | |
| XYLENES, TOTAL | ug/kg | 13000 = | 12000 = | | |
| TPH (C4 - C10) | ug/kg | 2900 = | 4400 = | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 72 = | 77 = | 5 U | 5 U |
| TPH (C25 to C40) | mg/kg | 6 = | 5 U | 5 U | 42 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1221 (AROCHLOR 1221) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1232 (AROCHLOR 1232) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1242 (AROCHLOR 1242) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1248 (AROCHLOR 1248) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1254 (AROCHLOR 1254) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1260 (AROCHLOR 1260) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH54 | RBH54 | RBH55 | RBH56 |
| | Sample Depth: | 11 to 11.5 ft. | 13 to 13.5 ft. | 13 to 14 ft. | 8.9 to 9.4 ft. |
| | Sample ID: | RBH54BS0102 | RBH54BS0103 | RBH55BS0101 | RBH56BS0101 |
| | Collection Date: | 10/24/96 | 10/24/96 | 11/11/96 | 11/11/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |

Note NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH56 | RBH56 | RBH57 | RBH57 |
| | Sample Depth: | 14.4 to 15 ft. | 15 to 15.5 ft. | 5 to 5.5 ft. | 8 to 8.5 ft. |
| | Sample ID: | RBH56BS0122 | RBH56BS0102 | RBH57BS0101 | RBH57BS0102 |
| | Collection Date: | 11/11/96 | 11/11/96 | 11/11/96 | 11/11/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| BROMOBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| BROMOCHLOROMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| BROMODICHLOROMETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| BROMOFORM | ug/kg | 5 U | 5 U | 5 U | 5 U |
| BROMOMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| n-BUTYLBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| SEC-BUTYLBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| tert-BUTYLBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| CARBON TETRACHLORIDE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| CHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| CHLOROETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| CHLOROFORM | ug/kg | 2 U | 2 U | 2 U | 2 U |
| CHLOROMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| 2-CHLOROTOLUENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 4-CHLOROTOLUENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| DIBROMOCHLOROMETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | 10 U | 10 U | 10 U | 10 U |
| 1,2-DIBROMOETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| DIBROMOMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| 1,2-DICHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,3-DICHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,4-DICHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| DICHLORODIFLUOROMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| 1,1-DICHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2-DICHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,1-DICHLOROETHENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| cis-1,2-DICHLOROETHENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| trans-1,2-DICHLOROETHENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2-DICHLOROPROPANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,3-DICHLOROPROPANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 2,2-DICHLOROPROPANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| trans-1,3-DICHLOROPROPENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| ETHYLBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| HEXACHLOROBUTADIENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | 2 U | 2 U | 2 U | 2 U |
| p-ISOPROPYLTOLUENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| METHYLENE CHLORIDE | ug/kg | 10 U | 10 U | 10 U | 10 U |
| NAPHTHALENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| n-PROPYLBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| STYRENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |

Note NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH56 | RBH56 | RBH57 | RBH57 |
| | Sample Depth: | 14.4 to 15 ft. | 15 to 15.5 ft. | 5 to 5.5 ft. | 8 to 8.5 ft. |
| | Sample ID: | RBH56BS0122 | RBH56BS0102 | RBH57BS0101 | RBH57BS0102 |
| | Collection Date: | 11/11/96 | 11/11/96 | 11/11/96 | 11/11/96 |
| Analyte | Units | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| TETRACHLOROETHYLENE(PCE) | ug/kg | 2 U | 2 U | 2 U | 2 U |
| TOLUENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2,3-TRICHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2,4-TRICHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,1,1-TRICHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,1,2-TRICHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| TRICHLOROETHYLENE (TCE) | ug/kg | 2 U | 2 U | 2 U | 2 U |
| TRICHLOROFLUOROMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| 1,2,3-TRICHLOROPROPANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | 2 U | 2 U | 2 U | 2 U |
| VINYL CHLORIDE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | 2 U | 2 U | 2 U | 2 U |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2-DICHLOROPROPYLENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | | 5 U | 5 U | 5 U |
| TPH (C25 to C40) | mg/kg | | 5 U | 5 U | 5 U |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1221 (AROCHLOR 1221) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1232 (AROCHLOR 1232) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1242 (AROCHLOR 1242) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1248 (AROCHLOR 1248) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1254 (AROCHLOR 1254) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| PCB-1260 (AROCHLOR 1260) | ug/kg | 50 U | 50 U | 50 U | 50 U |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH56 | RBH56 | RBH57 | RBH57 |
| | Sample Depth: | 14.4 to 15 ft. | 15 to 15.5 ft. | 5 to 5.5 ft. | 8 to 8.5 ft. |
| | Sample ID: | RBH56BS0122 | RBH56BS0102 | RBH57BS0101 | RBH57BS0102 |
| | Collection Date: | 11/11/96 | 11/11/96 | 11/11/96 | 11/11/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Fuel Storage Tank 1 | Fuel Storage Tank 1 | Fuel Storage Tank 2 |
|---|---|---|---|---|---|
| | Boring Number: | RBH57 | RBH58 | RBH58 | RBH59 |
| | Sample Depth: | 15 to 15.5 ft. | 1 to 1.5 ft. | 4.5 to 5 ft. | 1 to 1.5 ft. |
| | Sample ID: | RBH57BS0103 | RBH58BS0101 | RBH58BS0102 | RBH59BS0101 |
| | Collection Date: | 11/11/96 | 11/11/96 | 11/11/96 | 11/11/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | 640 = | | | |
| BROMOBENZENE | ug/kg | 2 U | | | |
| BROMOCHLOROMETHANE | ug/kg | 5 U | | | |
| BROMODICHLOROMETHANE | ug/kg | 2 U | | | |
| BROMOFORM | ug/kg | 5 U | | | |
| BROMOMETHANE | ug/kg | 5 U | | | |
| n-BUTYLBENZENE | ug/kg | 1235 = | | | |
| SEC-BUTYLBENZENE | ug/kg | 895 = | | | |
| tert-BUTYLBENZENE | ug/kg | 2 U | | | |
| CARBON TETRACHLORIDE | ug/kg | 5 U | | | |
| CHLOROBENZENE | ug/kg | 2 U | | | |
| CHLOROETHANE | ug/kg | 5 U | | | |
| CHLOROFORM | ug/kg | 2 U | | | |
| CHLOROMETHANE | ug/kg | 5 U | | | |
| 2-CHLOROTOLUENE | ug/kg | 2 U | | | |
| 4-CHLOROTOLUENE | ug/kg | 2 U | | | |
| DIBROMOCHLOROMETHANE | ug/kg | 2 U | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | 10 U | | | |
| 1,2-DIBROMOETHANE | ug/kg | 2 U | | | |
| DIBROMOMETHANE | ug/kg | 5 U | | | |
| 1,2-DICHLOROBENZENE | ug/kg | 2 U | | | |
| 1,3-DICHLOROBENZENE | ug/kg | 2 U | | | |
| 1,4-DICHLOROBENZENE | ug/kg | 2 U | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | 5 U | | | |
| 1,1-DICHLOROETHANE | ug/kg | 2 U | | | |
| 1,2-DICHLOROETHANE | ug/kg | 2 U | | | |
| 1,1-DICHLOROETHENE | ug/kg | 2 U | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | 2 U | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | 2 U | | | |
| 1,2-DICHLOROPROPANE | ug/kg | 2 U | | | |
| 1,3-DICHLOROPROPANE | ug/kg | 2 U | | | |
| 2,2-DICHLOROPROPANE | ug/kg | 2 U | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | 2 U | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | 2 U | | | |
| ETHYLBENZENE | ug/kg | 2 U | | | |
| HEXACHLOROBUTADIENE | ug/kg | 2 U | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | 1000 = | | | |
| p-ISOPROPYLTOLUENE | ug/kg | 2 U | | | |
| METHYLENE CHLORIDE | ug/kg | 10 U | | | |
| NAPHTHALENE | ug/kg | 2 U | | | |
| n-PROPYLBENZENE | ug/kg | 1240 = | | | |
| STYRENE | ug/kg | 2 U | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | 2 U | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Fuel Storage Tank 1 | Fuel Storage Tank 1 | Fuel Storage Tank 2 |
|---|---|---|---|---|---|
| | Boring Number: | RBH57 | RBH58 | RBH58 | RBH59 |
| | Sample Depth: | 15 to 15.5 ft. | 1 to 1.5 ft. | 4.5 to 5 ft. | 1 to 1.5 ft. |
| | Sample ID: | RBH57BS0103 | RBH58BS0101 | RBH58BS0102 | RBH59BS0101 |
| | Collection Date: | 11/11/96 | 11/11/96 | 11/11/96 | 11/11/96 |
| Analyte | Units | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | 2 U | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | 2 U | | | |
| TOLUENE | ug/kg | 430 = | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | 2 U | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | 2 U | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | 2 U | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | 2 U | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | 2 U | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | 5 U | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | 2 U | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | 2 U | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | 2 U | | | |
| VINYL CHLORIDE | ug/kg | 5 U | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | 2 U | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | 2 U | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | 2 U | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 16000 = | 5 U | 5 U | 300 U |
| TPH (C25 to C40) | mg/kg | 8300 = | 5 U | 5 U | 2900 = |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | 50 U | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | 50 U | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | 50 U | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | 50 U | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | 50 U | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | 50 U | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | 50 U | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Fuel Storage Tank 1 | Fuel Storage Tank 1 | Fuel Storage Tank 2 |
|---|---|---|---|---|---|
| | Boring Number: | RBH57 | RBH58 | RBH58 | RBH59 |
| | Sample Depth: | 15 to 15.5 ft. | 1 to 1.5 ft. | 4.5 to 5 ft. | 1 to 1.5 ft. |
| | Sample ID: | RBH57BS0103 | RBH58BS0101 | RBH58BS0102 | RBH59BS0101 |
| | Collection Date: | 11/11/96 | 11/11/96 | 11/11/96 | 11/11/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM. TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 2 | Fuel Storage Tank 2 | Fuel Storage Tank 3 | Fuel Storage Tank 3 |
|---|---|---|---|---|---|
| | Boring Number: | RBH59 | RBH59 | RBH60 | RBH60 |
| | Sample Depth: | 4.5 to 5 ft. | 4.5 to 5 ft. | .5 to 1 ft. | 4.5 to 5 ft. |
| | Sample ID: | RBH59BS0102 | RBH59BS0122 | RBH60BS0101 | RBH60BS0102 |
| | Collection Date: | 11/11/96 | 11/11/96 | 11/11/96 | 11/11/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analized U - Undetected = - Detected

Table 7
Soil Analytical Results
Redondo Generating Station
Edison Phase II ESA

| | Facility Location: | Fuel Storage Tank 2 | Fuel Storage Tank 2 | Fuel Storage Tank 3 | Fuel Storage Tank 3 |
|---|---|---|---|---|---|
| | Boring Number: | RBH59 | RBH59 | RBH60 | RBH60 |
| | Sample Depth: | 4.5 to 5 ft. | 4.5 to 5 ft. | .5 to 1 ft. | 4.5 to 5 ft. |
| | Sample ID: | RBH59BS0102 | RBH59BS0122 | RBH60BS0101 | RBH60BS0102 |
| | Collection Date: | 11/11/96 | 11/11/96 | 11/11/96 | 11/11/96 |
| Analyte | Units | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| BTEX | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| PETROLEUM HYDROCARBONS | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 5 U | 5 U | 5 U | 5 U |
| TPH (C25 to C40) | mg/kg | 5 U | 5 U | 5 U | 5 U |
| | | | | | |
| PCBs | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 2 | Fuel Storage Tank 2 | Fuel Storage Tank 3 | Fuel Storage Tank 3 |
|---|---|---|---|---|---|
| | Boring Number: | RBH59 | RBH59 | RBH60 | RBH60 |
| | Sample Depth: | 4.5 to 5 ft. | 4.5 to 5 ft. | .5 to 1 ft. | 4.5 to 5 ft. |
| | Sample ID: | RBH59BS0102 | RBH59BS0122 | RBH60BS0101 | RBH60BS0102 |
| | Collection Date: | 11/11/96 | 11/11/96 | 11/11/96 | 11/11/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 4 | Fuel Storage Tank 4 | Fuel Storage Tank 4 | Hazardous Materials Stroage Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH61 | RBH61 | RBH61 | RBH62 |
| | Sample Depth: | 1 to 1.5 ft. | 1 to 1.5 ft. | 4.5 to 5 ft. | .5 to 1.2 ft. |
| | Sample ID: | RBH61BS0101 | RBH61BS0121 | RBH61BS0102 | RBH62BS0201 |
| | Collection Date: | 11/11/96 | 11/11/96 | 11/11/96 | 01/28/97 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | 2 U |
| BROMOBENZENE | ug/kg | | | | 5 U |
| BROMOCHLOROMETHANE | ug/kg | | | | 2 U |
| BROMODICHLOROMETHANE | ug/kg | | | | 5 U |
| BROMOFORM | ug/kg | | | | 5 U |
| BROMOMETHANE | ug/kg | | | | 5 U |
| n-BUTYLBENZENE | ug/kg | | | | 5 U |
| SEC-BUTYLBENZENE | ug/kg | | | | 5 U |
| tert-BUTYLBENZENE | ug/kg | | | | 5 U |
| CARBON TETRACHLORIDE | ug/kg | | | | 5 U |
| CHLOROBENZENE | ug/kg | | | | 2 U |
| CHLOROETHANE | ug/kg | | | | 5 U |
| CHLOROFORM | ug/kg | | | | 2 U |
| CHLOROMETHANE | ug/kg | | | | 5 U |
| 2-CHLOROTOLUENE | ug/kg | | | | 5 U |
| 4-CHLOROTOLUENE | ug/kg | | | | 5 U |
| DIBROMOCHLOROMETHANE | ug/kg | | | | 2 U |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | 10 U |
| 1,2-DIBROMOETHANE | ug/kg | | | | 2 U |
| DIBROMOMETHANE | ug/kg | | | | 2 U |
| 1,2-DICHLOROBENZENE | ug/kg | | | | 2 U |
| 1,3-DICHLOROBENZENE | ug/kg | | | | 2 U |
| 1,4-DICHLOROBENZENE | ug/kg | | | | 2 U |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | 5 U |
| 1,1-DICHLOROETHANE | ug/kg | | | | 2 U |
| 1,2-DICHLOROETHANE | ug/kg | | | | 2 U |
| 1,1-DICHLOROETHENE | ug/kg | | | | 5 U |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | 2 U |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | 2 U |
| 1,2-DICHLOROPROPANE | ug/kg | | | | 2 U |
| 1,3-DICHLOROPROPANE | ug/kg | | | | 2 U |
| 2,2-DICHLOROPROPANE | ug/kg | | | | 5 U |
| 1,1-DICHLOROPROPENE | ug/kg | | | | 2 U |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | 5 U |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | 5 U |
| ETHYLBENZENE | ug/kg | | | | 2 U |
| HEXACHLOROBUTADIENE | ug/kg | | | | 5 U |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | 2 U |
| METHYLENE CHLORIDE | ug/kg | | | | 28 = |
| NAPHTHALENE | ug/kg | | | | 5 U |
| n-PROPYLBENZENE | ug/kg | | | | 2 U |
| STYRENE | ug/kg | | | | 2 U |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | 5 U |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 4 | Fuel Storage Tank 4 | Fuel Storage Tank 4 | Hazardous Materials Stroage Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH61 | RBH61 | RBH61 | RBH62 |
| | Sample Depth: | 1 to 1.5 ft. | 1 to 1.5 ft. | 4.5 to 5 ft. | .5 to 1.2 ft. |
| | Sample ID: | RBH61BS0101 | RBH61BS0121 | RBH61BS0102 | RBH62BS0201 |
| | Collection Date: | 11/11/96 | 11/11/96 | 11/11/96 | 01/28/97 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | 2 U |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | 2 U |
| TOLUENE | ug/kg | | | | 3 = |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | 5 U |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | 5 U |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | 78 = |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | 2 U |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | 2 U |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | 5 U |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | 2 U |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | 11 = |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | 6 = |
| VINYL CHLORIDE | ug/kg | | | | 5 U |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | 2 U |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | 2 U |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | 5 U | 5 U | 5 U | |
| TPH (C25 to C40) | mg/kg | 5 U | 5 U | 5 U | |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 4 | Fuel Storage Tank 4 | Fuel Storage Tank 4 | Hazardous Materials Stroage Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH61 | RBH61 | RBH61 | RBH62 |
| | Sample Depth: | 1 to 1.5 ft. | 1 to 1.5 ft. | 4.5 to 5 ft. | .5 to 1.2 ft. |
| | Sample ID: | RBH61BS0101 | RBH61BS0121 | RBH61BS0102 | RBH62BS0201 |
| | Collection Date: | 11/11/96 | 11/11/96 | 11/11/96 | 01/28/97 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | | | | 37.1 = |
| ARSENIC | mg/kg | | | | 2.4 = |
| BARIUM | mg/kg | | | | 45.3 = |
| BERYLLIUM | mg/kg | | | | .5 U |
| CADMIUM | mg/kg | | | | 1 U |
| CHROMIUM, TOTAL | mg/kg | | | | 6.3 = |
| COBALT | mg/kg | | | | 5.2 = |
| COPPER | mg/kg | | | | 52.6 = |
| LEAD | mg/kg | | | | 134 = |
| MERCURY | mg/kg | | | | .08 U |
| MOLYBDENUM | mg/kg | | | | 3 U |
| NICKEL | mg/kg | | | | 16.1 = |
| SELENIUM | mg/kg | | | | .4 U |
| SILVER | mg/kg | | | | 2 U |
| THALLIUM | mg/kg | | | | .44 U |
| VANADIUM | mg/kg | | | | 31.6 = |
| ZINC | mg/kg | | | | 78.5 = |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Hazardous Materials Stroage Area | Hazardous Materials Stroage Area | Solvent Wash Area | Solvent Wash Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH62 | RBH62 | RBH63 | RBH63 |
| | Sample Depth: | 5.4 to 6 ft. | 10 to 10.8 ft. | 1.4 to 2 ft. | 11 to 11.7 ft. |
| | Sample ID: | RBH62BS0222 | RBH62BS0203 | RBH63BS0201 | RBH63BS0203 |
| | Collection Date: | 01/28/97 | 01/28/97 | 01/28/97 | 01/28/97 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| BROMOBENZENE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| BROMOCHLOROMETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| BROMODICHLOROMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| BROMOFORM | ug/kg | 5 U | 5 U | 5 U | 5 U |
| BROMOMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| n-BUTYLBENZENE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| SEC-BUTYLBENZENE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| tert-BUTYLBENZENE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| CARBON TETRACHLORIDE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| CHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| CHLOROETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| CHLOROFORM | ug/kg | 2 U | 2 U | 2 U | 2 U |
| CHLOROMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| 2-CHLOROTOLUENE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| 4-CHLOROTOLUENE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| DIBROMOCHLOROMETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | 10 U | 10 U | 10 U | 10 U |
| 1,2-DIBROMOETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| DIBROMOMETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2-DICHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,3-DICHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,4-DICHLOROBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| DICHLORODIFLUOROMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| 1,1-DICHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2-DICHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,1-DICHLOROETHENE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| cis-1,2-DICHLOROETHENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| trans-1,2-DICHLOROETHENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2-DICHLOROPROPANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,3-DICHLOROPROPANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 2,2-DICHLOROPROPANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| 1,1-DICHLOROPROPENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| cis-1,3-DICHLOROPROPENE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| trans-1,3-DICHLOROPROPENE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| ETHYLBENZENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| HEXACHLOROBUTADIENE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | 2 U | | 2 U |
| p-ISOPROPYLTOLUENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| METHYLENE CHLORIDE | ug/kg | 10 U | 10 U | 20 = | 10 U |
| NAPHTHALENE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| n-PROPYLBENZENE | ug/kg | 2 U | 2 U | 2 = | 2 U |
| STYRENE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Hazardous Materials Stroage Area | Hazardous Materials Stroage Area | Solvent Wash Area | Solvent Wash Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH62 | RBH62 | RBH63 | RBH63 |
| | Sample Depth: | 5.4 to 6 ft. | 10 to 10.8 ft. | 1.4 to 2 ft. | 11 to 11.7 ft. |
| | Sample ID: | RBH62BS0222 | RBH62BS0203 | RBH63BS0201 | RBH63BS0203 |
| | Collection Date: | 01/28/97 | 01/28/97 | 01/28/97 | 01/28/97 |
| Analyte | Units | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| TETRACHLOROETHYLENE(PCE) | ug/kg | 2 U | 2 U | 16 = | 36 = |
| TOLUENE | ug/kg | 3 = | 2 U | 2 U | 3 = |
| 1,2,3-TRICHLOROBENZENE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| 1,2,4-TRICHLOROBENZENE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| 1,1,1-TRICHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,1,2-TRICHLOROETHANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| TRICHLOROETHYLENE (TCE) | ug/kg | 2 U | 2 U | 28 = | 61 = |
| TRICHLOROFLUOROMETHANE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| 1,2,3-TRICHLOROPROPANE | ug/kg | 2 U | 2 U | 2 U | 2 U |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | 2 U | 2 U | 11 = | 2 U |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | 2 U | 2 U | 8 = | 2 U |
| VINYL CHLORIDE | ug/kg | 5 U | 5 U | 5 U | 5 U |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | 2 U | 2 U | 2 U | 2 U |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | 2 U | 2 U | 2 U | 2 U |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| BTEX | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| PETROLEUM HYDROCARBONS | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | | | | |
| TPH (C25 to C40) | mg/kg | | | | |
| | | | | | |
| PCBs | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Hazardous Materials Stroage Area | Hazardous Materials Stroage Area | Solvent Wash Area | Solvent Wash Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH62 | RBH62 | RBH63 | RBH63 |
| | Sample Depth: | 5.4 to 6 ft. | 10 to 10.8 ft. | 1.4 to 2 ft. | 11 to 11.7 ft. |
| | Sample ID: | RBH62BS0222 | RBH62BS0203 | RBH63BS0201 | RBH63BS0203 |
| | Collection Date: | 01/28/97 | 01/28/97 | 01/28/97 | 01/28/97 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | | | | |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | 9 U | | 9 U | |
| ARSENIC | mg/kg | 6.4 = | | 2.1 = | |
| BARIUM | mg/kg | 139 = | | 8.5 = | |
| BERYLLIUM | mg/kg | .5 U | | .5 U | |
| CADMIUM | mg/kg | 1 U | | 1 U | |
| CHROMIUM. TOTAL | mg/kg | 11 = | | 5.2 = | |
| COBALT | mg/kg | 9.2 = | | 3 U | |
| COPPER | mg/kg | 60.6 = | | 2 U | |
| LEAD | mg/kg | 2550 = | | 10 U | |
| MERCURY | mg/kg | 2.3 = | | .08 U | |
| MOLYBDENUM | mg/kg | 5.8 = | | 3 U | |
| NICKEL | mg/kg | 329 = | | 4 U | |
| SELENIUM | mg/kg | .97 = | | .4 U | |
| SILVER | mg/kg | 2 U | | 2 U | |
| THALLIUM | mg/kg | .44 U | | .44 U | |
| VANADIUM | mg/kg | 929 = | | 15.9 = | |
| ZINC | mg/kg | 156 = | | 6.9 = | |
| | | | | | |
| pH | units | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Transformer Unit 1 - 4, 1-main block A | Transformer Unit 1 - 4, 3-main block A | Transformer Unit 5 | Transformer Unit 5 |
|---|---|---|---|---|---|
| | Boring Number: | RSS33 | RSS34 | RSS35 | RSS35 |
| | Sample Depth: | to ft. | to ft. | to ft. | to ft. |
| | Sample ID: | RSS33SS0101 | RSS34SS0101 | RSS35SS0101 | RSS35SS0121 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/kg | | | | |
| BROMOBENZENE | ug/kg | | | | |
| BROMOCHLOROMETHANE | ug/kg | | | | |
| BROMODICHLOROMETHANE | ug/kg | | | | |
| BROMOFORM | ug/kg | | | | |
| BROMOMETHANE | ug/kg | | | | |
| n-BUTYLBENZENE | ug/kg | | | | |
| SEC-BUTYLBENZENE | ug/kg | | | | |
| tert-BUTYLBENZENE | ug/kg | | | | |
| CARBON TETRACHLORIDE | ug/kg | | | | |
| CHLOROBENZENE | ug/kg | | | | |
| CHLOROETHANE | ug/kg | | | | |
| CHLOROFORM | ug/kg | | | | |
| CHLOROMETHANE | ug/kg | | | | |
| 2-CHLOROTOLUENE | ug/kg | | | | |
| 4-CHLOROTOLUENE | ug/kg | | | | |
| DIBROMOCHLOROMETHANE | ug/kg | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | | | | |
| 1,2-DIBROMOETHANE | ug/kg | | | | |
| DIBROMOMETHANE | ug/kg | | | | |
| 1,2-DICHLOROBENZENE | ug/kg | | | | |
| 1,3-DICHLOROBENZENE | ug/kg | | | | |
| 1,4-DICHLOROBENZENE | ug/kg | | | | |
| DICHLORODIFLUOROMETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHANE | ug/kg | | | | |
| 1,2-DICHLOROETHANE | ug/kg | | | | |
| 1,1-DICHLOROETHENE | ug/kg | | | | |
| cis-1,2-DICHLOROETHENE | ug/kg | | | | |
| trans-1,2-DICHLOROETHENE | ug/kg | | | | |
| 1,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,3-DICHLOROPROPANE | ug/kg | | | | |
| 2,2-DICHLOROPROPANE | ug/kg | | | | |
| 1,1-DICHLOROPROPENE | ug/kg | | | | |
| cis-1,3-DICHLOROPROPENE | ug/kg | | | | |
| trans-1,3-DICHLOROPROPENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| HEXACHLOROBUTADIENE | ug/kg | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | | | | |
| p-ISOPROPYLTOLUENE | ug/kg | | | | |
| METHYLENE CHLORIDE | ug/kg | | | | |
| NAPHTHALENE | ug/kg | | | | |
| n-PROPYLBENZENE | ug/kg | | | | |
| STYRENE | ug/kg | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | | | | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Transformer Unit 1 - 4, 1-main block A | Transformer Unit 1 - 4, 3-main block A | Transformer Unit 5 | Transformer Unit 5 |
|---|---|---|---|---|---|
| | Boring Number: | RSS33 | RSS34 | RSS35 | RSS35 |
| | Sample Depth: | to ft. | to ft. | to ft. | to ft. |
| | Sample ID: | RSS33SS0101 | RSS34SS0101 | RSS35SS0101 | RSS35SS0121 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | | | | |
| 1,1,1-TRICHLOROETHANE | ug/kg | | | | |
| 1,1,2-TRICHLOROETHANE | ug/kg | | | | |
| TRICHLOROETHYLENE (TCE) | ug/kg | | | | |
| TRICHLOROFLUOROMETHANE | ug/kg | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | | | | |
| VINYL CHLORIDE | ug/kg | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | | | | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | | | | |
| 1,2-DICHLOROPROPYLENE | ug/kg | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/kg | | | | |
| TOLUENE | ug/kg | | | | |
| ETHYLBENZENE | ug/kg | | | | |
| XYLENES, TOTAL | ug/kg | | | | |
| TPH (C4 - C10) | ug/kg | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | mg/kg | | | | |
| ETHYLBENZENE | mg/kg | | | | |
| METHYLTERTBUTYLETHER | mg/kg | | | | |
| TOLUENE | mg/kg | | | | |
| XYLENES, TOTAL | mg/kg | | | | |
| TPH (C10 to C24) | mg/kg | | | | |
| TPH (C25 to C40) | mg/kg | | | | |
| | | | | | |
| **PCBs** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | | | | |
| | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | 10 U | 10 U | 25 U | 25 U |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | 10 U | 10 U | 25 U | 25 U |

Note: NA - Not Analized U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Transformer Unit 1 - 4, 1-main block A | Transformer Unit 1 - 4, 3-main block A | Transformer Unit 5 | Transformer Unit 5 |
|---|---|---|---|---|---|
| | Boring Number: | RSS33 | RSS34 | RSS35 | RSS35 |
| | Sample Depth: | to ft. | to ft. | to ft. | to ft. |
| | Sample ID: | RSS33SS0101 | RSS34SS0101 | RSS35SS0101 | RSS35SS0121 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | 10 U | 10 U | 25 U | 25 U |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | 10 U | 10 U | 25 U | 25 U |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | 10 U | 10 U | 25 U | 25 U |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | 10 U | 10 U | 25 U | 25 U |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | 10 U | 10 U | 25 U | 25 U |
| | | | | | |
| METALS | | | | | |
| ANTIMONY | mg/kg | | | | |
| ARSENIC | mg/kg | | | | |
| BARIUM | mg/kg | | | | |
| BERYLLIUM | mg/kg | | | | |
| CADMIUM | mg/kg | | | | |
| CHROMIUM, TOTAL | mg/kg | | | | |
| COBALT | mg/kg | | | | |
| COPPER | mg/kg | | | | |
| LEAD | mg/kg | | | | |
| MERCURY | mg/kg | | | | |
| MOLYBDENUM | mg/kg | | | | |
| NICKEL | mg/kg | | | | |
| SELENIUM | mg/kg | | | | |
| SILVER | mg/kg | | | | |
| THALLIUM | mg/kg | | | | |
| VANADIUM | mg/kg | | | | |
| ZINC | mg/kg | | | | |
| | | | | | |
| pH | units | | | | |

Note NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Transformer Unit 6 |
|---|---|---|
| | Boring Number: | RSS36 |
| | Sample Depth: | to ft. |
| | Sample ID: | RSS36SS0101 |
| | Collection Date: | 10/23/96 |
| Analyte | Units | |
| VOC | | |
| BENZENE | ug/kg | |
| BROMOBENZENE | ug/kg | |
| BROMOCHLOROMETHANE | ug/kg | |
| BROMODICHLOROMETHANE | ug/kg | |
| BROMOFORM | ug/kg | |
| BROMOMETHANE | ug/kg | |
| n-BUTYLBENZENE | ug/kg | |
| SEC-BUTYLBENZENE | ug/kg | |
| tert-BUTYLBENZENE | ug/kg | |
| CARBON TETRACHLORIDE | ug/kg | |
| CHLOROBENZENE | ug/kg | |
| CHLOROETHANE | ug/kg | |
| CHLOROFORM | ug/kg | |
| CHLOROMETHANE | ug/kg | |
| 2-CHLOROTOLUENE | ug/kg | |
| 4-CHLOROTOLUENE | ug/kg | |
| DIBROMOCHLOROMETHANE | ug/kg | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/kg | |
| 1,2-DIBROMOETHANE | ug/kg | |
| DIBROMOMETHANE | ug/kg | |
| 1,2-DICHLOROBENZENE | ug/kg | |
| 1,3-DICHLOROBENZENE | ug/kg | |
| 1,4-DICHLOROBENZENE | ug/kg | |
| DICHLORODIFLUOROMETHANE | ug/kg | |
| 1,1-DICHLOROETHANE | ug/kg | |
| 1,2-DICHLOROETHANE | ug/kg | |
| 1,1-DICHLOROETHENE | ug/kg | |
| cis-1,2-DICHLOROETHENE | ug/kg | |
| trans-1,2-DICHLOROETHENE | ug/kg | |
| 1,2-DICHLOROPROPANE | ug/kg | |
| 1,3-DICHLOROPROPANE | ug/kg | |
| 2,2-DICHLOROPROPANE | ug/kg | |
| 1,1-DICHLOROPROPENE | ug/kg | |
| cis-1,3-DICHLOROPROPENE | ug/kg | |
| trans-1,3-DICHLOROPROPENE | ug/kg | |
| ETHYLBENZENE | ug/kg | |
| HEXACHLOROBUTADIENE | ug/kg | |
| ISOPROPYLBENZENE (CUMENE) | ug/kg | |
| p-ISOPROPYLTOLUENE | ug/kg | |
| METHYLENE CHLORIDE | ug/kg | |
| NAPHTHALENE | ug/kg | |
| n-PROPYLBENZENE | ug/kg | |
| STYRENE | ug/kg | |
| 1,1,1,2-TETRACHLOROETHANE | ug/kg | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 7**
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Transformer Unit 6 |
|---|---|---|
| | Boring Number: | RSS36 |
| | Sample Depth: | to ft. |
| | Sample ID: | RSS36SS0101 |
| | Collection Date: | 10/23/96 |
| **Analyte** | **Units** | |
| 1,1,2,2-TETRACHLOROETHANE | ug/kg | |
| TETRACHLOROETHYLENE(PCE) | ug/kg | |
| TOLUENE | ug/kg | |
| 1,2,3-TRICHLOROBENZENE | ug/kg | |
| 1,2,4-TRICHLOROBENZENE | ug/kg | |
| 1,1,1-TRICHLOROETHANE | ug/kg | |
| 1,1,2-TRICHLOROETHANE | ug/kg | |
| TRICHLOROETHYLENE (TCE) | ug/kg | |
| TRICHLOROFLUOROMETHANE | ug/kg | |
| 1,2,3-TRICHLOROPROPANE | ug/kg | |
| 1,2,4-TRIMETHYLBENZENE | ug/kg | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/kg | |
| VINYL CHLORIDE | ug/kg | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/kg | |
| M,P-XYLENE (SUM OF ISOMERS) | ug/kg | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/kg | |
| 1,2-DICHLOROPROPYLENE | ug/kg | |
| | | |
| **BTEX** | | |
| BENZENE | ug/kg | |
| TOLUENE | ug/kg | |
| ETHYLBENZENE | ug/kg | |
| XYLENES, TOTAL | ug/kg | |
| TPH (C4 - C10) | ug/kg | |
| | | |
| **PETROLEUM HYDROCARBONS** | | |
| BENZENE | mg/kg | |
| ETHYLBENZENE | mg/kg | |
| METHYLTERTBUTYLETHER | mg/kg | |
| TOLUENE | mg/kg | |
| XYLENES, TOTAL | mg/kg | |
| TPH (C10 to C24) | mg/kg | |
| TPH (C25 to C40) | mg/kg | |
| | | |
| **PCBs** | | |
| PCB-1016 (AROCHLOR 1016) | ug/kg | |
| PCB-1221 (AROCHLOR 1221) | ug/kg | |
| PCB-1232 (AROCHLOR 1232) | ug/kg | |
| PCB-1242 (AROCHLOR 1242) | ug/kg | |
| PCB-1248 (AROCHLOR 1248) | ug/kg | |
| PCB-1254 (AROCHLOR 1254) | ug/kg | |
| PCB-1260 (AROCHLOR 1260) | ug/kg | |
| | | |
| PCB-1016 (AROCHLOR 1016) | ug/wipe | 10 U |
| PCB-1221 (AROCHLOR 1221) | ug/wipe | 10 U |

Note: NA - Not Analized U - Undetected = - Detected

Table 7
**Soil Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Transformer Unit 6 |
|---|---|---|
| | Boring Number: | RSS36 |
| | Sample Depth: | to ft. |
| | Sample ID: | RSS36SS0101 |
| | Collection Date: | 10/23/96 |
| Analyte | Units | |
| PCB-1232 (AROCHLOR 1232) | ug/wipe | 10 U |
| PCB-1242 (AROCHLOR 1242) | ug/wipe | 10 U |
| PCB-1248 (AROCHLOR 1248) | ug/wipe | 10 U |
| PCB-1254 (AROCHLOR 1254) | ug/wipe | 10 U |
| PCB-1260 (AROCHLOR 1260) | ug/wipe | 10 U |
| | | |
| METALS | | |
| ANTIMONY | mg/kg | |
| ARSENIC | mg/kg | |
| BARIUM | mg/kg | |
| BERYLLIUM | mg/kg | |
| CADMIUM | mg/kg | |
| CHROMIUM. TOTAL | mg/kg | |
| COBALT | mg/kg | |
| COPPER | mg/kg | |
| LEAD | mg/kg | |
| MERCURY | mg/kg | |
| MOLYBDENUM | mg/kg | |
| NICKEL | mg/kg | |
| SELENIUM | mg/kg | |
| SILVER | mg/kg | |
| THALLIUM | mg/kg | |
| VANADIUM | mg/kg | |
| ZINC | mg/kg | |
| | | |
| pH | units | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 1 | Fuel Storage Tank 2 | Fuel Storage Tank 2 | Fuel Storage Tank 3 |
|---|---|---|---|---|---|
| | Boring Number: | RBH01 | RBH04 | RBH04 | RBH07 |
| | Sample Depth: | 4 ft. | 4 ft. | 4 ft. | 4.2 ft. |
| | Sample ID: | RBH01BW0104 | RBH04BW0104 | RBH04BW0124 | RBH07BW0104 |
| | Collection Date: | 10/24/96 | 10/24/96 | 10/24/96 | 10/24/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/l | .5 U | | | |
| BROMOBENZENE | ug/l | .5 U | | | |
| BROMOCHLOROMETHANE | ug/l | .5 U | | | |
| BROMODICHLOROMETHANE | ug/l | .5 U | | | |
| BROMOFORM | ug/l | .5 U | | | |
| BROMOMETHANE | ug/l | .5 U | | | |
| n-BUTYLBENZENE | ug/l | .5 U | | | |
| SEC-BUTYLBENZENE | ug/l | .5 U | | | |
| tert-BUTYLBENZENE | ug/l | .5 U | | | |
| CARBON TETRACHLORIDE | ug/l | .5 U | | | |
| CHLOROBENZENE | ug/l | .5 U | | | |
| CHLOROETHANE | ug/l | .5 U | | | |
| CHLOROFORM | ug/l | .5 U | | | |
| CHLOROMETHANE | ug/l | .5 U | | | |
| 2-CHLOROTOLUENE | ug/l | .5 U | | | |
| 4-CHLOROTOLUENE | ug/l | .5 U | | | |
| DIBROMOCHLOROMETHANE | ug/l | .5 U | | | |
| 1.2-DIBROMO-3-CHLOROPROPANE | ug/l | 5 U | | | |
| 1.2-DIBROMOETHANE | ug/l | .5 U | | | |
| DIBROMOMETHANE | ug/l | .5 U | | | |
| 1.2-DICHLOROBENZENE | ug/l | .5 U | | | |
| 1.3-DICHLOROBENZENE | ug/l | .5 U | | | |
| 1.4-DICHLOROBENZENE | ug/l | .5 U | | | |
| DICHLORODIFLUOROMETHANE | ug/l | .5 U | | | |
| 1.1-DICHLOROETHANE | ug/l | .5 U | | | |
| 1.2-DICHLOROETHANE | ug/l | .5 U | | | |
| 1.1-DICHLOROETHENE | ug/l | .5 U | | | |
| cis-1.2-DICHLOROETHENE | ug/l | .5 U | | | |
| trans-1.2-DICHLOROETHENE | ug/l | .5 U | | | |
| 1.2-DICHLOROPROPANE | ug/l | .5 U | | | |
| 1.3-DICHLOROPROPANE | ug/l | .5 U | | | |
| 2.2-DICHLOROPROPANE | ug/l | .5 U | | | |
| 1.1-DICHLOROPROPENE | ug/l | | | | |
| cis-1.3-DICHLOROPROPENE | ug/l | .5 U | | | |
| ETHYLBENZENE | ug/l | .5 U | | | |
| HEXACHLOROBUTADIENE | ug/l | .5 U | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/l | .5 U | | | |
| p-ISOPROPYLTOLUENE | ug/l | .5 U | | | |
| METHYLENE CHLORIDE | ug/l | .5 U | | | |
| NAPHTHALENE | ug/l | .5 U | | | |
| n-PROPYLBENZENE | ug/l | 1 U | | | |
| STYRENE | ug/l | .5 U | | | |
| 1.1.1.2-TETRACHLOROETHANE | ug/l | .5 U | | | |
| 1.1.2.2-TETRACHLOROETHANE | ug/l | .5 U | | | |

Note NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 1 | Fuel Storage Tank 2 | Fuel Storage Tank 2 | Fuel Storage Tank 3 |
|---|---|---|---|---|---|
| | Boring Number: | RBH01 | RBH04 | RBH04 | RBH07 |
| | Sample Depth: | 4 ft. | 4 ft. | 4 ft. | 4.2 ft. |
| | Sample ID: | RBH01BW0104 | RBH04BW0104 | RBH04BW0124 | RBH07BW0104 |
| | Collection Date: | 10/24/96 | 10/24/96 | 10/24/96 | 10/24/96 |
| **Analyte** | **Units** | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/l | .5 U | | | |
| TOLUENE | ug/l | .5 U | | | |
| 1,2,3-TRICHLOROBENZENE | ug/l | .5 U | | | |
| 1,2,4-TRICHLOROBENZENE | ug/l | .5 U | | | |
| 1,1,1-TRICHLOROETHANE | ug/l | .5 U | | | |
| 1,1,2-TRICHLOROETHANE | ug/l | .5 U | | | |
| TRICHLOROETHYLENE (TCE) | ug/l | .5 U | | | |
| TRICHLOROFLUOROMETHANE | ug/l | .5 U | | | |
| 1,2,3-TRICHLOROPROPANE | ug/l | 1 U | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/l | .5 U | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/l | .5 U | | | |
| VINYL CHLORIDE | ug/l | .5 U | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/l | 1 U | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/l | 1 U | | | |
| 1,2-DICHLOROPROPYLENE | ug/l | .5 U | | | |
| DICHLOROFLUOROMETHANE | ug/l | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| XYLENES, TOTAL | ug/l | | | | |
| TPH (C4 - C10) | ug/l | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| METHYLTERTBUTYLETHER | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| XYLENES, TOTAL | ug/l | | | | |
| TPH (C10 to C24) | mg/l | .5 U | .5 U | .5 U | .5 U |
| TPH (C25 to C40) | mg/l | .5 U | .5 U | .5 U | .6 = |
| | | | | | |
| **PCB** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/l | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/l | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/l | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/l | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/l | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/l | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/l | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/l | | | | |
| ARSENIC | mg/l | | | | |

Note NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 1 | Fuel Storage Tank 2 | Fuel Storage Tank 2 | Fuel Storage Tank 3 |
|---|---|---|---|---|---|
| | Boring Number: | RBH01 | RBH04 | RBH04 | RBH07 |
| | Sample Depth: | 4 ft. | 4 ft. | 4 ft. | 4.2 ft. |
| | Sample ID: | RBH01BW0104 | RBH04BW0104 | RBH04BW0124 | RBH07BW0104 |
| | Collection Date: | 10/24/96 | 10/24/96 | 10/24/96 | 10/24/96 |
| Analyte | Units | | | | |
| BARIUM | mg/l | | | | |
| BERYLLIUM | mg/l | | | | |
| CADMIUM | mg/l | | | | |
| CHROMIUM, TOTAL | mg/l | | | | |
| COBALT | mg/l | | | | |
| COPPER | mg/l | | | | |
| LEAD | mg/l | | | | |
| MERCURY | mg/l | | | | |
| MOLYBDENUM | mg/l | | | | |
| NICKEL | mg/l | | | | |
| SELENIUM | mg/l | | | | |
| SILVER | mg/l | | | | |
| THALLIUM | mg/l | | | | |
| VANADIUM | mg/l | | | | |
| ZINC | mg/l | | | | |
| | | | | | |
| pH | units | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Note NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 3 | Fuel Storage Tank 5 | Displacement Oil Tank | Former UST's |
|---|---|---|---|---|---|
| | Boring Number: | RBH07 | RBH13 | RBH15 | RBH17 |
| | Sample Depth: | 4.2 ft. | 9.2 ft. | 6.5 ft. | 13 ft. |
| | Sample ID: | RBH07BW0124 | RBH13BW0104 | RBH15BW0104 | RBH17BW0104 |
| | Collection Date: | 10/24/96 | 10/24/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/l | | | | |
| BROMOBENZENE | ug/l | | | | |
| BROMOCHLOROMETHANE | ug/l | | | | |
| BROMODICHLOROMETHANE | ug/l | | | | |
| BROMOFORM | ug/l | | | | |
| BROMOMETHANE | ug/l | | | | |
| n-BUTYLBENZENE | ug/l | | | | |
| SEC-BUTYLBENZENE | ug/l | | | | |
| tert-BUTYLBENZENE | ug/l | | | | |
| CARBON TETRACHLORIDE | ug/l | | | | |
| CHLOROBENZENE | ug/l | | | | |
| CHLOROETHANE | ug/l | | | | |
| CHLOROFORM | ug/l | | | | |
| CHLOROMETHANE | ug/l | | | | |
| 2-CHLOROTOLUENE | ug/l | | | | |
| 4-CHLOROTOLUENE | ug/l | | | | |
| DIBROMOCHLOROMETHANE | ug/l | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/l | | | | |
| 1,2-DIBROMOETHANE | ug/l | | | | |
| DIBROMOMETHANE | ug/l | | | | |
| 1,2-DICHLOROBENZENE | ug/l | | | | |
| 1,3-DICHLOROBENZENE | ug/l | | | | |
| 1,4-DICHLOROBENZENE | ug/l | | | | |
| DICHLORODIFLUOROMETHANE | ug/l | | | | |
| 1,1-DICHLOROETHANE | ug/l | | | | |
| 1,2-DICHLOROETHANE | ug/l | | | | |
| 1,1-DICHLOROETHENE | ug/l | | | | |
| cis-1,2-DICHLOROETHENE | ug/l | | | | |
| trans-1,2-DICHLOROETHENE | ug/l | | | | |
| 1,2-DICHLOROPROPANE | ug/l | | | | |
| 1,3-DICHLOROPROPANE | ug/l | | | | |
| 2,2-DICHLOROPROPANE | ug/l | | | | |
| 1,1-DICHLOROPROPENE | ug/l | | | | |
| cis-1,3-DICHLOROPROPENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| HEXACHLOROBUTADIENE | ug/l | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/l | | | | |
| p-ISOPROPYLTOLUENE | ug/l | | | | |
| METHYLENE CHLORIDE | ug/l | | | | |
| NAPHTHALENE | ug/l | | | | |
| n-PROPYLBENZENE | ug/l | | | | |
| STYRENE | ug/l | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/l | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/l | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 3 | Fuel Storage Tank 5 | Displacement Oil Tank | Former UST's |
|---|---|---|---|---|---|
| | Boring Number: | RBH07 | RBH13 | RBH15 | RBH17 |
| | Sample Depth: | 4.2 ft. | 9.2 ft. | 6.5 ft. | 13 ft. |
| | Sample ID: | RBH07BW0124 | RBH13BW0104 | RBH15BW0104 | RBH17BW0104 |
| | Collection Date: | 10/24/96 | 10/24/96 | 10/23/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/l | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/l | | | | |
| 1,1,1-TRICHLOROETHANE | ug/l | | | | |
| 1,1,2-TRICHLOROETHANE | ug/l | | | | |
| TRICHLOROETHYLENE (TCE) | ug/l | | | | |
| TRICHLOROFLUOROMETHANE | ug/l | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/l | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/l | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/l | | | | |
| VINYL CHLORIDE | ug/l | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/l | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/l | | | | |
| 1,2-DICHLOROPROPYLENE | ug/l | | | | |
| DICHLOROFLUOROMETHANE | ug/l | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| XYLENES, TOTAL | ug/l | | | | |
| TPH (C4 - C10) | ug/l | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | ug/l | | | | .5 U |
| ETHYLBENZENE | ug/l | | | | .5 U |
| METHYLTERTBUTYLETHER | ug/l | | | | .5 U |
| TOLUENE | ug/l | | | | 19 = |
| XYLENES, TOTAL | ug/l | | | | .5 U |
| TPH (C10 to C24) | mg/l | .5 U | 1.9 = | 2.1 = | .5 U |
| TPH (C25 to C40) | mg/l | .5 = | 1.2 = | .63 = | .54 = |
| | | | | | |
| **PCB** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/l | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/l | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/l | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/l | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/l | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/l | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/l | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/l | | | | |
| ARSENIC | mg/l | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Fuel Storage Tank 3 | Fuel Storage Tank 5 | Displacement Oil Tank | Former UST's |
|---|---|---|---|---|---|
| | Boring Number: | RBH07 | RBH13 | RBH15 | RBH17 |
| | Sample Depth: | 4.2 ft. | 9.2 ft. | 6.5 ft. | 13 ft. |
| | Sample ID: | RBH07BW0124 | RBH13BW0104 | RBH15BW0104 | RBH17BW0104 |
| | Collection Date: | 10/24/96 | 10/24/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| BARIUM | mg/l | | | | |
| BERYLLIUM | mg/l | | | | |
| CADMIUM | mg/l | | | | |
| CHROMIUM, TOTAL | mg/l | | | | |
| COBALT | mg/l | | | | |
| COPPER | mg/l | | | | |
| LEAD | mg/l | | | | |
| MERCURY | mg/l | | | | |
| MOLYBDENUM | mg/l | | | | |
| NICKEL | mg/l | | | | |
| SELENIUM | mg/l | | | | |
| SILVER | mg/l | | | | |
| THALLIUM | mg/l | | | | |
| VANADIUM | mg/l | | | | |
| ZINC | mg/l | | | | |
| | | | | | |
| pH | units | | | | |
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Note: NA - Not Analyzed U - Undetected = - Detected

Table 8
Groundwater Analytical Results
Redondo Generating Station
Edison Phase II ESA

| | Facility Location: | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 5 & 6 | Power Block Units 5 & 6 |
|---|---|---|---|---|---|
| | Boring Number: | RBH20 | RBH21 | RBH23 | RBH24 |
| | Sample Depth: | 12.9 ft. | 13 ft. | 12.5 ft. | 12.9 ft. |
| | Sample ID: | RBH20BW0104 | RBH21BW0104 | RBH23BW0104 | RBH24BW0104 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/l | | | | |
| BROMOBENZENE | ug/l | | | | |
| BROMOCHLOROMETHANE | ug/l | | | | |
| BROMODICHLOROMETHANE | ug/l | | | | |
| BROMOFORM | ug/l | | | | |
| BROMOMETHANE | ug/l | | | | |
| n-BUTYLBENZENE | ug/l | | | | |
| SEC-BUTYLBENZENE | ug/l | | | | |
| tert-BUTYLBENZENE | ug/l | | | | |
| CARBON TETRACHLORIDE | ug/l | | | | |
| CHLOROBENZENE | ug/l | | | | |
| CHLOROETHANE | ug/l | | | | |
| CHLOROFORM | ug/l | | | | |
| CHLOROMETHANE | ug/l | | | | |
| 2-CHLOROTOLUENE | ug/l | | | | |
| 4-CHLOROTOLUENE | ug/l | | | | |
| DIBROMOCHLOROMETHANE | ug/l | | | | |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/l | | | | |
| 1,2-DIBROMOETHANE | ug/l | | | | |
| DIBROMOMETHANE | ug/l | | | | |
| 1,2-DICHLOROBENZENE | ug/l | | | | |
| 1,3-DICHLOROBENZENE | ug/l | | | | |
| 1,4-DICHLOROBENZENE | ug/l | | | | |
| DICHLORODIFLUOROMETHANE | ug/l | | | | |
| 1,1-DICHLOROETHANE | ug/l | | | | |
| 1,2-DICHLOROETHANE | ug/l | | | | |
| 1,1-DICHLOROETHENE | ug/l | | | | |
| cis-1,2-DICHLOROETHENE | ug/l | | | | |
| trans-1,2-DICHLOROETHENE | ug/l | | | | |
| 1,2-DICHLOROPROPANE | ug/l | | | | |
| 1,3-DICHLOROPROPANE | ug/l | | | | |
| 2,2-DICHLOROPROPANE | ug/l | | | | |
| 1,1-DICHLOROPROPENE | ug/l | | | | |
| cis-1,3-DICHLOROPROPENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| HEXACHLOROBUTADIENE | ug/l | | | | |
| ISOPROPYLBENZENE (CUMENE) | ug/l | | | | |
| p-ISOPROPYLTOLUENE | ug/l | | | | |
| METHYLENE CHLORIDE | ug/l | | | | |
| NAPHTHALENE | ug/l | | | | |
| n-PROPYLBENZENE | ug/l | | | | |
| STYRENE | ug/l | | | | |
| 1,1,1,2-TETRACHLOROETHANE | ug/l | | | | |
| 1,1,2,2-TETRACHLOROETHANE | ug/l | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Pbase II ESA**

| | Facility Location: | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 5 & 6 | Power Block Units 5 & 6 |
|---|---|---|---|---|---|
| | Boring Number: | RBH20 | RBH21 | RBH23 | RBH24 |
| | Sample Depth: | 12.9 ft. | 13 ft. | 12.5 ft. | 12.9 ft. |
| | Sample ID: | RBH20BW0104 | RBH21BW0104 | RBH23BW0104 | RBH24BW0104 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| 1,2,3-TRICHLOROBENZENE | ug/l | | | | |
| 1,2,4-TRICHLOROBENZENE | ug/l | | | | |
| 1,1,1-TRICHLOROETHANE | ug/l | | | | |
| 1,1,2-TRICHLOROETHANE | ug/l | | | | |
| TRICHLOROETHYLENE (TCE) | ug/l | | | | |
| TRICHLOROFLUOROMETHANE | ug/l | | | | |
| 1,2,3-TRICHLOROPROPANE | ug/l | | | | |
| 1,2,4-TRIMETHYLBENZENE | ug/l | | | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/l | | | | |
| VINYL CHLORIDE | ug/l | | | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/l | | | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/l | | | | |
| 1,2-DICHLOROPROPYLENE | ug/l | | | | |
| DICHLOROFLUOROMETHANE | ug/l | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| XYLENES, TOTAL | ug/l | | | | |
| TPH (C4 - C10) | ug/l | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| METHYLTERTBUTYLETHER | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| XYLENES, TOTAL | ug/l | | | | |
| TPH (C10 to C24) | mg/l | .5 U | .5 U | | .5 U |
| TPH (C25 to C40) | mg/l | .5 U | .5 U | | .5 U |
| | | | | | |
| **PCB** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/l | 1 U | 1 U | | 1 U |
| PCB-1221 (AROCHLOR 1221) | ug/l | 1 U | 1 U | | 1 U |
| PCB-1232 (AROCHLOR 1232) | ug/l | 1 U | 1 U | | 1 U |
| PCB-1242 (AROCHLOR 1242) | ug/l | 1 U | 1 U | | 1 U |
| PCB-1248 (AROCHLOR 1248) | ug/l | 1 U | 1 U | | 1 U |
| PCB-1254 (AROCHLOR 1254) | ug/l | 1 U | 1 U | | 1 U |
| PCB-1260 (AROCHLOR 1260) | ug/l | 1 U | 1 U | | 1 U |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/l | .045 U | .045 U | .045 U | .045 U |
| ARSENIC | mg/l | .005 = | .005 = | .005 = | .016 = |

Note: NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 1 - 4 | Power Block Units 1 - 4 | Power Block Units 5 & 6 | Power Block Units 5 & 6 |
|---|---|---|---|---|---|
| | Boring Number: | RBH20 | RBH21 | RBH23 | RBH24 |
| | Sample Depth: | 12.9 ft. | 13 ft. | 12.5 ft. | 12.9 ft. |
| | Sample ID: | RBH20BW0104 | RBH21BW0104 | RBH23BW0104 | RBH24BW0104 |
| | Collection Date: | 10/23/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| BARIUM | mg/l | .03 = | .012 = | .1 = | .11 = |
| BERYLLIUM | mg/l | .005 U | .005 U | .005 U | .005 U |
| CADMIUM | mg/l | .005 U | .005 U | .005 U | .005 U |
| CHROMIUM, TOTAL | mg/l | .01 U | .01 U | .01 U | .01 U |
| COBALT | mg/l | .015 U | .015 U | .015 U | .015 U |
| COPPER | mg/l | .01 U | .01 U | .01 U | .01 U |
| LEAD | mg/l | .05 U | .05 U | .05 U | .05 U |
| MERCURY | mg/l | .005 = | .006 = | .001 U | .001 U |
| MOLYBDENUM | mg/l | .03 = | .05 = | .03 = | .04 = |
| NICKEL | mg/l | .02 U | .02 U | .02 U | .02 U |
| SELENIUM | mg/l | .005 U | .005 U | .005 U | .005 U |
| SILVER | mg/l | .05 = | .06 = | .04 = | .05 = |
| THALLIUM | mg/l | .007 = | .001 U | .007 = | .008 = |
| VANADIUM | mg/l | .03 = | .05 = | .03 = | .06 = |
| ZINC | mg/l | .07 = | .02 U | .02 U | .02 U |
| | | | | | |
| pH | units | | | | |
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Note: NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 7 & 8 | HAZMAT Storage Area | HAZMAT Storage Area | Primary Fuel Pump Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH29 | RBH32 | RBH32 | RBH38 |
| | Sample Depth: | 11 ft. | 12.5 ft. | 12.5 ft. | 11.1 ft. |
| | Sample ID: | RBH29BW0104 | RBH32BW0104 | RBH32BW0104D | RBH38BW0104 |
| | Collection Date: | 10/23/96 | 11/01/96 | 10/23/96 | 10/24/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/l | | .5 U | | |
| BROMOBENZENE | ug/l | | .5 U | | |
| BROMOCHLOROMETHANE | ug/l | | .5 U | | |
| BROMODICHLOROMETHANE | ug/l | | .5 U | | |
| BROMOFORM | ug/l | | .5 U | | |
| BROMOMETHANE | ug/l | | .5 U | | |
| n-BUTYLBENZENE | ug/l | | .5 U | | |
| SEC-BUTYLBENZENE | ug/l | | .5 U | | |
| tert-BUTYLBENZENE | ug/l | | .5 U | | |
| CARBON TETRACHLORIDE | ug/l | | .5 U | | |
| CHLOROBENZENE | ug/l | | .5 U | | |
| CHLOROETHANE | ug/l | | .5 U | | |
| CHLOROFORM | ug/l | | .5 U | | |
| CHLOROMETHANE | ug/l | | .5 U | | |
| 2-CHLOROTOLUENE | ug/l | | .5 U | | |
| 4-CHLOROTOLUENE | ug/l | | .5 U | | |
| DIBROMOCHLOROMETHANE | ug/l | | .5 U | | |
| 1.2-DIBROMO-3-CHLOROPROPANE | ug/l | | 5 U | | |
| 1.2-DIBROMOETHANE | ug/l | | .5 U | | |
| DIBROMOMETHANE | ug/l | | .5 U | | |
| 1.2-DICHLOROBENZENE | ug/l | | .5 U | | |
| 1.3-DICHLOROBENZENE | ug/l | | .5 U | | |
| 1.4-DICHLOROBENZENE | ug/l | | .5 U | | |
| DICHLORODIFLUOROMETHANE | ug/l | | .5 U | | |
| 1.1-DICHLOROETHANE | ug/l | | .9 = | | |
| 1.2-DICHLOROETHANE | ug/l | | .5 U | | |
| 1.1-DICHLOROETHENE | ug/l | | .5 U | | |
| cis-1.2-DICHLOROETHENE | ug/l | | .5 U | | |
| trans-1.2-DICHLOROETHENE | ug/l | | .5 U | | |
| 1.2-DICHLOROPROPANE | ug/l | | .5 U | | |
| 1.3-DICHLOROPROPANE | ug/l | | .5 U | | |
| 2.2-DICHLOROPROPANE | ug/l | | .5 U | | |
| 1.1-DICHLOROPROPENE | ug/l | | | | |
| cis-1.3-DICHLOROPROPENE | ug/l | | .5 U | | |
| ETHYLBENZENE | ug/l | | .5 U | | |
| HEXACHLOROBUTADIENE | ug/l | | .5 U | | |
| ISOPROPYLBENZENE (CUMENE) | ug/l | | .5 U | | |
| p-ISOPROPYLTOLUENE | ug/l | | .5 U | | |
| METHYLENE CHLORIDE | ug/l | | 1 U | | |
| NAPHTHALENE | ug/l | | 1 U | | |
| n-PROPYLBENZENE | ug/l | | .5 U | | |
| STYRENE | ug/l | | .5 U | | |
| 1.1.1.2-TETRACHLOROETHANE | ug/l | | .5 U | | |
| 1.1.2.2-TETRACHLOROETHANE | ug/l | | .5 U | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 7 & 8 | HAZMAT Storage Area | HAZMAT Storage Area | Primary Fuel Pump Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH29 | RBH32 | RBH32 | RBH38 |
| | Sample Depth: | 11 ft. | 12.5 ft. | 12.5 ft. | 11.1 ft. |
| | Sample ID: | RBH29BW0104 | RBH32BW0104 | RBH32BW0104D | RBH38BW0104 |
| | Collection Date: | 10/23/96 | 11/01/96 | 10/23/96 | 10/24/96 |
| **Analyte** | **Units** | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/l | | .5 U | | |
| TOLUENE | ug/l | | .7 = | | |
| 1,2,3-TRICHLOROBENZENE | ug/l | | .5 U | | |
| 1,2,4-TRICHLOROBENZENE | ug/l | | .5 U | | |
| 1,1,1-TRICHLOROETHANE | ug/l | | .5 U | | |
| 1,1,2-TRICHLOROETHANE | ug/l | | .5 U | | |
| TRICHLOROETHYLENE (TCE) | ug/l | | .5 U | | |
| TRICHLOROFLUOROMETHANE | ug/l | | .5 U | | |
| 1,2,3-TRICHLOROPROPANE | ug/l | | 1 U | | |
| 1,2,4-TRIMETHYLBENZENE | ug/l | | .5 U | | |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/l | | .5 U | | |
| VINYL CHLORIDE | ug/l | | .5 U | | |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/l | | .5 U | | |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/l | | 1 U | | |
| 1,2-DICHLOROPROPYLENE | ug/l | | .5 U | | |
| DICHLOROFLUOROMETHANE | ug/l | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| XYLENES, TOTAL | ug/l | | | | |
| TPH (C4 - C10) | ug/l | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| METHYLTERTBUTYLETHER | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| XYLENES, TOTAL | ug/l | | | | |
| TPH (C10 to C24) | mg/l | .5 U | .5 U | | .5 U |
| TPH (C25 to C40) | mg/l | .5 U | .6 = | | .5 U |
| | | | | | |
| **PCB** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/l | | 1 U | | |
| PCB-1221 (AROCHLOR 1221) | ug/l | | 1 U | | |
| PCB-1232 (AROCHLOR 1232) | ug/l | | 1 U | | |
| PCB-1242 (AROCHLOR 1242) | ug/l | | 1 U | | |
| PCB-1248 (AROCHLOR 1248) | ug/l | | 1 U | | |
| PCB-1254 (AROCHLOR 1254) | ug/l | | 1 U | | |
| PCB-1260 (AROCHLOR 1260) | ug/l | | 1 U | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/l | .045 U | .045 U | .045 U | |
| ARSENIC | mg/l | .0499 = | .008 = | .009 = | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Power Block Units 7 & 8 | HAZMAT Storage Area | HAZMAT Storage Area | Primary Fuel Pump Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH29 | RBH32 | RBH32 | RBH38 |
| | Sample Depth: | 11 ft. | 12.5 ft. | 12.5 ft. | 11.1 ft. |
| | Sample ID: | RBH29BW0104 | RBH32BW0104 | RBH32BW0104D | RBH38BW0104 |
| | Collection Date: | 10/23/96 | 11/01/96 | 10/23/96 | 10/24/96 |
| Analyte | Units | | | | |
| BARIUM | mg/l | 1.4 = | .08 = | .07 = | |
| BERYLLIUM | mg/l | .0049 = | .005 = | .005 = | |
| CADMIUM | mg/l | .025 = | .005 U | .005 U | |
| CHROMIUM, TOTAL | mg/l | 2 = | .01 U | .01 U | |
| COBALT | mg/l | .14 = | .015 U | .015 U | |
| COPPER | mg/l | .54 = | .01 U | .22 = | |
| LEAD | mg/l | .72 = | .05 U | .05 U | |
| MERCURY | mg/l | .0029 = | .003 = | .004 = | |
| MOLYBDENUM | mg/l | .29 = | .03 = | .03 = | |
| NICKEL | mg/l | .42 = | .02 U | .02 U | |
| SELENIUM | mg/l | .002 U | .007 = | .005 = | |
| SILVER | mg/l | .01 U | .05 = | .04 = | |
| THALLIUM | mg/l | .0022 U | .01 U | .01 U | |
| VANADIUM | mg/l | .57 = | .73 = | .72 = | |
| ZINC | mg/l | 2.3 = | .02 U | .11 = | |
| | | | | | |
| pH | units | | | | |
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Note: NA - Not Analyzed U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Secondary Fuel Pump Area | Fuel Oil Pump Station | Demineralizer sumps | Solvent Wash Station |
|---|---|---|---|---|---|
| | Boring Number: | RBH40 | RBH42 | RBH51 | RBH52 |
| | Sample Depth: | 10.4 ft. | 1.3 ft. | 13.7 ft. | 12.5 ft. |
| | Sample ID: | RBH40BW0104 | RBH42BW0104 | RBH51BW0103 | RBH52BW0104 |
| | Collection Date: | 10/24/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/l | | | | .5 U |
| BROMOBENZENE | ug/l | | | | .5 U |
| BROMOCHLOROMETHANE | ug/l | | | | .5 U |
| BROMODICHLOROMETHANE | ug/l | | | | .5 U |
| BROMOFORM | ug/l | | | | .5 U |
| BROMOMETHANE | ug/l | | | | .5 U |
| n-BUTYLBENZENE | ug/l | | | | .5 U |
| SEC-BUTYLBENZENE | ug/l | | | | .5 U |
| tert-BUTYLBENZENE | ug/l | | | | .5 U |
| CARBON TETRACHLORIDE | ug/l | | | | .5 U |
| CHLOROBENZENE | ug/l | | | | .5 U |
| CHLOROETHANE | ug/l | | | | .5 U |
| CHLOROFORM | ug/l | | | | .7 = |
| CHLOROMETHANE | ug/l | | | | .5 U |
| 2-CHLOROTOLUENE | ug/l | | | | .5 U |
| 4-CHLOROTOLUENE | ug/l | | | | .5 U |
| DIBROMOCHLOROMETHANE | ug/l | | | | .5 U |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/l | | | | 5 U |
| 1,2-DIBROMOETHANE | ug/l | | | | .5 U |
| DIBROMOMETHANE | ug/l | | | | .5 U |
| 1,2-DICHLOROBENZENE | ug/l | | | | .5 U |
| 1,3-DICHLOROBENZENE | ug/l | | | | .5 U |
| 1,4-DICHLOROBENZENE | ug/l | | | | .5 U |
| DICHLORODIFLUOROMETHANE | ug/l | | | | .5 U |
| 1,1-DICHLOROETHANE | ug/l | | | | .5 U |
| 1,2-DICHLOROETHANE | ug/l | | | | .5 U |
| 1,1-DICHLOROETHENE | ug/l | | | | 1.6 = |
| cis-1,2-DICHLOROETHENE | ug/l | | | | .7 = |
| trans-1,2-DICHLOROETHENE | ug/l | | | | .5 U |
| 1,2-DICHLOROPROPANE | ug/l | | | | .5 U |
| 1,3-DICHLOROPROPANE | ug/l | | | | .5 U |
| 2,2-DICHLOROPROPANE | ug/l | | | | .5 U |
| 1,1-DICHLOROPROPENE | ug/l | | | | |
| cis-1,3-DICHLOROPROPENE | ug/l | | | | .5 U |
| ETHYLBENZENE | ug/l | | | | .5 U |
| HEXACHLOROBUTADIENE | ug/l | | | | .5 U |
| ISOPROPYLBENZENE (CUMENE) | ug/l | | | | .5 U |
| p-ISOPROPYLTOLUENE | ug/l | | | | .5 U |
| METHYLENE CHLORIDE | ug/l | | | | 1 U |
| NAPHTHALENE | ug/l | | | | 1 U |
| n-PROPYLBENZENE | ug/l | | | | .5 U |
| STYRENE | ug/l | | | | .5 U |
| 1,1,1,2-TETRACHLOROETHANE | ug/l | | | | .5 U |
| 1,1,2,2-TETRACHLOROETHANE | ug/l | | | | .5 U |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Secondary Fuel Pump Area | Fuel Oil Pump Station | Demineralizer sumps | Solvent Wash Station |
|---|---|---|---|---|---|
| | Boring Number: | RBH40 | RBH42 | RBH51 | RBH52 |
| | Sample Depth: | 10.4 ft. | 1.3 ft. | 13.7 ft. | 12.5 ft. |
| | Sample ID: | RBH40BW0104 | RBH42BW0104 | RBH51BW0103 | RBH52BW0104 |
| | Collection Date: | 10/24/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| **Analyte** | **Units** | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/l | | | | 2.9 = |
| TOLUENE | ug/l | | | | 1.1 = |
| 1,2,3-TRICHLOROBENZENE | ug/l | | | | .5 U |
| 1,2,4-TRICHLOROBENZENE | ug/l | | | | .5 U |
| 1,1,1-TRICHLOROETHANE | ug/l | | | | .7 = |
| 1,1,2-TRICHLOROETHANE | ug/l | | | | .5 U |
| TRICHLOROETHYLENE (TCE) | ug/l | | | | 36.7 = |
| TRICHLOROFLUOROMETHANE | ug/l | | | | .5 U |
| 1,2,3-TRICHLOROPROPANE | ug/l | | | | 1 U |
| 1,2,4-TRIMETHYLBENZENE | ug/l | | | | .5 U |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/l | | | | .5 U |
| VINYL CHLORIDE | ug/l | | | | .5 U |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/l | | | | .5 U |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/l | | | | 1 U |
| 1,2-DICHLOROPROPYLENE | ug/l | | | | .5 U |
| DICHLOROFLUOROMETHANE | ug/l | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| XYLENES, TOTAL | ug/l | | | | |
| TPH (C4 - C10) | ug/l | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| METHYLTERTBUTYLETHER | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| XYLENES, TOTAL | ug/l | | | | |
| TPH (C10 to C24) | mg/l | .7 = | .5 U | | .5 U |
| TPH (C25 to C40) | mg/l | .6 = | .5 U | | .6 = |
| | | | | | |
| **PCB** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/l | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/l | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/l | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/l | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/l | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/l | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/l | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/l | | | .045 U | .045 U |
| ARSENIC | mg/l | | | .002 U | .009 = |

Note NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Secondary Fuel Pump Area | Fuel Oil Pump Station | Demineralizer sumps | Solvent Wash Station |
|---|---|---|---|---|---|
| | Boring Number: | RBH40 | RBH42 | RBH51 | RBH52 |
| | Sample Depth: | 10.4 ft. | 1.3 ft. | 13.7 ft. | 12.5 ft. |
| | Sample ID: | RBH40BW0104 | RBH42BW0104 | RBH51BW0103 | RBH52BW0104 |
| | Collection Date: | 10/24/96 | 10/23/96 | 10/23/96 | 10/23/96 |
| Analyte | Units | | | | |
| BARIUM | mg/l | | | .027 = | .033 = |
| BERYLLIUM | mg/l | | | .0025 U | .005 U |
| CADMIUM | mg/l | | | .005 U | .005 U |
| CHROMIUM, TOTAL | mg/l | | | .01 U | .01 U |
| COBALT | mg/l | | | .015 U | .015 U |
| COPPER | mg/l | | | .01 U | .03 = |
| LEAD | mg/l | | | .002 U | .06 = |
| MERCURY | mg/l | | | .0003 U | .009 = |
| MOLYBDENUM | mg/l | | | .019 = | .02 = |
| NICKEL | mg/l | | | .02 U | .02 U |
| SELENIUM | mg/l | | | .002 U | .005 U |
| SILVER | mg/l | | | .01 U | .04 = |
| THALLIUM | mg/l | | | .0022 U | .003 = |
| VANADIUM | mg/l | | | .01 U | .06 = |
| ZINC | mg/l | | | .02 U | .08 = |
| | | | | | |
| pH | units | | | 7.46 = | |

Note: NA - Not Analyzed U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH54 | RBH55 | RBH56 | RBH57 |
| | Sample Depth: | 15 ft. | 22 ft. | 13.4 ft. | 13 ft. |
| | Sample ID: | RBH54BW0104 | RBH55BW0106 | RBH56BW0106 | RBH57BW0104 |
| | Collection Date: | 10/24/96 | 11/11/96 | 11/11/96 | 11/11/96 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/l | 469 = | 2 U | 2 U | .5 U |
| BROMOBENZENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| BROMOCHLOROMETHANE | ug/l | 25 U | 2 U | 2 U | .5 U |
| BROMODICHLOROMETHANE | ug/l | 25 U | 5 U | 5 U | .5 U |
| BROMOFORM | ug/l | 25 U | 2 U | 2 U | .5 U |
| BROMOMETHANE | ug/l | 25 U | 5 U | 5 U | .5 U |
| n-BUTYLBENZENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| SEC-BUTYLBENZENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| tert-BUTYLBENZENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| CARBON TETRACHLORIDE | ug/l | 25 U | 2 U | 2 U | .5 U |
| CHLOROBENZENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| CHLOROETHANE | ug/l | 25 U | 5 U | 5 U | .5 U |
| CHLOROFORM | ug/l | 25 U | 2 U | 2 U | .5 U |
| CHLOROMETHANE | ug/l | 25 U | 5 U | 5 U | .5 U |
| 2-CHLOROTOLUENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 4-CHLOROTOLUENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| DIBROMOCHLOROMETHANE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 1,2-DIBROMOETHANE | ug/l | 25 U | 2 U | 2 U | 5 U |
| DIBROMOMETHANE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 1,2-DICHLOROBENZENE | ug/l | 25 U | 10 U | 10 U | .5 U |
| 1,3-DICHLOROBENZENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 1,4-DICHLOROBENZENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| DICHLORODIFLUOROMETHANE | ug/l | 25 U | 5 U | .5 U | .5 U |
| 1,1-DICHLOROETHANE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 1,2-DICHLOROETHANE | ug/l | 25 U | 5 U | 5 U | .5 U |
| 1,1-DICHLOROETHENE | ug/l | 25 U | 2 U | 2 U | .8 = |
| cis-1,2-DICHLOROETHENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| trans-1,2-DICHLOROETHENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 1,2-DICHLOROPROPANE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 1,3-DICHLOROPROPANE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 2,2-DICHLOROPROPANE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 1,1-DICHLOROPROPENE | ug/l | | | | |
| cis-1,3-DICHLOROPROPENE | ug/l | 25 U | 5 U | 5 U | .5 U |
| ETHYLBENZENE | ug/l | 227 = | 2 U | 2 U | .5 U |
| HEXACHLOROBUTADIENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| ISOPROPYLBENZENE (CUMENE) | ug/l | 40 = | 2 U | 2 U | 6.6 = |
| p-ISOPROPYLTOLUENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| METHYLENE CHLORIDE | ug/l | 25 U | 10 U | 10 U | 1 U |
| NAPHTHALENE | ug/l | 167.6 = | 2 U | 2 U | 1 U |
| n-PROPYLBENZENE | ug/l | 95 = | 2 U | 2 U | 6.1 = |
| STYRENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 1,1,1,2-TETRACHLOROETHANE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 1,1,2,2-TETRACHLOROETHANE | ug/l | 25 U | 2 U | 2 U | .5 U |

Note. NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH54 | RBH55 | RBH56 | RBH57 |
| | Sample Depth: | 15 ft. | 22 ft. | 13.4 ft. | 13 ft. |
| | Sample ID: | RBH54BW0104 | RBH55BW0106 | RBH56BW0106 | RBH57BW0104 |
| | Collection Date: | 10/24/96 | 11/11/96 | 11/11/96 | 11/11/96 |
| **Analyte** | **Units** | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/l | 25 U | 2 U | 2 U | .5 U |
| TOLUENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 1,2,3-TRICHLOROBENZENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 1,2,4-TRICHLOROBENZENE | ug/l | 25 U | 5 U | 5 U | .5 U |
| 1,1,1-TRICHLOROETHANE | ug/l | 25 U | 2 U | 2 U | .5 U |
| 1,1,2-TRICHLOROETHANE | ug/l | 25 U | 2 U | 2 U | .5 U |
| TRICHLOROETHYLENE (TCE) | ug/l | 25 U | 2 U | 2 U | .5 U |
| TRICHLOROFLUOROMETHANE | ug/l | 25 U | 5 U | 2 U | .5 U |
| 1,2,3-TRICHLOROPROPANE | ug/l | 25 U | 2 U | 2 U | 1 U |
| 1,2,4-TRIMETHYLBENZENE | ug/l | 48 = | 2 U | 2 U | .5 U |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/l | 25 U | 2 U | 2 U | .5 U |
| VINYL CHLORIDE | ug/l | 25 U | 5 U | 5 U | .5 U |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/l | 25 U | 2 U | 2 U | .5 U |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/l | 51 = | 2 U | 2 U | 1 U |
| 1,2-DICHLOROPROPYLENE | ug/l | 25 U | 2 U | 2 U | .5 U |
| DICHLOROFLUOROMETHANE | ug/l | | | | |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/l | 550 = | | | |
| TOLUENE | ug/l | 12 = | | | |
| ETHYLBENZENE | ug/l | 460 = | | | |
| XYLENES, TOTAL | ug/l | 180 = | | | |
| TPH (C4 - C10) | ug/l | 50 = | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| METHYLTERTBUTYLETHER | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| XYLENES, TOTAL | ug/l | | | | |
| TPH (C10 to C24) | mg/l | | .5 U | .5 U | |
| TPH (C25 to C40) | mg/l | | 380 = | 20 = | |
| | | | | | |
| **PCB** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/l | | 1 U | 1 U | |
| PCB-1221 (AROCHLOR 1221) | ug/l | | 1 U | 1 U | |
| PCB-1232 (AROCHLOR 1232) | ug/l | | 1 U | 1 U | |
| PCB-1242 (AROCHLOR 1242) | ug/l | | 1 U | 1 U | |
| PCB-1248 (AROCHLOR 1248) | ug/l | | 1 U | 1 U | |
| PCB-1254 (AROCHLOR 1254) | ug/l | | 1 U | 1 U | |
| PCB-1260 (AROCHLOR 1260) | ug/l | | 1 U | 1 U | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/l | | | | |
| ARSENIC | mg/l | | | | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area | Oil/Gas Separator Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH54 | RBH55 | RBH56 | RBH57 |
| | Sample Depth: | 15 ft. | 22 ft. | 13.4 ft. | 13 ft. |
| | Sample ID: | RBH54BW0104 | RBH55BW0106 | RBH56BW0106 | RBH57BW0104 |
| | Collection Date: | 10/24/96 | 11/11/96 | 11/11/96 | 11/11/96 |
| Analyte | Units | | | | |
| BARIUM | mg/l | | | | |
| BERYLLIUM | mg/l | | | | |
| CADMIUM | mg/l | | | | |
| CHROMIUM, TOTAL | mg/l | | | | |
| COBALT | mg/l | | | | |
| COPPER | mg/l | | | | |
| LEAD | mg/l | | | | |
| MERCURY | mg/l | | | | |
| MOLYBDENUM | mg/l | | | | |
| NICKEL | mg/l | | | | |
| SELENIUM | mg/l | | | | |
| SILVER | mg/l | | | | |
| THALLIUM | mg/l | | | | |
| VANADIUM | mg/l | | | | |
| ZINC | mg/l | | | | |
| | | | | | |
| pH | units | | | | |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |

Note NA - Not Analyzed U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Hazardous Materials Stroage Area | Solvent Wash Area | Solvent Wash Area | Solvent Wash Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH62 | RBH63 | RBH63 | RBH64 |
| | Sample Depth: | 11.7 ft. | 11.3 ft. | 11.3 ft. | 11.8 ft. |
| | Sample ID: | RBH62BW0201 | RBH63BW0201 | RBH63BW0221 | RBH64BW0201 |
| | Collection Date: | 01/28/97 | 01/28/97 | 01/28/97 | 01/28/97 |
| Analyte | Units | | | | |
| VOC | | | | | |
| BENZENE | ug/l | .5 U | .5 U | 12.7 = | .5 U |
| BROMOBENZENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| BROMOCHLOROMETHANE | ug/l | .5 U | .5 U | .5 U | .5 U |
| BROMODICHLOROMETHANE | ug/l | .5 U | .5 U | .5 U | .5 U |
| BROMOFORM | ug/l | .5 U | .5 U | .5 U | .5 U |
| BROMOMETHANE | ug/l | .5 U | .5 U | .5 U | .5 U |
| n-BUTYLBENZENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| SEC-BUTYLBENZENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| tert-BUTYLBENZENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| CARBON TETRACHLORIDE | ug/l | 13.6 = | .5 U | .5 U | .5 U |
| CHLOROBENZENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| CHLOROETHANE | ug/l | 4.5 = | .5 U | .5 U | .5 U |
| CHLOROFORM | ug/l | .5 U | .5 U | .5 U | .5 U |
| CHLOROMETHANE | ug/l | .5 U | .5 U | .5 U | .5 U |
| 2-CHLOROTOLUENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| 4-CHLOROTOLUENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| DIBROMOCHLOROMETHANE | ug/l | .5 U | .5 U | .5 U | .5 U |
| 1,2-DIBROMO-3-CHLOROPROPANE | ug/l | 5 U | 5 U | .5 U | .5 U |
| 1,2-DIBROMOETHANE | ug/l | .5 U | .5 U | 5 U | 5 U |
| DIBROMOMETHANE | ug/l | .5 U | .5 U | .5 U | .5 U |
| 1,2-DICHLOROBENZENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| 1,3-DICHLOROBENZENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| 1,4-DICHLOROBENZENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| DICHLORODIFLUOROMETHANE | ug/l | | | | |
| 1,1-DICHLOROETHANE | ug/l | 22 = | 1.3 = | .5 U | 3.6 = |
| 1,2-DICHLOROETHANE | ug/l | .5 U | .5 U | .5 U | .5 U |
| 1,1-DICHLOROETHENE | ug/l | 4.7 = | .5 U | .5 U | .5 U |
| cis-1,2-DICHLOROETHENE | ug/l | .5 U | 1.3 = | .5 U | .5 U |
| trans-1,2-DICHLOROETHENE | ug/l | 5 U | .5 U | .5 U | .5 U |
| 1,2-DICHLOROPROPANE | ug/l | .5 U | .5 U | .5 U | .5 U |
| 1,3-DICHLOROPROPANE | ug/l | 5 U | .5 U | .5 U | .5 U |
| 2,2-DICHLOROPROPANE | ug/l | 5 U | .5 U | .5 U | .5 U |
| 1,1-DICHLOROPROPENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| cis-1,3-DICHLOROPROPENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| ETHYLBENZENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| HEXACHLOROBUTADIENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| ISOPROPYLBENZENE (CUMENE) | ug/l | .5 U | .5 U | .5 U | .5 U |
| p-ISOPROPYLTOLUENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| METHYLENE CHLORIDE | ug/l | 1 U | 1 U | 1 U | 1 U |
| NAPHTHALENE | ug/l | 1 U | 1 U | 1 U | 1 U |
| n-PROPYLBENZENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| STYRENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| 1,1,1,2-TETRACHLOROETHANE | ug/l | .5 U | .5 U | .5 U | .5 U |
| 1,1,2,2-TETRACHLOROETHANE | ug/l | .5 U | .5 U | .5 U | .5 U |

Note: NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Hazardous Materials Stroage Area | Solvent Wash Area | Solvent Wash Area | Solvent Wash Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH62 | RBH63 | RBH63 | RBH64 |
| | Sample Depth: | 11.7 ft. | 11.3 ft. | 11.3 ft. | 11.8 ft. |
| | Sample ID: | RBH62BW0201 | RBH63BW0201 | RBH63BW0221 | RBH64BW0201 |
| | Collection Date: | 01/28/97 | 01/28/97 | 01/28/97 | 01/28/97 |
| **Analyte** | **Units** | | | | |
| TETRACHLOROETHYLENE(PCE) | ug/l | .5 U | .5 U | .5 U | .5 U |
| TOLUENE | ug/l | .5 U | .5 U | 2.7 = | .5 U |
| 1,2,3-TRICHLOROBENZENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| 1,2,4-TRICHLOROBENZENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| 1,1,1-TRICHLOROETHANE | ug/l | 110 = | .7 = | .5 U | .5 U |
| 1,1,2-TRICHLOROETHANE | ug/l | .5 U | .5 U | .5 U | .5 U |
| TRICHLOROETHYLENE (TCE) | ug/l | .5 U | .5 U | .5 U | .5 U |
| TRICHLOROFLUOROMETHANE | ug/l | 3.8 = | .5 U | .5 U | .5 U |
| 1,2,3-TRICHLOROPROPANE | ug/l | 1 U | 1 U | 1 U | 1 U |
| 1,2,4-TRIMETHYLBENZENE | ug/l | .5 U | .5 U | .5 U | .5 U |
| 1,3,5-TRIMETHYLBENZENE (MESITYLENE) | ug/l | .5 U | .5 U | .5 U | .5 U |
| VINYL CHLORIDE | ug/l | .5 U | .5 U | .5 U | .5 U |
| O-XYLENE (1,2-DIMETHYLBENZENE) | ug/l | .5 U | .5 U | .5 U | .5 U |
| M-XYLENE (1,3-DIMETHYLBENZENE) | ug/l | 1 U | 1 U | 1 U | 1 U |
| 1,2-DICHLOROPROPYLENE | ug/l | | | | |
| DICHLOROFLUOROMETHANE | ug/l | .5 U | .5 U | .5 U | .5 U |
| | | | | | |
| **BTEX** | | | | | |
| BENZENE | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| XYLENES, TOTAL | ug/l | | | | |
| TPH (C4 - C10) | ug/l | | | | |
| | | | | | |
| **PETROLEUM HYDROCARBONS** | | | | | |
| BENZENE | ug/l | | | | |
| ETHYLBENZENE | ug/l | | | | |
| METHYLTERTBUTYLETHER | ug/l | | | | |
| TOLUENE | ug/l | | | | |
| XYLENES, TOTAL | ug/l | | | | |
| TPH (C10 to C24) | mg/l | | | | |
| TPH (C25 to C40) | mg/l | | | | |
| | | | | | |
| **PCB** | | | | | |
| PCB-1016 (AROCHLOR 1016) | ug/l | | | | |
| PCB-1221 (AROCHLOR 1221) | ug/l | | | | |
| PCB-1232 (AROCHLOR 1232) | ug/l | | | | |
| PCB-1242 (AROCHLOR 1242) | ug/l | | | | |
| PCB-1248 (AROCHLOR 1248) | ug/l | | | | |
| PCB-1254 (AROCHLOR 1254) | ug/l | | | | |
| PCB-1260 (AROCHLOR 1260) | ug/l | | | | |
| | | | | | |
| **METALS** | | | | | |
| ANTIMONY | mg/l | .5 U | .5 U | .5 U | |
| ARSENIC | mg/l | .01 U | .02 = | .01 U | |

Note: NA - Not Analized U - Undetected = - Detected

**Table 8**
**Groundwater Analytical Results**
**Redondo Generating Station**
**Edison Phase II ESA**

| | Facility Location: | Hazardous Materials Stroage Area | Solvent Wash Area | Solvent Wash Area | Solvent Wash Area |
|---|---|---|---|---|---|
| | Boring Number: | RBH62 | RBH63 | RBH63 | RBH64 |
| | Sample Depth: | 11.7 ft. | 11.3 ft. | 11.3 ft. | 11.8 ft. |
| | Sample ID: | RBH62BW0201 | RBH63BW0201 | RBH63BW0221 | RBH64BW0201 |
| | Collection Date: | 01/28/97 | 01/28/97 | 01/28/97 | 01/28/97 |
| Analyte | Units | | | | |
| BARIUM | mg/l | .14 = | .35 = | .06 = | |
| BERYLLIUM | mg/l | .02 = | .1 U | .1 U | |
| CADMIUM | mg/l | .014 = | .05 U | .05 U | |
| CHROMIUM, TOTAL | mg/l | .02 = | .05 U | .05 U | |
| COBALT | mg/l | .07 = | .05 U | .05 U | |
| COPPER | mg/l | .05 U | .05 U | .05 = | |
| LEAD | mg/l | .027 = | .025 = | .067 = | |
| MERCURY | mg/l | .002 = | .003 = | .001 = | |
| MOLYBDENUM | mg/l | .1 U | .1 U | .1 U | |
| NICKEL | mg/l | .09 = | .05 U | .05 U | |
| SELENIUM | mg/l | .005 U | .005 U | .005 U | |
| SILVER | mg/l | .11 = | .1 = | .09 = | |
| THALLIUM | mg/l | .01 U | .01 U | .01 U | |
| VANADIUM | mg/l | .17 = | .5 U | .5 U | |
| ZINC | mg/l | .5 = | 3.1 = | .17 = | |
| | | | | | |
| pH | units | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Note: NA - Not Analized U - Undetected = - Detected

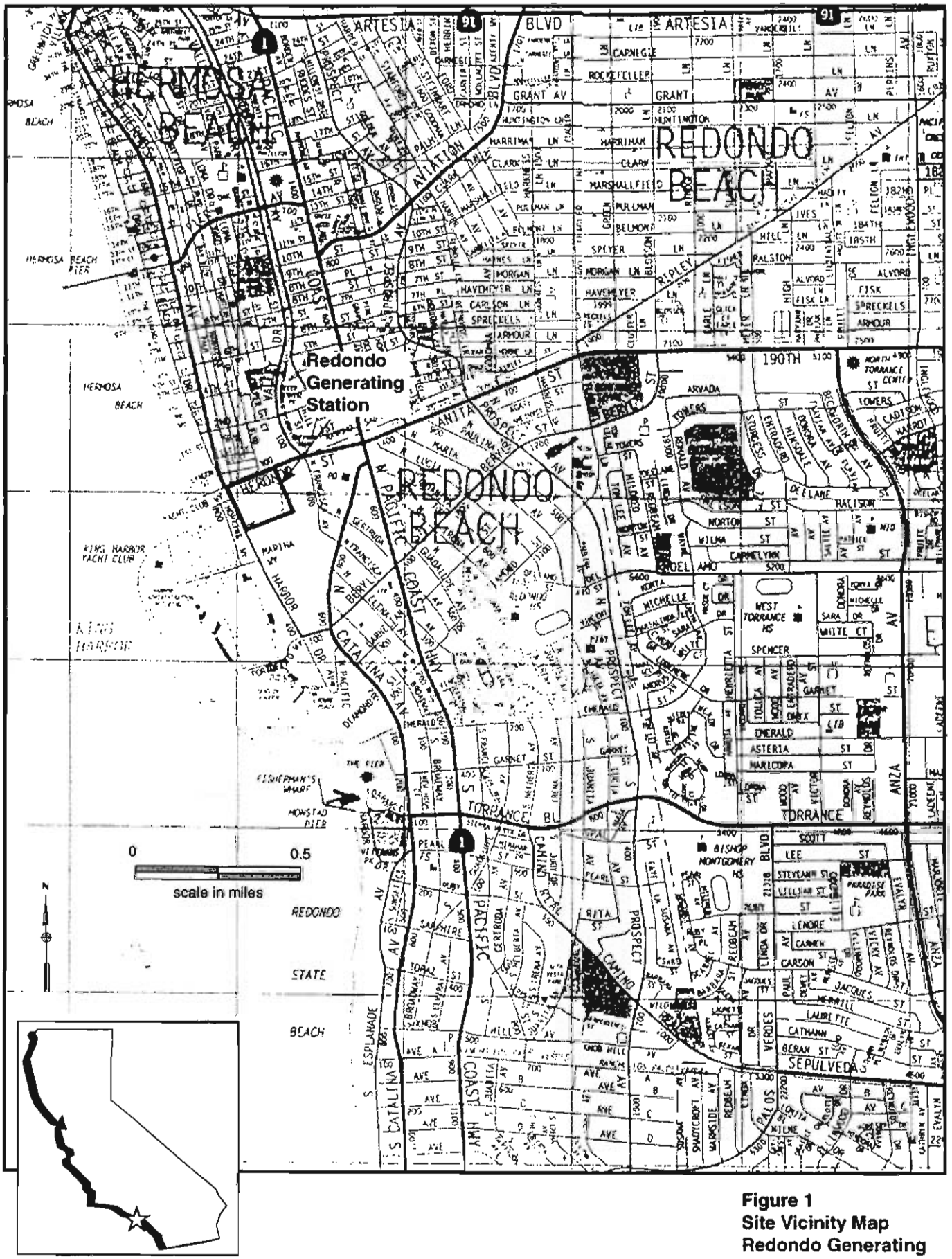


**Figure 1**
**Site Vicinity Map**
**Redondo Generating Station**
**Edison Phase II ESA**

**CH2MHILL**

m137125.ED.RP.RD redond 6/97

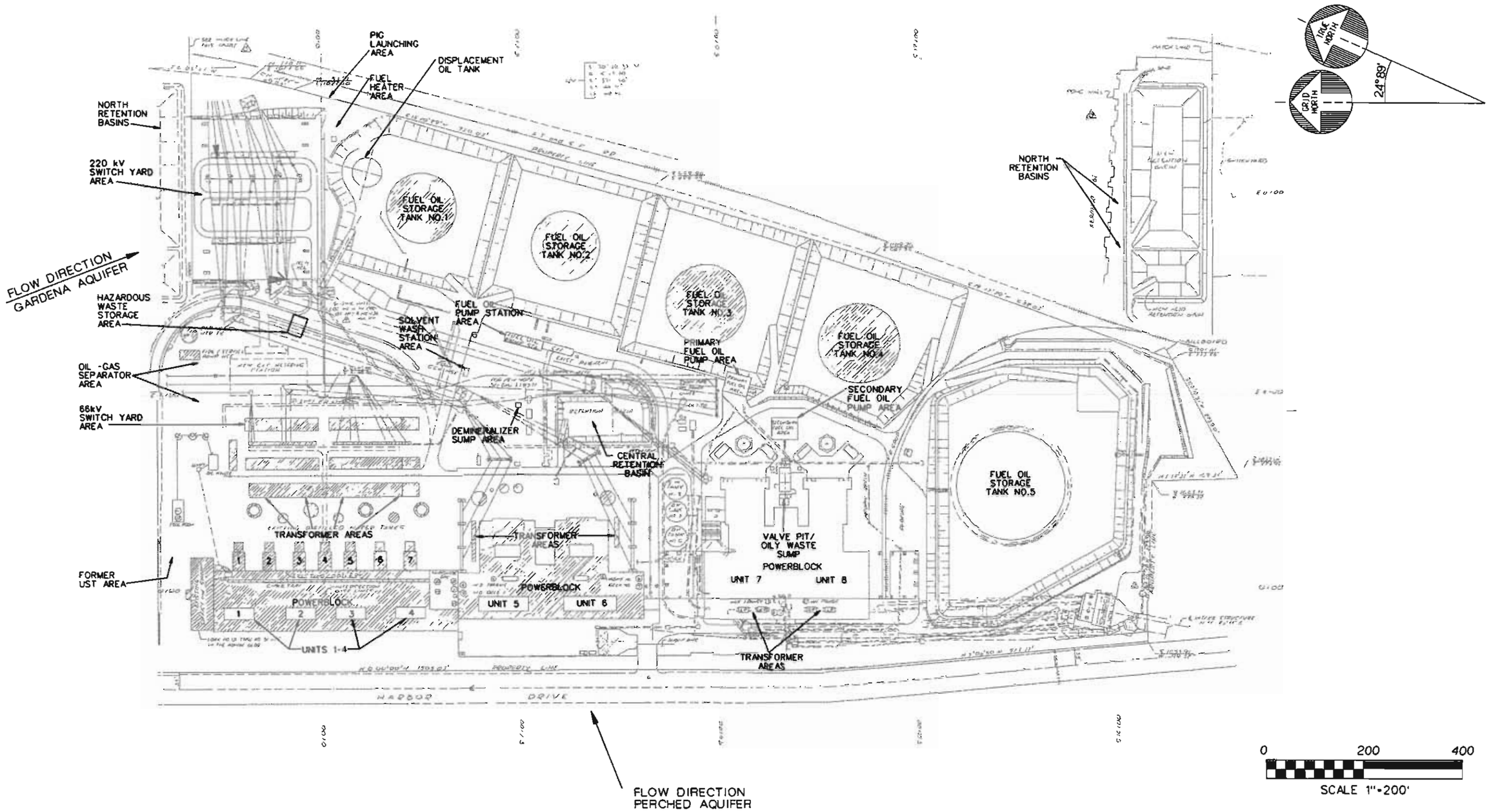


Figure 2
Facilities Map
Redondo Generating Station
Edison Phase II ESA

CH2MHILL

I:/PROJECTS/137125.ED/REDONDO/37125-3B.DGN 11-MAR-1997

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 137125.ED.FW-RD | RBH01 | 1 | 1 |

# SOIL BORING LOG

PROJECT EDISON PHASE II INVESTIGATION LOCATION REDONDO BEACH

ELEVATION _____ DRILLING CONTRACTOR ENVIRONMENTAL SUPPORT TECHNOLOGIES, LAGUNA, CA.

DRILLING METHOD AND EQUIPMENT DIRECT PUSH - CONTINUOUS CORE

WATER LEVELS 4.25 FT BGS, 10/21/96 START 1508 10/21/96 FINISH 1525 10/21/96 LOGGER C Parker

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5 1.0 | D1-S | 1.83 | | SILTY SAND (SM), SAND FRACTION MEDIUM TO LIGHT BROWN, LOOSE, DRY, MEDIUM GRAIN DEPTH TO 6". | PID = 0 ppm, CGI = 0% |
| | | | | | WELL GRADED SAND (SW), LIGHT BROWN, LOOSE, DRY, MEDIUM GRAIN | |
| 2 | | | | | | |
| | 3.0 3.4 | D2-S | 1.50 | | | |
| 4 | | | | | SAME AS ABOVE | PID - 22.7 ppm, BOREHOLE |
| | 4.5 5.0 | D3-S | 1.00 | | | |
| | | | | | | PID: 8 ppm, BOREHOLE |
| | | | | | END OF SOIL BORING AT 5 FEET BGS. SMEAR OF OIL ON SPLIT SPOON FROM 4.5 TO 5 FT BGS. | |
| 6 | | | | | | |
| 8 | | | | | | |
| 10 | | | | | | |



REV 11/89 FORM D15E

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 137125.ED.FW RD | RBH 02 | 1 | 1 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Rubidoux Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS Not Encountered, 10/21/96 START 1430 10/21/96 FINISH 1442 10/21/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5<br>0.5 | D1-5 | | | SILTY SAND (SM), SAND FRACTION MED TO LIGHT BROWN, LOOSE, DRY, FINE GRAINED DEPTH TO 1.75' BGS SILT DARK GRAY<br>DARK COLOR STAINS FROM 0.5 TO 0.5 | PID=0, LEL=0% ORGANIC ODOR |
| 2 | | | 1.25 | | INORGANIC SILT (ML), SMALL % SAND DARK BROWN | |
| 4 | 4.0<br>4.25 | D2-5 | 1.08 | | SAME AS ABOVE, PLUS CORE IS MOIST | PID=105 ppm, [illegible] |
| | 5.0<br>5.3<br>5.5<br>6.0 | D3-5<br>D4-5 | | | SAME AS ABOVE | |
| 6 | | | 1.83 | | END OF SOIL BORING, AT 6 FT BGS. | |



REV 11/89 FORM D158

CH2M HILL

PROJECT NUMBER: 137125.ED.FW.MB | BORING NUMBER: RBH03 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna CA

DRILLING METHOD AND EQUIPMENT Hand Auger

WATER LEVELS ~ 4.5 feet bgs 10/22/96 START 10/22/96 FINISH 10/22/96 LOGGER T. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5 | 01-5 | | | Poorly Graded SAND (SP) Medium grain sand | |
| 2 | | | | | | |
| 4 | | | | | Same as above | |
| | 4.5 | 02-5 | | | | |
| 6 | | | | | End of Borehole @ 4.5 feet bgs. Backfilled boring with Enviroplug No 8 - bentonite chips | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER: 137125.ED.FWRD BORING NUMBER: RBH04 SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies

DRILLING METHOD AND EQUIPMENT Hand Auger Laguna CA

WATER LEVELS ~5.6 feet bgs START 12/22/96 FINISH 12/22/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5 | Ø1-S | | | Poorly Graded SAND (SP) Medium grain sand | |
| 2 | | | | | | |
| 4 | | | | | | PID = 0.0ppm in borehole |
| | 5.0 | Ø2-S | | | Same as above Color change to dark gray / black | |
| 6 | | | | | | |
| 8 | | | | | | |
| 10 | | | | | End of boring @ 9.5 feet bgs. Set Temporary Piezometer to 9.5 feet bgs, 5-foot 0.01 slot Sch 40 PVC - flush Threaded. | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER: 137125.ED.FW.RB | BORING NUMBER: RB405 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna CA

DRILLING METHOD AND EQUIPMENT Hand Auger

WATER LEVELS ~4.0 feet bgs START 10/23/96 FINISH 10/23/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | POORLY GRADED SAND (SP) | PID 0.0ppm in BZ |
| | 0.5 | Ø1 | | | Coarse grain sand size | |
| 2 | | | | | | |
| | 3.5 | Ø2 | | | WELL GRADED SAND (SW) WITH GRAVEL | |
| 4 | | | | | rounded to subrounded gravel (1mm to 3mm in size), no fines, stream deposit-like | |
| | | | | | WET at 4-feet bgs | |
| 6 | | | | | End of Borehole @ 4 feet bgs Backfilled borehole with bentonite. | |



REV 11/89 FORM D1!

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | |
|---|---|---|
| 137125.ED.PW.RD | RBH06 | SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS Not Encountered, 10/21/96 START 1338 10/21/96 FINISH 1353 10/21/96 LOGGER C Parker

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5<br>0.8 | D1-S | | | SILTY SAND (SM), SAND PORTION MED TO LIGHT BROWN, LOOSE, DRY, FINE GRAINED DEPTH TO 0.67 FT BGS. SILT DARK GRAY | PID = 3.8 PPM, LEL = 0% SLIGHT ORGANIC ODOR |
| | | | | | WELL SORTED SAND (SW), SAND IS TAN TO LT GRAY, WELL ROUNDED LOOSE, DRY, MEDIUM GRAIN. DEPTH TO 1.33 FT BGS | |
| 2 | | 1.75 | 1.75 | | SILTY SAND (SM), SAND MED TO LIGHT BROWN, DRY, MEDIUM GRAIN SILT DARK GRAY DEPTH TO BOTTOM OF BORING. | |
| | | | | | SAND PORTION CHANGES TO FINE, BACK TO MEDIUM BY 4 FT BGS | |
| 4 | | | 1.83 | | SAME AS ABOVE | |
| | 5.0<br>5.4 | D2-S | | | | |
| 6 | | | 1.75 | | SAME AS ABOVE | |
| | | | | | END OF SOIL BORING 6 FT BGS | |

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| [illegible] | B-HA-7 | | |

# SOIL BORING LOG

PROJECT [illegible] LOCATION [illegible]

ELEVATION _____ DRILLING CONTRACTOR [illegible]

DRILLING METHOD AND EQUIPMENT [illegible]

WATER LEVELS [illegible] START [illegible] FINISH [illegible] LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | [illegible] | | | | [illegible] | [illegible] |
| 2 | | | | | [illegible] | |
| | [illegible] | | | | | |
| 4 | | | | | [illegible] | [illegible] |
| | [illegible] | | | | | |
| | | | | | [illegible] | [illegible] |
| 6 | | | | | [illegible] | (SS?) |
| 8 | | | | | [illegible] | |

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | |
|---|---|---|
| 137125.ED.FW RD | RBH 08 | SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS Not Encountered, 10/21/96 START 1404 10/21/96 FINISH 1416 10/21/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5 0.8 | Ø1-S | | | SILTY SAND (SM). SAND FRACTION MED TO LIGHT BROWN, DRY, FINE GRAINED SILT DARK GRAY. | |
| 2 | | | 1.50 | | SANDY SILT (ML). SAND FRACTION LIGHT BROWN, MEDIUM GRAINED. SILT DARK GRAY. | |
| 4 | | | 0.83 | | SAME AS ABOVE. | |
| | 5.0 5.4 | Ø2-S | | | | |
| 6 | | | 0.75 | | SAME AS ABOVE | |
| | | | | | END OF SOIL BORING 6 FT BGS. | |

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET |
|---|---|---|
| 137125.ED.FW RD | RBH09 | 1 OF 1 |

# SOIL BORING LOG

PROJECT Enisen Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technology, Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS Not Encountered, 10/21/96 START 1022 10/21/96 FINISH 1102 10/21/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | POORLY SORTED SAND (SP), LIGHT BROWN, DRY, LOOSE, FINE GRAIN | PID=0 ppm, LEL=0% |
| | 0.5 1.0 | D1-S | | | SANDY SILT (ML), SAND FRACTION BROWN, FINE GRAIN, SILT DARK GRAY | |
| | | | | | WELL SORTED SAND (SW) YELLOWISH ORANGE, DRY, FINE GRAIN | |
| | | | | | SILTY SAND (SM), SAND FRACTION LIGHT BROWN, FINE GRAIN, SILT DARK GRAY | |
| 2 | | | 1.50 | | | |
| 4 | | | 2.00 | | SAME AS ABOVE | |
| | 5.0 5.3 | D2-S | | | | |
| 6 | | | 2.00 | | SAME AS ABOVE | |
| | | | | | END OF SOIL BORING 6 FT BGS | |



REV 11/89 FORM D158

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | |
|---|---|---|
| 137125.ED.FW RD | RBH 10 | SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna Ca

DRILLING METHOD AND EQUIPMENT Direct Push (Continuous Core)

WATER LEVELS Not Encountered, 10/21/96 START 1158 10/21/96 FINISH 1212 10/21/96 LOGGER C. Rice

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | Silty Sand (SM), light brown, silt gray. | |
| | 0.5 1.0 | Ø1-5 | | | Well graded sand (SW) gray, fine, medium, large grain | |
| | | | | | Silty sand (SM), sand light brown, fine grain silt dark gray. | |
| 2 | | | 1.42 | | | |
| 4 | | | 2.00 | | Same as above, but moist. | |
| | 5.0 5.4 | Ø2-5 | | | Organic silt wet. (OL) | |
| 6 | | | 2.00 | | End of Soil Boring 6 ft bgs. | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | |
|---|---|---|
| 137125 ED. FW RD | RBH 11 | SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Rosarito Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push - continuous core

WATER LEVELS 3.50 ft. bgs ±, 10/21/96 START 1114 10/21/96 FINISH 1142 10/21/96 LOGGER C. Rian

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5 0.8 | D1-5 | | | SILTY SAND (SM) SAND FRACTION MED TO LIGHT BROWN; FINE GRAIN; SILT IS BROWN | PID: 2 ppm - SMEAR OF OIL ON CASING. RH = 0% |
| | | | | | POORLY GRADED SAND (SP), SAND LIGHT-BROWN, RND TO WELL RND, MEDIUM GRAIN | |
| 2 | | | 1.50 | | SAME AS ABOVE | |
| 4 | | | 2.00 | | SAME AS ABOVE | |
| | 5.0 5.3 | D2-5 | | | | |
| 6 | | | 1.50 | | SAME AS ABOVE | |



REV 11/89 FORM D158

CH2M HILL

13[illegible]125.ED.FW.RB | RBH12 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core

WATER LEVELS Not Encountered 10/21/96 START 10/21/96 FINISH 10/21/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | | PID 0.0ppm in BZ CGI 0% LEL |
| | | | | | FILL - Sand and Gravel | |
| | 1.6 2.0 | Ø1-S | 1 | | | |
| 2 | | | | | | PID - 0.0ppm in Sleeve head space CGI - 0.0% LEL |
| | | | | | POORLY GRADED SAND (SP) Medium sand size | |
| | | | 2 | | | |
| 4 | | | | | POORLY GRADED SAND (SP) Medium to dark gray, moist, medium sand size | |
| | 5.0 5.3 | Ø2-S | | | | |
| 6 | 6.0-6.3 | Ø3-S | | | POORLY GRADED SAND (SP) Dark gray, moist, dense | No Odor |
| 8 | | | | | END OF BORING @ 8 FEET BACKFILLED WITH ENVIRO-PLUG (TR) BENTONITE CHIPS | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER: 137125.ED.FW.RB | BORING NUMBER: RBH13 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna CA

DRILLING METHOD AND EQUIPMENT Hand Auger

WATER LEVELS ~9.3 feet bgs 10/23/96 START 10/22/96 FINISH 10/22/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5 | #1 S | | | Poorly Graded Sand (SP) medium brown, clean, fine to medium sand size | |
| 2 | | | | | | |
| | | | | | Same as above | |
| 4 | | | | | | |
| | | | | | | PID = 0.0ppm |
| | | | | | Poorly Graded Sand (SP) Dark brown, some fines, cohesive | |
| 6 | | | | | | No odor |
| | | | | | | Black Smear |
| 8 | | | | | | |
| | | | | | Some rock fragments wet | |
| 10 | | | | | | |
| | | | | | Poorly Graded Sand (SP) medium brown, clean fine to medium grained sand size | End of boring @ 11.5 feet bgs. Temporary piezometer installed: Sch 40 PVC 0.01 slot 5-foot Perforated interval |
| 12 | | | | | | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER: 1317125.ED.FW.RB | BORING NUMBER: RBH14 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT: Edison Phase II Investigation LOCATION: Redondo Beach

ELEVATION: _____ DRILLING CONTRACTOR: Environmental Support Technologies

DRILLING METHOD AND EQUIPMENT: Direct Push Continuous Core Laguna CA

WATER LEVELS: Not encountered, 10/21/96 START: 10/21/96 FINISH: 10/21/96 LOGGER: [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5-0.8 | #1 | 1.5 | | POORLY GRADED SAND (SP) medium brown, dry, medium to fine sand size - few angular gravel | may be fill |
| 2 | | | | | | |
| | | | 2.0 | | POORLY GRADED SAND (SP) Clean medium sand size | |
| 4 | | | | | | |
| | 5.0-5.3 | #2 | 1.7 | | Same as above | |
| 6 | | | | | | |
| | 7.0-7.0 | #3 | 2.0 | | POORLY GRADED SAND (SP) medium to dark red-brown, moist, medium to fine sand size | |
| 8 | | | | | | |
| 10 | | | | | End of Boring @ 10 feet bgs. Backfilled with bentonite | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | | |
|---|---|---|---|
| 137125.ED.FW.RD | RBH 15 | SHEET 1 | OF 1 |

# SOIL BORING LOG

PROJECT EDISON PHASE II INVESTIGATION LOCATION REDONDO BEACH

ELEVATION _____ DRILLING CONTRACTOR ENVIRONMENTAL SUPPORT TECHNOLOGIES, LAGUNA CA

DRILLING METHOD AND EQUIPMENT DIRECT PUSH - CONTINUOUS CORE

WATER LEVELS 6.0 FT BGS / 10/22/96 START 0811 10/22/96 FINISH 0848 10/22/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5 1 | Ø1-S | | | SILTY SAND (SM), SAND FRACTION LT BROWN, POORLY SORTED, SILT GRAY. | PID: 0 ppm CGI = 0% |
| 2 | | | 1.42 | | SAME AS ABOVE | PID = 1.2 ppm, BOREHOLE |
| 4 | | | 1.00 | | SAME AS ABOVE | PID = 1.1 ppm, BOREHOLE |
| | 5.0 5.5 | Ø2-S | | | WELL GRADED SAND (SW) LIGHT BROWN, WELL RND TO RND, FINE GRAIN | |
| 6 | | | 1.58 | | SAME AS ABOVE | PID = 0.5 ppm, BOREHOLE |
| 8 | | | 1.17 | | SAME AS ABOVE | PID = 1.0 ppm BOREHOLE |
| | | | | | END OF SOIL BORING, 8 FT BGS. TEMPORARY PIEZOMETER INSTALLED TO 8 FT BGS, 5 FT 0.010 SLOT, SCHDL 40 PVC FLUSH THREADED. | |
| 10 | | | | | | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | |
|---|---|---|
| 137125.ED.FW.RD | RBH16 | SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS 4.75 ft BGS, 10/21/96 START 1601 10/21/96 FINISH 1617 10/21/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | Poorly graded drain rock, 2 inches | PID - 0 ppm; CGI - 0% |
| | 0.5 0.9 | D1-S | | | Silty sand (SM) sand fraction light brown, dry, fine. silt dark gray | |
| 2 | | | 0.42 | | Well graded sand (SW) light tan to light brown, medium grain | PID - 5.4 ppm, borehole<br>PID - 13.1 ppm, smear of oil on split spoon |
| 4 | | | 1.67 | | Same as above | |
| | 5.0 5.4 | D2-S | | | | |
| 6 | | | 1.67 | | Same as above, but fine grain<br>End of Soil Boring, 6 ft BGS | PID - 0.7 ppm, borehole |

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RB | BORING NUMBER RB417 | SHEET 1 OF 2

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core

WATER LEVELS 13.8' bgs, 10/22/96 START 0911, 10/22/96 FINISH 1025, 10/22/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | | BZ - breathing zone |
| 2 | | | 1.0 | | Fill - loose, moist medium grain sand; Subangular to Subrounded gravel ~10mm in size, | |
| 4 | | | 1.0 | | - Same as above plus asphalt pieces | |
| 6 | | | 0.5 | | - Same as above, more gravel and concrete pieces | |
| 8 | | | 1.0 | | Poorly GRADED SAND (SP) Clean, medium to fine size sand, moist | PID = 1.2 ppm in BZ |
| 10 | 10.0-10.3 | B1-5 | 1.1 | | - Same as above wet | PID = 6.7 ppm in Sleeve headspace CGI - 0% LEL |
| 12 | | | | | | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RB | BORING NUMBER RBH17 | SHEET 2 OF 2

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core

WATER LEVELS 13.8' bgs, 10/22/96 START 0911, 10/22/96 FINISH 1025, 10/22/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | Same as above | PID 9.6 ppm in Sleeve headspace |
| 14 | 130-133 | Ø2-3 | | | | |
| | 135-136 | Ø2-3 | | | | |
| 16 | | | | | End of Boring @ 16 feet bgs. Set Temporary piezometer, Sch 40 PVC, 0.01 Slot size, 5-foot Slot interval flush threaded. | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RB | BORING NUMBER HB418 | SHEET 1 OF 2

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core

WATER LEVELS Estimated @ 14' bgs±, 10/22/96 START 10/22/96 0800 FINISH 10/22/96 0822 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | 1.5 | | Fill - Pieces of Concrete | |
| 2 | | | | | - Fill - yellow/orange, dry, sand and gravel, iron staining | |
| | | | 1.5 | | | |
| 4 | | | | | | |
| | | | 1.2 | | | |
| 6 | | | | | POORLY GRADED SAND (SP) | |
| | | | 2.0 | | Medium size sand, wet, little to no fines | |
| 8 | 8.0-8.4 | GH-5 | | | | |
| | | | 1.5 | | | |
| 10 | | | | | | |
| 12 | | | | | | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RB | BORING NUMBER HBH 18 | SHEET 2 OF 2

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core

WATER LEVELS Estimated @ 14' bgs±, 10/22/96 START 10/22/96 FINISH 10/22/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| 14 | 14.0 - 14.3 | #2 | 2.0 | | Poorly Graded Sand (SP) | |
| 16 | | | | | - Saturated | |
| 18 | | | | | End of Bor. hole at 18 feet bgs. Backfilled borehole with bentonite | |



REV 11/89 FORM D1

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RB | BORING NUMBER TBH19 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core

WATER LEVELS Not Encountered, 10/22/96 START 10/22/96 FINISH 10/22/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 1.5-1.8 | Ø1-5 | | | Fill — Sand - Gravel | PID 9 ppm in Sleeve headspace = 0.0 ppm in Breath [illegible] |
| 2 | | | | | | |
| 4 | | | | | | |
| | 5.0 5.34 | Ø2-5 | | | | PID in borehole ranges from 5-13 pp |
| 6 | | | | | End of Boring - 8 feet bgs Backfilled w/bentonite | |
| 8 | | | | | | |
| 10 | | | | | | |
| 1 | | | | | | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| [illegible] | [illegible] | 1 | [illegible] |

# SOIL BORING LOG

PROJECT [illegible] LOCATION [illegible]

ELEVATION _____ DRILLING CONTRACTOR [illegible]

DRILLING METHOD AND EQUIPMENT [illegible]

WATER LEVELS [illegible] START [illegible] FINISH [illegible] LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | [illegible] | [illegible] |
| | | | | | [illegible] | |
| 2 | [illegible] | [illegible] | [illegible] | | | [illegible] |
| | | | [illegible] | | [illegible] | |
| 4 | | | | | | [illegible] |
| | [illegible] | [illegible] | [illegible] | | [illegible] | |
| 6 | | | | | [illegible] | [illegible] |
| | | | [illegible] | | | |
| | | | | | [illegible] | [illegible] |
| | | | [illegible] | | | |
| 10 | | | | | [illegible] | |
| | | | [illegible] | | | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| | | | |

# SOIL BORING LOG

PROJECT _____ LOCATION _____

ELEVATION _____ DRILLING CONTRACTOR _____

DRILLING METHOD AND EQUIPMENT _____

WATER LEVELS _____ START _____ FINISH _____ LOGGER _____

| DEPTH BELOW SURFACE (FT) | SAMPLE | | | STANDARD PENETRATION TEST RESULTS | SOIL DESCRIPTION | COMMENTS |
|---|---|---|---|---|---|---|
| | INTERVAL | NUMBER AND TYPE | RECOVERY (FT) | 6"-6"-6" (N) | SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
| | | | | | | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET 1 OF 2 |
|---|---|---|
| 137185.ED.FW.RD | RBH 21 | |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna, CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS 12.97 FT BGS, 10/23/96 START 1015 10/23/96 FINISH 1035 10/23/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | ASPHALT | |
| | | | | | BACKFILL (GM) FOR ASPHALT | |
| | 0.5 1.0 | 01-S | | | POORLY GRADED SAND (SP), YELLOW ORANGE, MEDIUM TO FINE GRAIN | |
| 2 | | | 0.50 | | SAME AS ABOVE, BUT COLOR TO TAN | PID = 20.5 PPM |
| 4 | | | 2.00 | | SAME AS ABOVE | PID = 5 PPM |
| | 5.0 5.5 | 02-S | | | | |
| 6 | | | 2.00 | | SAME AS ABOVE | PID = 5.7 PPM |
| 8 | | | 2.00 | | SAME AS ABOVE | |
| 10 | 10.0 10.5 | 03-S | 2.00 | | SAME AS ABOVE | |
| | | | | | | PID = 1.8 PPM |
| 12 | | | | | SAME AS ABOVE | |

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | | |
|---|---|---|---|
| 137125.ED.AW.RD | RBH21 | SHEET 2 | OF 2 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna, CA

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core

WATER LEVELS 12.97 ft BGS, 10/23/96 START 1015 10/23/96 FINISH 10/23/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| 14 | | | | | SAME AS ABOVE (SP) | |
| | | | | | SAME AS ABOVE | PID - 0 ppm |
| | | | | | END OF SOIL BORING 14 FT BGS | |

CH2M HILL

PROJECT NUMBER: 137125.ED.FW.RB | BORING NUMBER: TRBH22 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core

WATER LEVELS not encountered, 10-22-96 START 1030, 10/22/96 FINISH 1030, 10/22/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| 0 | | | | | | PID-BKG CGI 0.0% LOL |
| | | | 1.0 | | Poorly GRADED SAND (SP) Yellow/orange, fine sand size | FILL |
| | 1.0-1.3 | Ø1-S | | | | |
| 2 | | | | | | |
| | 3.0-3.4 | 21-S | | | | |
| | | | 1.0 | | Color Change | |
| 4 | | | | | Poorly GRADED SAND (SP) medium brown, moist fine sand size, no fines | |
| | 5.0-5.3 | Ø2-S | | | | |
| | | | 1.7 | | | |
| 6 | | | | | Same as above | |
| | | | 1.7 | | gray powder - concrete? dry | |
| 8 | | | | | | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | |
|---|---|---|
| 137125.ED FW RD | RBH 23 | SHEET 1 OF 2 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS 12.52 ft BGS, 10/23/96 START 1100 10/23/96 FINISH 10/23/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | ASPHALT | |
| | | | | | BACKFILL FOR ASPHALT, (GM) YELLOW-ORANGE SIZE FROM 3/4 TO 200 MESH. | |
| 2 | | | 1.33 | | POORLY GRADED SANDS (SP), TAN TO LIGHT GRAY, DRY, FINE. | PID = 1.9 PPM |
| 4 | | | 1.33 | | SAME AS ABOVE | |
| 6 | | | 1.33 | | SAME AS ABOVE | PID = 1.7 PPM |
| 8 | | | | | SAME AS ABOVE | PID = 0 PPM |
| 10 | | | | | SAME AS ABOVE | |
| | | | 1.33 | | | PID = 0 PPM |
| 12 | | | | | SAME AS ABOVE | |

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET |
|---|---|---|
| 137125. ED. FW. RD | RBH 23 | 2 OF 2 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna Ca

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS 12.52 ft BGS, 10/23/96 START 1100 10/23/96 FINISH 10/23/96 LOGGER C. [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| 12 | | | | | SAME AS ABOVE (SP) | |
| 14 | | | | | SAME AS ABOVE | |
| 16 | | | 1.33 | | SAME AS ABOVE | |
| | | | 1.00 | | END OF SOIL BORING, 17 ft BGS<br>TEMPORARY PIEZOMETER INSTALLED TO 15.5 ft BGS, 5-FOOT, 0.01 SLOT, SCH 40 PVC, FLUSH THREADED. | |

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 137125.ED.FW.RD | RDH24 | 1 | 2 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push – Continuous Core

WATER LEVELS 14:00 ft BGS, 10/23/96 START 1250 10/23/96 FINISH 1330 10/23/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | ASPHALT | |
| | 0.5 1.0 | D1-5 | | | POORLY GRADED SAND (SP), LIGHT BROWN TAN, SAND WELL RND TO RND, FINE TO MEDIUM GRADE. | |
| 2 | | | 1.17 | | SAME AS ABOVE | PID = 2.1 ppm, BOREHOLE |
| 4 | | | | | SAME AS ABOVE | |
| | 5.0 5.5 | D2-5 | 1.33 | | | PID 2.1 ppm, BOREHOLE |
| 6 | | | | | SAME AS ABOVE | |
| | | | 1.67 | | | PID = 2.3 ppm, BOREHOLE |
| 8 | | | | | SAME AS ABOVE | |
| | | | | | ORGANIC SILTS LITHOLOGIC CONTACT | |
| 10 | 10.0 10.5 | D3-5 | | | SAME AS ABOVE PLUS ORGANIC SILT | |
| | | | 1.67 | | | PID = 2.6 ppm, BOREHOLE |
| 12 | | | | | ORGANIC SILTS GONE, SHARP CONTACT | |



REV 11/89 FORM D158

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | |
|---|---|---|
| 137125. ED. FW. RD | RBH24 | SHEET 2 OF 2 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS 14.00 FT BGS, 10/23/96 START 1250 10/20/96 FINISH 1330 10/23/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| 12 | | | | | SAME AS ABOVE | |
| | | | | | CORE MOIST | |
| 14 | | | | | SAME AS ABOVE | PID = 4.3 ppm, BOREHOLE |
| 16 | | | | | SAME AS ABOVE | |
| | | | | | | PID = 3.1 PPM, BOREHOLE |
| | | | | | END OF SOIL BORING, 17 FT BGS. TEMPORARY PIEZOMETER INSTALLED TO 15 FT BGS, 5-FOOT, 0.01 SLOT, SCH 40, PVC, FLUSH THREADED. | |

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET 1 OF 1 |
|---|---|---|
| 137125.ED.FW.RD | RBH25 | |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push- Continuous Core

WATER LEVELS Not encountered, 10/22/96 START 1529 10/22/96 FINISH 1544 10/22/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | ASPHALT | |
| | 0.5 1.0 | D1-S | | | POORLY GRADED SAND (SP), LIGHT GRAY, WET RED TO RED, FINE GRAINS. | |
| 2 | | | 1.17 | | SAME AS ABOVE | PID: 3.4 PPM, BOREHOLE |
| 4 | | | 1.25 | | SAME AS ABOVE | PID: 3.4 PPM, BOREHOLE |
| | 5.0 5.5 | D2-S | | | | |
| 6 | | | 0.83 | | SAME AS ABOVE | |
| | | | | | END OF SOIL BORING, 6 FT BGS | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 137125.ED.FW.RD | RBH 26 | 1 | 1 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technology, Laguna, CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS Not encountered, 10-22-96 START 1555 10/22/96 FINISH 1612 10/22/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | ASPHALT | |
| | 0.5 1.0 | D1-5 | | | SILTY SAND (SM), SAND LIGHT BROWN, WELL RND, FINE, SILT DARK GRAY | |
| 2 | | | | | WELL GRADED SAND (SW), LIGHT BROWN, MOD TO V. FINE SAND, OCCASIONAL PIECE OF CLAY. | PID = 3.3 PPM, BOREHOLE |
| 4 | | | | | SAME AS ABOVE | PID = 3.0 PPM, BOREHOLE |
| | 5.0 5.5 | D2-5 | | | | |
| | 5.5 6.0 | 22-5 | | | | |
| 6 | | | | | SAME AS ABOVE | PID = 36 PPM, BOREHOLE |
| | | | | | END OF SOIL BORING 6 FT BGS | |



REV 11/89 FORM D158

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RB | BORING NUMBER BBH27 | SHEET | OF

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION

ELEVATION DRILLING CONTRACTOR Environmental Support Technologies Laguna CA

DRILLING METHOD AND EQUIPMENT Hand Auger

WATER LEVELS Not encountered, 10-23-96 START 10/23/96 FINISH 10/23/96 LOGGER T. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | | PID 0.0 ppm in BZ |
| | 0.5 | 01-5 | | | POORLY GRADED SAND (SP) medium brown, medium to fine sand size | PID 0.0 ppm in borehole |
| 2 | | | | | | |
| 4 | | | | | | |
| | 5.1-5.5 | 02 | | | POORLY GRADED SAND (SP-SC) medium brown, medium to fine sand size, little fines, moist. no odor. | PID 0.0 ppm in borehole |
| 6 | | | | | End of borehole ~ 6 feet bgs, backfilled with bentonite | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER: 137125.GD.FWAB | BORING NUMBER: BBH28 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna CA

DRILLING METHOD AND EQUIPMENT Hand Auger

WATER LEVELS Not Encountered, 10-22-96 START 10/23/96 FINISH 10/23/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | Poorly GRADED SAND (SP) medium brown, <5% fines | |
| | 0.5 | Ø1-S | | | | |
| 2 | | | | | | |
| 4 | | | | | Poorly GRADED SAND (SP) medium brown, little fines, moist | |
| | 5.0 | Ø2-S | | | | |
| 6 | | | | | End of Borehole @ 6 feet bgs, backfilled with bentonite | |



REV 11/89 FORM D1

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 137125.ED.FW1.RD | RBH 29 | 1 | 1 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS 9.85 ft BGS, 10/23/96 START 1345 10/23/96 FINISH 1430 10/23/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | ASPHALT | |
| | 0.5 0.8 | D1-S | | | POORLY GRADED SAND (SP) TAN TO LIGHT GRAY, WELL RND TO RND, FINE. | |
| | 0.8 1.2 | D1-MS | | | | |
| | 1.2 1.6 | D1-MSD | | | | |
| 2 | | | 1.33 | | SAME AS ABOVE | PID = 0.6 PPM, BOREHOLE |
| 4 | | | 1.83 | | SAME AS ABOVE | |
| | 5.0 5.5 | D2-S | | | | |
| 6 | | | 1.67 | | SAME AS ABOVE | PID - 1.7 PPM, BOREHOLE |
| 8 | 7.5 8.0 | D3-S | 1.50 | | SAME AS ABOVE, GRB VOC SAMPLE | PID = 14 PPM, BOREHOLE |
| | | | | | CORE IS MOIST | |
| 10 | 10.0 10.5 | D5-S | 1.67 | | SAME AS ABOVE, GRAY | PID = 1.8 PPM, BOREHOLE |
| | | | | | SAND AS ABOVE | |
| 12 | | | 1.58 | | END OF SOIL BORING 12 FT BGS | PID - 9.5 PPM, BOREHOLE |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RD | BORING NUMBER RBH21 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Dedondo Beach, California

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies

DRILLING METHOD AND EQUIPMENT Hand Auger

WATER LEVELS not encountered, 10-22-96 START 1410, 10/22/96 FINISH 1430, 10/22/96 LOGGER C. Parker

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | not conducted | Boring not conducted electrical checker stated that sub-surface has many 440 volt electric lines too many utilities in area. |
| 2 | | | | | | |
| 4 | | | | | | |
| 6 | | | | | | |
| 8 | | | | | | |
| 10 | | | | | | |
| 12 | | | | | | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 137125.ED.FW.RD | RBH30 | 1 | 1 |

# SOIL BORING LOG

PROJECT EDISON PHASE II INVESTIGATION LOCATION REDONDO BEACH

ELEVATION _____ DRILLING CONTRACTOR ENVIRONMENTAL SUPPORT TECHNOLOGIES, LAGUNA CA

DRILLING METHOD AND EQUIPMENT DIRECT PUSH. CONTINUOUS CORE

WATER LEVELS Not Encountered, 10/22/96 START 1445 10/22/96 FINISH 1507 10/22/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | ASPHALT | |
| | 0.5 1.0 | D1-5 | | | POORLY GRADED SAND (SP), LIGHT GRAY TO TAN, DRY, MEDIUM TO V. FINE. | |
| 2 | | | 1.75 | | SAME AS ABOVE | PID = 4.8 PPM; BOREHOLE CGI = 3% |
| 4 | | | 2.0 | | SAME AS ABOVE | PID = 5.4 PPM, CGI = 1% |
| | 5.0 5.5 5.5 5.9 | D2-5 D2-5 | | | | |
| 6 | | | 1.75 | | SAME AS ABOVE | |
| | | | | | END OF SOIL BORING 7 FT BGS | PID = 4.2 PPM |

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | |
|---|---|---|
| 137125.ED.FW.RD | RBH 32 | SHEET 1 OF 2 |

# SOIL BORING LOG

PROJECT Edison - Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna, CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS 13.50 FT BGS, 10/23/96 START 0758 10/23/96 FINISH 0930 10/23/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | ASPHALT | |
| | 0.5<br>0.8<br>0.5<br>1.1 | D1-5<br>11-5 | | | POORLY GRADED SAND (SP), LIGHT BROWN, DRY, FINE. | |
| 2 | | | 1.25 | | WELL GRADED SAND (SW), LIGHT BROWN, ~~MOIST~~ RAND TO RAND, MED TO FINE GRAIN | PID = 4.4 PPM, BOREHOLE |
| 4 | | | 1.75 | | SAME AS ABOVE | PID = 3.9 PPM, BOREHOLE |
| | 5.0<br>5.5 | D2-5 | | | | |
| 6 | | | 2.00 | | SAME AS ABOVE | PID = 2.0 PPM, BOREHOLE |
| | | | | | SW AS ABOVE PLUS SILT | |
| | | | 1.33 | | | PID = 4.3 PPM, BOREHOLE |
| 8 | | | | | | |
| | | | | | SW AS ABOVE NO SILT | |
| | | | 1.25 | | | PID = 2.1 PPM, BOREHOLE |
| 10 | | | | | SAME AS ABOVE | |
| | | | 1.25 | | | PID = 3.4 PPM, BOREHOLE |
| 12 | | | | | SAME AS ABOVE | |

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET 2 OF 2 |
|---|---|---|
| 137125.ED.FW.RD | RBH32 | |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna, CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS 13.50 ft BGS, 10/23/96 START 0758 10/23/96 FINISH 0930 10/23/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| 12 | | | | | SAME AS ABOVE | |
| | | | 1.75 | | | PID: 2.9 ppm, BOREHOLE |
| 14 | | | | | SAME AS ABOVE | |
| | | | 1.25 | | | PID: 2.8 ppm, BOREHOLE |
| | | | | | END OF SOIL BORING, 15.5 FT BGS<br>TEMPORARY PIEZOMETER INSTALLED TO 15 FT BGS, 5-FOOT, 0.01 SLOT, SCH 40, PVC, FLUSH THREAD | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | | |
|---|---|---|---|
| 137125.ED.FW.RD | RBH 37 | SHEET 1 | OF 1 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach, California

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna, California

DRILLING METHOD AND EQUIPMENT Hand Auger

WATER LEVELS Not Encountered, 10-24-96 START 1110, 10-24-96 FINISH 1217, 10-24-96 LOGGER C. R. Barnett

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| 5 | | | | | Poorly graded sand (SP), brown, moist, some gravel, medium size sand particles | No odor, appears to b backfill, fill |
| | | | | | END OF Boring C approximately 7' bgs. | Borehole keeps collapsing at 6 to 7' bgs abandoned Location (augered for over 1 hr at this location) |
| 10 | | | | | | |
| 15 | | | | | | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 137125.ED.FW RD | RBH 38 | 1 | 2 |

# SOIL BORING LOG

PROJECT Edison - Phase II Investigation LOCATION Redondo Beach, CA

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna, CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS 10.5 FT BGS, 10/24/96 START 10/24/96 FINISH 1435 10/24/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | ASPHALT | |
| | | | | | WELL GRADED SAND (SW) TAN, RUD TO WELL RUD, COARSE TO FINE. | |
| | | | | | POORLY GRADED SAND (SP) TAN, RUD, FINE. | |
| 2 | | | 1.00 | | | |
| 4 | | | | | SAME AS ABOVE | |
| | | | 1.75 | | | PID = 0 PPM |
| 6 | | | | | SAME AS ABOVE | |
| 8 | | | 1.58 | | SAME AS ABOVE | PID = 0 PPM |
| 10 | | | | | SAME AS ABOVE | |
| | | | 1.58 | | | PID = 4.2 PPM |
| 12 | | | | | | |

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET |
|---|---|---|
| 137125.ED.FW.RD | RBH 38 | 2 OF 2 |

# SOIL BORING LOG

PROJECT Edison - Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna, CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS 10.5 ft BGS, 10/24/96 START 1407 10/24/96 FINISH 1435 10/24/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| 12 | | | | | | |
| | 13.0 / 13.5 | D1-5 | | | | |
| | 13.5 / 14.0 | 11-5 | 1.58 | | SAME AS ABOVE | |
| 14 | | | | | END OF SOIL BORING, 14 FT BGS. TEMPORARY PIEZOMETER INSTALLED TO 13 FT BGS, 5-FOOT, 0.01 SLOT, SCH 40, PVC, FLUSH THREAD | PID = 0.9 ppm, BOREHOLE |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | |
|---|---|---|
| 137125.ED.FW.RD | RBH 39 | SHEET 1 OF 1 |

# SOIL BORING LOG

PROJECT EDISON - PHASE II INVESTIGATION LOCATION REDONDO BEACH

ELEVATION _____ DRILLING CONTRACTOR ENVIRONMENTAL SUPPORT TECHNOLOGIES, LAGUNA, CA

DRILLING METHOD AND EQUIPMENT DIRECT PUSH - CONTINUOUS CORE

WATER LEVELS Estimated @ 10.0 ft. bgs±, 10/22/96 START 1247 10/22/96 FINISH 10/22/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | ASPHALT | |
| | | | | | WELL GRADED SAND (SW), LT BROWN, WELL RND TO RND, FINE GRAIN. DEPTH TO 4.7 FT BGS | |
| 2 | | | 1.00 | | | PID = 0.8 PPM, BOREHOLE |
| 4 | | | | | | |
| | | | 2.00 | | POORLY GRADED SAND (SP), LT BROWN TO TAN, WELL RND TO RND, COARSE TO FINE GRAIN | PID: 0 PPM, BOREHOLE |
| | 5.9 6.8 | D1-5 | | | | |
| 6 | | | | | | |
| 8 | | | 2.00 | | SAME AS ABOVE | PID = 0 PPM, BOREHOLE |
| | 8.3 9.6 | D2-5 | | | | |
| 10 | | | | | SAME AS ABOVE | |
| | | | 2.00 | | END OF SOIL BORING 11 FT BGS | PID = 0 PPM, BOREHOLE |
| 12 | | | | | | |

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 137125.ED.FW.RD | RBH 4/0 | 1 | 2 |

# SOIL BORING LOG

PROJECT Edison - Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies, Laguna, CA

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS 12.0 ft BGS, 10/22/96 START 1320 10/22/96 FINISH 1350 10/22/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | ASPHALT | |
| | | | | | CLAYEY SAND (SC), SAND FRACTION TAN, RND, FINE GRAIN | |
| 2 | | | 1.25 | | | |
| | | | | | POORLY GRADED SAND (SP), TAN, RND, FINE GRAIN | |
| 4 | | | | | | |
| | | | 1.83 | | | PID - 0.6 PPM, BOREHOLE |
| | 5.5 6.0 | Φ 1-5 | | | | |
| 6 | | | | | SAME AS ABOVE | |
| | | | | | SILTY SAND (SM), SAND FRACTION TAN, RND, FINE, SILT DARK GRAY | |
| 8 | | | 2.00 | | | PID = 1.2 PPM, BOREHOLE |
| 10 | 9.8 10.2 | D2-5 | | | SAME AS ABOVE | |
| | | | 2.00 | | | PID = 1.3 PPM, BOREHOLE |
| 12 | | | | | | |

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET |
|---|---|---|
| 137125.ED.FW.RD | RBH40 | 2 OF 2 |

# SOIL BORING LOG

PROJECT EDISON - PHASE II INVESTIGATION LOCATION REDONDO

ELEVATION _____ DRILLING CONTRACTOR ENVIRONMENTAL SUPPORT TECHNOLOGIES, LOMITA, CA

DRILLING METHOD AND EQUIPMENT DIRECT PUSH - CONTINUOUS CORE

WATER LEVELS 12.0 FT BGS, 10/22/96 START 1320 10/22/96 FINISH 1350 10/22/96 LOGGER [illegible]

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| 12 | | | | | SAME AS ABOVE | |
| | | | | | WELL GRADED SAND (SW), LT GRAY, WELL RND TO RND, MEDIUM GRAIN | |
| 14 | | | | | END OF SOIL BORING 14 FT BGS<br>TEMPORARY PIEZOMETER INSTALLED TO 13 FT BGS, 5-FT, 0.01 SLOT, SCH 40, PVC, FLUSH THREAD | 0.1 PPM, BOREHOLE |

CH2M HILL

PROJECT NUMBER: RBH41 | BORING NUMBER: RBH41 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT: Edison Phase II Investigation LOCATION: Redondo Beach

ELEVATION: _____ DRILLING CONTRACTOR: Environmental Support Technologies

DRILLING METHOD AND EQUIPMENT: Direct Push / Hand Auger

WATER LEVELS: 1.5 ft bgs, 10/23/96 START: 10/22/96 1420 FINISH: 10/22/96 1515 LOGGER: J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | Gravel / asphalt / coated | BZ = breathing zone |
| | 0.5 | #1-S | | | | Heavy asphalt odor |
| | | | | | Poorly GRADED SAND (SP) Dark Gray, coated Sand (loamy look) | PID ~7ppm in hole 0.0ppm in BZ |
| 2 | | | | | | |
| | 3.5 | #2-S | | | Same as above, medium brown | PID in 2.5ppm in borehole 0.0ppm in BZ |
| 4 | | | | | | |
| | 5.0 | #3-S | | | Same as above | |
| | | | | | End of borehole @ ~5.5 feet bgs. Backfilled with bentonite | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER: 137125.ED.F10.RB | BORING NUMBER: TBH42 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT: Edison Phase II Investigation LOCATION: Redondo Beach

ELEVATION: _____ DRILLING CONTRACTOR: Environmental Support Technologies

DRILLING METHOD AND EQUIPMENT: Hand Auger Laguna Co

WATER LEVELS: 1.5 ft bgs, 10/23/96 START: 10/23/96 1249 FINISH: 10/23/96 1415 LOGGER: J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5 | 01-S | | | Poorly Graded SAND (SP) medium brown, wet | PID = 0.0 ppm |
| 2 | | | | | | |
| 4 | 4.0 | 02-S | | | Poorly Graded SAND (SP-SM) medium brown to dark gray, medium grain sand size, little fines. | no odor |
| | | | | | - Color changed to Light to medium brown | |
| 5 | 5.0 | 03-S | | | Poorly Graded SAND with GRAVEL (SW) medium brown, medium to coarse grain sand, gravel | Hold 03 |
| | | | | | End of borehole @ ~5.5 feet bgs. Backfilled with bentonite | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER: 137125.ED.FW.RB | BORING NUMBER: BH43 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT: Edison Phase II Investigation LOCATION: Redondo Beach

ELEVATION: | DRILLING CONTRACTOR: Environmental Support Technologies, Laguna CA

DRILLING METHOD AND EQUIPMENT: Direct Push Continuous Core

WATER LEVELS: Not Encountered, 10/22/96 START: 10/22/96 FINISH: 10/22/96 LOGGER: J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | | PID 0.0ppm in BZ |
| | 0.2-0.6 | B1-S | | | POORLY GRADED SAND (SP) Orange/yellow, fine grain sand size changes color to medium brown at about 0.7 feet bgs. | |
| | 0.6-1.0 | B1-S | | | | |
| 2 | 1.8-2.2 | B2M-S | 3 | | | PID 16ppm in 3-inch borehole |
| | 2.2 to 2.6 | B2M-S | | | | |
| | 2.6-3.0 | B2-S | | | | |
| 4 | | | | | END of boring @ 3.0 feet bgs. Backfilled with bentonite. | |



REV 11/89 FORM D1

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RB | BORING NUMBER BH44 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technolo

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core

WATER LEVELS not Encountered, 10/22/96 START 10/22/96 FINISH 10/22/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | | PID 0.0ppm |
| | | | | | Poorly Graded Sand (SP) Orange/Yellow, fine grain sand | |
| | 0.5-1.0 | B1-S | | | | |
| 2 | | | | | Color change to medium brown at 0.7 feet bgs | |
| | 2.3-2.6 | 22-S | | | | |
| | 2.6-2.9 | B2 S | 2.9 | | | |
| | | | | | End of Boring @ 2.9 feet bgs. Backfilled borehole with bentonite/ Enviroplug® No. 8 | |
| 4 | | | | | | |



REV 11/89 FORM D1

CH2M HILL

PROJECT NUMBER 137125 ED.FLO.RB | BORING NUMBER BH45 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core Laguna CA

WATER LEVELS Not Encountered 10/22/96 START 10/22/96 FINISH 10/22/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | Poorly Graded Sand (SP) | |
| 2 | 0.5-0.8 | Ø1-S | | | Orange/yellow fine grain sand to medium brown | |
| | 2.5-3.0 | Ø2-S | 3 | | | |
| 4 | | | | | End of Boring @ 3 feet bgs. Backfilled with Enviroplug No. 8 bentonite chips | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 137125.ED.FW.RB | RBH46 | 1 | 1 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna CA

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core

WATER LEVELS Not Encountered, 10/22/96 START 10/21/96 FINISH 10/21/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5-0.8 | Ø1-S | | | Poorly Graded Sand (SP) | |
| 2 | | | | | | |
| | 3.0 3.3 | Ø2-S | | | Poorly Graded Sand (SP) | |
| 4 | | | | | End of boring @ 4 feet bgs Backfilled with bentonite | |



REV 11/89 FORM D1

CH2M HILL

PROJECT NUMBER 137125.ED.FLORA | BORING NUMBER RBH47 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redonda Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technology

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core Laguna CA

WATER LEVELS Not Encountered, 10-22-96 START 10/21/96 FINISH 10/21/96 LOGGER T Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | POORLY GRADED SAND (SP) medium sand size | |
| 2 | 1.0-1.3 | Ø1-S | 1.6 | | | |
| | | | | | Same as above | |
| | 3.0-3.3 | Ø2-S | 2.0 | | | |
| 4 | | | | | End of borehole @ 4.0 feet bgs. Backfilled with bentonite | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER 13 7125, ED.FW.RB | BORING NUMBER RBH 48 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologi

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core Laguna CA

WATER LEVELS Not Encountered, 10/21/96 START 10/21/96 FINISH 10/21/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5-0.8 | Ø1-S | 1.8 | | Poorly Graded Sand (SP) Medium brown | |
| 2 | | | | | | |
| | 3.0-3.3 | Ø2-S | 1.9 | | Color change - to dark gray | |
| 4 | | | | | Poorly Graded Sand (SP) | |
| | 5.0 5.3 | Ø3-S | 1.5 | | Medium brown, Coarse Sand size | Dk-gray color is gone. Ø3 - Hold |
| 6 | | | | | End of Boring @ 6 feet bgs. Backfilled with bentonite. | |



REV 11/89 FORM D1

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RB | BORING NUMBER BGH 49 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technology

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core Laguna CA

WATER LEVELS Not Encountered, 10/21/96 START 10/21/96 FINISH 10/21/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5-0.8 | 21-S | 1.3 | | | |
| 2 | | | | | Poorly Graded Sand (SP) Light brown to yellow/orange, medium sand size, little fines | |
| | 2.8-3.0 | 22-S | | | | |
| | 3.0-3.3 | 22-S | 2.0 | | | |
| 4 | | | | | End of borehole @ 4.0 feet backfilled with bentonite | |



REV 11/89 FORM D1

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RD | BORING NUMBER RBH50 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach, California

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna, California

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS Not Encountered, 10/22/96 START 0858, 10/22/96 FINISH 0916, 10/22/96 LOGGER C. Parker

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | Backfill Washed Gravel (GP) 2" | |
| 2 | | | | | same as above, (GP) | |
| 4 | | | | | same as above, (GP) | |
| 6 | | | | | 5' bgs normal drilling<br>6' bgs void to 7' bgs, tube dropped, at 7' bgs encountered hard drilling - Refusal - abandoned this Location | Concrete/grout in sample shoe, may have encountered encased pipe/utility |
| 8 | | | | | | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RD | BORING NUMBER RBH51 | SHEET 1 OF 2

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach, California

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna, California

DRILLING METHOD AND EQUIPMENT Direct Push- Continuous Core.

WATER LEVELS 13.7' bgs, 10-23-96 START 0928, 10/22/96 FINISH 1045, 10/22/96 LOGGER C Parker

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | Gravel (GP) | |
| | | | 21" | | well graded Sand (SW), brown, well rounded - rounded particles | |
| 2 | | | | | | PID ~1.5ppm |
| | | | 14" | | Same as above (SW) | |
| 4 | | | | | | PID ~ 1.3ppm |
| | | | 12" | | well graded Sand (SW), Light brown, well rounded particles | PID ~ 0.7ppm |
| 6 | | | | | Poorly graded sand (SP), Light brown | |
| | | | 19" | | | PID ~ 0.6ppm |
| 8 | | | | | | |
| | | | 16" | | Same as above (SP) | PID ~ 0.4ppm |
| 10 | | | | | | |
| | | | 14" | | Poorly graded Sand (SP), Light brown | |
| 12 | | | | | | |

CH2M HILL

PROJECT NUMBER 137125, ED. FW. RD | BORING NUMBER RBH51 | SHEET 2 OF 2

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach, California

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna, California

DRILLING METHOD AND EQUIPMENT Direct Push- Continuous Core

WATER LEVELS 13.7' bgs, 10-23-96 START 0928, 10/22/96 FINISH 1045, 10/22/96 LOGGER C Parker

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | 16" | | Poorly graded Sand (SP), Light brown | |
| | | | | | | PID ~ 0.7ppm |
| | | | | | wet @ about 13' bgs | |
| 14 | | | | | | |
| | | | 14" | | | |
| | | | | | | PID ~ 1.3ppm @ 15' bgs |
| | | | | | END OF Boring @ 15' bgs | |
| 16 | | | | | | |

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RD | BORING NUMBER RBH52 | SHEET 1 OF 2

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach, California

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna, California

DRILLING METHOD AND EQUIPMENT Direct Push- Continuous Core

WATER LEVELS 12.5' bgs, 10-23-96 START 1058, 10/22/96 FINISH 1140, 10/22/96 LOGGER C Parker

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | Well graded Sand (SW), Light brown, well rounded | ← Asphalt Surface |
| | 0.5 - 1.5 | 01 | 13" | | | |
| 2 | | | | | | PID ~ 1.2 ppm |
| | | | 17" | | | |
| 4 | | | | | Poorly graded Sand (SP), Light brown, well rounded | |
| | | | | | | 4.5 - PID ~ 0.7 ppm |
| | 5.5 - 6.0 | 02 | 21" | | | |
| 6 | | | | | | |
| | | | | | | PID ~ 0.4 ppm |
| 8 | | | | | Same as above (SP) | |
| 10 | | | | | | |
| | | | | | Poorly graded Sand (SP), Light brown, well rounded | |
| 12 | | | | | | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RD | BORING NUMBER RBH52 | SHEET 2 OF 2

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach, California

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna, California

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS 12.5' bgs, 10-23-96 START 1058, 10/22/96 FINISH 1140, 10/22/96 LOGGER C. Parker

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | Poorly graded Sand (SP), Light brown, well rounded | |
| 14 | | | | | | PID @ 15' bgs ~ 0.6 ppm |
| | | | | | Same as above (SP) | |
| | | | | | END OF Boring @ 15' bgs | |
| 16 | | | | | | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER 137125ED.FW.RB | BORING NUMBER TRBH53 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technology

DRILLING METHOD AND EQUIPMENT Direct Push Continuous Core

WATER LEVELS Not Encountered, 10/21/96 START 1540, 10/21/96 FINISH 1615, 10/21/96 LOGGER J. Wagner

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 0.5-0.8 | Ø1-5 | 2.0 | | FILL | |
| 2 | | | | | | |
| | | | 1.5 | | FILL - gravel, sand, dry loose | |
| 4 | | | | | | |
| | 4.6-5.0 | Ø2-5 | 1.5 | | POORLY GRADED SAND (SP) medium brown loose, medium sand size | |
| 6 | | | | | | |
| | | | | | POORLY GRADED SAND (SP) medium brown to orange/yellow, moist, medium sand size | |
| 8 | | | | | End of Soil Boring @ 8.0 feet Backfilled with enviroplug® - bentonite chips | |



REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER 137125.ED.FW.RD | BORING NUMBER RBH 54 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach, California

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna, California

DRILLING METHOD AND EQUIPMENT Hand Auger Boring

WATER LEVELS 12.9' bgs, 10-24-96 START 0800, 10/24/96 FINISH 0940, 10/24/96 LOGGER C.R. Basnett

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | Well sorted, poorly graded sand (SP), brown, medium grain size | |
| 5 | | | | | same as above (SP) | |
| | | | | | Sand becoming darker brown (SP) | |
| | 8.5 | 01 | | | | may be getting close to GWT |
| 10 | | | | | Thick oily-like masses mixed with sand | Encountered hydrocarbon-like impacted soil - fuel-like gasoline-like odor |
| | 11 | 02 | | | Oil impacted soil continues | |
| | 13 | 03 | | | | |
| 15 | | | | | END OF Boring @ 15' bgs | |
| 20 | | | | | | |
| 25 | | | | | | |



REV 11/89 FORM D1

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 137125.ED.~~EW.RD~~ | RBH55 | 1 | 2 |

# SOIL BORING LOG

PROJECT Edison phase II Investigation LOCATION Redondo Generating Station

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies

DRILLING METHOD AND EQUIPMENT Direct Push - [illegible]

WATER LEVELS 32' bgs ± 11-11-96 START 11-11-96, 0812 FINISH 11-11-96, [illegible] LOGGER C. Bennett

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | 1.0 | | Poorly graded sand (SP), brown, dry, fine | Punch through Asphalt 19 ppm [illegible] |
| 2 | | | 1.6 | | Same as above (SP) | 3 ppm Fill material [illegible] |
| 4 | | | 1.0 | | Poorly graded Sand (SP), brown-tan, dry, fine | 0.6 ppm [illegible] |
| 6 | | | 0.8 | | Same as above (SP) | 0.3 ppm Fill material [illegible] |
| 8 | | | 0.7 | | Poorly graded Sand (SP) tan, slightly dry to moist, fine | 0.6 ppm [illegible] |
| 10 | | | 0.4 | | Same as above (SP), dry | 2.1 ppm Poor recovery [illegible] |
| 12 | | | | | | |



REV 11/89 FORM D15I

CH2M HILL

| PROJECT NUMBER An 137125.ED.~~FW.RD~~ | BORING NUMBER RBH55 | SHEET 2 OF 2 |
|---|---|---|

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Generating Station

ELEVATION _____ DRILLING CONTRACTOR Environmental ~~Supply~~ Support Technology

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core Laguna California

WATER LEVELS ~~19 bgs~~ 22 bgs, 11-11-96 START 11-11-96 FINISH 11-11-96, LOGGER C. Basnett

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| 12 | | | | | | very loose/soft soil |
| | | 01-S | 1.0 | | Poorly graded sand (SP), tan, slightly dry to moist, fine | 6 ppm in acetate sleeve |
| TPH | 13-13.5 | | | | | |
| VOC | 13.5-14 | | | | | |
| 14 | | | | | | Driller removes casing shoe is clogged |
| | | | 1.0 | | Same as above (SP), moist | 3.7 ppm in hole driller has to move rig - driller broke tip of sampler - left in hole |
| | | | | | | 3.0 ppm in acetate |
| 16 | | | | | | |
| | | | 1.2 | | Poorly graded sand (SP), tan, moist, fine | < 1.0 ppm in acetate sleeve |
| 18 | | | | | | |
| | | | 0.3 | | Same as above (SP) wet | < 1 ppm in hole, acetate push to ~~22'~~ 25', set well |
| 20 | | | | | END OF Boring Pushed to 25' to set well | |
| | | | | | Set well @ 25' bgs | |

4 caps, 20' boring, (8.30) 2-10' blanks 5' screen

REV 11/89 FORM D1

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 137125. ED. ~~FW. RD~~ AW | RBH 56 | 1 | 2 |

# SOIL BORING LOG

PROJECT Lansing Phase II Investigation LOCATION Riverside Generating Station

ELEVATION DRILLING CONTRACTOR Environmental Support Technology

DRILLING METHOD AND EQUIPMENT Direct Push-Continuous Core Laguna, Calif.

WATER LEVELS 13.4' bgs. 11-11-96 START 11-11-96, 1015 FINISH 11-11-96, 1055 LOGGER C. Bennett

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | 1.6 | | Poorly graded Sand (SP) brown dry to moist w/ depth, fine | <1.0 ppm in acetate sleeve |
| 2 | | | 1.6 | | same as above (SP), moist | 1.3 ppm in acetate sleeve |
| 4 | | | 1.6 | | Poorly graded Sand (SP), brown, moist, fine | 1.0 ppm in acetate sleeve |
| 6 | | | 1.6 | | same as above (SP) | ~1.5 ppm acetate sleeve |
| 8 | TPH-R 8.7-9.4 VOC 9.4-10 | 01-S | 1.1 | | Poorly graded sand (SP), brown, moist, fine | peaked @ 1.0 ppm in acetate sleeve |
| 10 | | | 1.2 | | same as above (SP) | 1.7 ppm peak in acetate sleeve |
| 12 | | | | | | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 137.25.ED. AW | RBH96 | 2 | 2 |

# SOIL BORING LOG

PROJECT [illegible] Phase II Investigation LOCATION Rexonde generating station

ELEVATION DRILLING CONTRACTOR Environmental Support Technologies

DRILLING METHOD AND EQUIPMENT Direct Push-Continuous Core [illegible]

WATER LEVELS 13.46 gs± 11-11-96 START 11-11-96 1015 FINISH 11-11-96, 1055 LOGGER C. Basnet

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | 1.0 | | | 2.6 ppm peak in acetate sheet |
| 14 | [illegible] 15.5 | C122-102-S | 1.6 | | Poorly graded sand (SP) brown, wet fine | 9.5± ppm in acetate |
| 16 | | | | | set well @ 16' bgs | |

4-Caps 16' boring (8.30) ~~to~~ 2-10' blanks 1-5' screen

REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 137125.ED.AN | RBH57 | 1 | 2 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Generating Station

ELEVATION DRILLING CONTRACTOR Environmental Support Technologies

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core [illegible]

WATER LEVELS [illegible], 11-11-96 START 11-11-96, 1100 FINISH 11-11-96, [illegible] LOGGER C. Basnett

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | | Punch through asphalt |
| | | | 0.7 | | Poorly to well graded sand (SP, SW), brown, orange/yellowish, moist to slightly dry, fine to medium | <1.0 ppm in acetate sleeve |
| 2 | | | | | | 35 ppm in acetate sleeve |
| | | | 1.5 | | Same as above (SP, SW) | |
| 4 | | | | | | 21 ppm in acetate sleeve Advised drillers to proceed w/ caution |
| TPH-D 5.0-5.5 VOC 5.5-6.0 | | 01 | 1.0 | | Poorly graded sand (SP), tan-brown, moist to slightly dry, fine | |
| 6 | | | | | | |
| | | | 1.5 | | Same as above (SP) | 55 ppm in acetate sleeve |
| 8 | | | | | | |
| [illegible] VOC 8.5-9 | | 02 | 1.4 | | Poorly graded sand (SP), brown/tan, slightly moist to dry, fine | 120 ppm in hole 18 ppm in acetate sleeve |
| 10 | | | | | | |
| | | | | | | 42 ppm in acetate sleeve |
| 12 | | | | | | |

CH2M HILL

| PROJECT NUMBER ED 137125. ~~Aw~~ AW | BORING NUMBER RPH57 | SHEET 2 OF 2 |
|---|---|---|

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Generating station

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna, Calif

DRILLING METHOD AND EQUIPMENT Direct Push - Continuous Core

WATER LEVELS 13 ft bgs ± 11-11-96 START 11-11-96, 1100 FINISH 11-11-96, 1225 LOGGER C. Bassett

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 8-8.5 8.5-9 | 02-5 | | | Top 0.6 ft. Same as above (SP) | oily-like contamination at about 13' bgs |
| | 9-9.5 9.5-10 | 020 | 1.1 | | Bot 0.5 ft Sand w/ petroleum-like substance, black, oily-like gasoline-like odor | |
| | 12.9-13.4 13.4-13.5 | 025-5 | | | | |
| 14 | | | | | | |
| TPHD VOC | 15.0-15.5 15.5-16 | 03-5 | 1.1 | | Sand w/ petroleum like substance (SP), black, wet, fine | 15.0 ppm in acetate sleeve gasoline-like odor |
| 16 | | | | | END OF Boring @ 16' bgs - Set well @ 16' bgs | ← well dry @ 1400 hrs |
| | | | | | Returned @ [illegible] hr and [illegible] well to [illegible] bgs | |

20 copper 16'-boring, 2-10' blanks, 1-5' screen

(8.30)

REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER 137125.ED.AW | BORING NUMBER RBH 58 | SHEET 1 OF 1

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Beach, California

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna, California

DRILLING METHOD AND EQUIPMENT Hand Auger to 5' bgs

WATER LEVELS 3' bgs ±, 11-11-96 START 11-11-96, 1307 FINISH 11-11-96, 1318 LOGGER G. Basnett

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | | angled boring into/under tank, 6-8" from tank edge |
| 1 | 1.0 - 1.5 | 01-S | TPH-D | | Poorly graded Sand (SP), brown, moist, coarse sand | |
| 2 | | | | | Same (SP) | |
| 3 | | | | | wet @ 3' bgs ± | |
| 4 | 4.5 - 5.0 | 02-S | TPH-D | | Poorly graded Sand (SP), dark brown, wet, coarse sand | |
| 5 | | | | | END OF Boring @ 5' bgs | |
| 6 | | | | | | |



REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET |
|---|---|---|
| 137125.ED.A[illegible] | RBH 59 | 1 OF 1 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Generating Stati[illegible]

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies

DRILLING METHOD AND EQUIPMENT Hand Auger [illegible]

WATER LEVELS [illegible] 11-11-96 START 11-11-96, 1325 FINISH 11-11-96, 1345 LOGGER C. Barnett

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | | 6" within tanks edge angled underneath tank |
| | | | | | Poorly graded sand ~~to well graded sand~~ (SP) brown to dark brown, dry, coarse particles | |
| 1 TPH-D | 1.0-1.5 | 01-[illegible] | | | | |
| 2 | | | | | | |
| | | | | | Same (SP) | |
| 3 | | | | | | |
| 4 | | | | | | |
| TPH-D | 4.5-5.0 | 102-[illegible] | | | Same, (SP), very coarse | Some pea-gravel |
| 5 | 4.5-5.0 | 12.2-[illegible] | | | | |
| | | | | | END OF boring @ 5' bgs | |

(8.30)

5' Auger boring

REV 11/89 FORM D15[illegible]

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| 7125.E0.AW | RBH 60 | 1 | 1 |

# SOIL BORING LOG

PROJECT Edison Phase II Investigation LOCATION Redondo Generating Station

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies

DRILLING METHOD AND EQUIPMENT ~~Direct Push~~ Hand Auger

WATER LEVELS 6' bgs, 11-11-96 START 1350, 11-11-96 FINISH 11-11-96, 1405 LOGGER C. Barnett

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | | Conducted within 0.5' of tank edge, angled into/under tank |
| 1 | TPHD 1.0-1.5' | 01 | | | Poorly graded sand (SP), brown to dark brown, moist, coarse | |
| | | 01D | | | | |
| | | 01S | | | | |
| 2 | | | | | | |
| 3 | | | | | Same as above (SP), very moist to wet, | |
| 4 | 4.5-5.0 | | | | | |
| | TPH D | 02 | | | Silty sand (SM) dark brown to black, very moist, coarse sand | |
| 5 | | | | | | |
| | | | | | END OF boring at 6' bgs | |

(8.30)

6' Auger boring

REV 11/89 FORM D15

CH2M HILL

| PROJECT NUMBER | BORING NUMBER | SHEET | OF |
|---|---|---|---|
| [illegible] | RBH61 | 1 | 1 |

# SOIL BORING LOG

PROJECT [illegible] II INVESTIGATION LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR Environmental Support Technologies Laguna, California

DRILLING METHOD AND EQUIPMENT HAND Auger to 5' bgs

WATER LEVELS 7' bgs±, 11-11-96 START 11-11-96, 1415 FINISH 11-11-96, 1426 LOGGER C. Barnett

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | | Concentrated within 6" from tank edge, angled under tank |
| | TPH-D 1.0-1.5 | 01-[illegible] 21-[illegible] | | | Poorly graded Sand (SP), brown, moist, fine | |
| 1 | | | | | | |
| 2 | | | | | same as above (SP) | |
| 3 | | | | | | |
| 4 | 4.5-5.0 TPH-2 | 02-[illegible] | | | Poorly graded Sand (SP), brown, very moist, fine - some stone | |
| 5 | | | | | END of Boring @ 5' bgs | |

— Auger boring (8.30) to 7' bgs —

REV 11/89 FORM D15

CH2M HILL

PROJECT NUMBER 137125.ED.AF.RB | BORING NUMBER RBH 62 | SHEET 1 OF 2

# SOIL BORING LOG

PROJECT EDISON PHASE II SUPPLEMENTAL INVEST LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR ENVIRONMENTAL SUPPORT TECH., LAGUNA, CA

DRILLING METHOD AND EQUIPMENT DIRECT PUSH CONTINUOUS CORE

WATER LEVELS 11.65 ft BGS 1/28/97 START 0925 1/28/97 FINISH 1035 1/28/97 LOGGER G. BUTLER

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | 6" - 14" | #1-5 | 9.5" | | SAND (S), TAN, FINE SAND W. SOME MEDIUM TO COARSE SAND, POORLY SORTED (i.e, WELL GRADED), SOME SHELL FRAGMENTS. | PID 0.1 ppm CGI 0.0% LEL |
| | | | | | | PID 0.0 ppm CGI 0.0% LEL |
| 2 | | | | | | |
| | | | | | SAME AS ABOVE | |
| 4 | | | | | | PID 0.0 ppm CGI 0.0% LEL |
| | 4'8" - 6' | #2-5 22-5 | 16" | | SAME AS ABOVE | |
| 6 | | | | | SAME AS ABOVE | PID 0.0 ppm CGI 0.0% LEL |
| | | | 16" | | | |
| 8 | | | | | SAME AS ABOVE | PID 0.0 ppm CGI 0.0% LEL |
| | | | 13" | | | |
| 10 | 10' - 6'8" | #3 5 | 10" | | SAND (SP), LIGHT BROWN, FINE SAND, WELL SORTED (i.e, POORLY GRADED). | |
| 12 | | | | | SOIL MOIST AT 12' | PID 0.0 ppm CGI 0.0% LEL |

REV 11/89 FORM D1586

CH2M HILL

PROJECT NUMBER 137125.ED.AF.RB | BORING NUMBER RBH62 | SHEET 2 OF 2

# SOIL BORING LOG

PROJECT EDISON PHASE II SUPPLEMENTAL INVES LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR ENVIRONMENTAL SUPPORT TECH., LAGUNA, CA

DRILLING METHOD AND EQUIPMENT DIRECT PUSH CONTINUOUS CORE

WATER LEVELS 11.65 FT BGS 1/28/97 START 0925 1/28/97 FINISH 1035 1/28/97 LOGGER G. BUTLER

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | 11" | | SAME AS ABOVE | PID 0.0 ppm<br>CGI 0.0% LEL<br>GROUNDWATER @ ~13' |
| 14 | | | | | | |
| 16 | | | | | | |
| 18 | | | | | END OF SOIL BORING AT 18 FT<br>TEMP. PIEZOMETER INSTALLED TO 18 FT BGS. 5 FT 0.01 SLOT, SH40, PVC, FLUSH THREADED | |
| 20 | | | | | | |



REV 11/89 FORM D1586

CH2M HILL

PROJECT NUMBER 137125.ED.AF.RB | BORING NUMBER RBH63 | SHEET 1 OF 2

# SOIL BORING LOG

PROJECT EDISON PHASE II SUPPLEMENTAL INVEST LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR ENVIRONMENTAL SUPPORT TECH., LAGUNA, CA

DRILLING METHOD AND EQUIPMENT DIRECT PUSH CONTINUOUS CORE

WATER LEVELS 11.3 ft BGS 1/28/97 START 1055 1/28/97 FINISH 1130 1/28/97 LOGGER G. BUTLER

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | 0.65' | | | PID 0.0 ppm<br>CGI 0.0% LEL |
| | | | | | SAND (SW), GRAY w. DARK STAINS, FINE TO COARSE SAND w. SOME PEBBLES, POORLY SORTED (ic, WELL GRADED). | |
| 2 | 16"-24" | Ø1-5 | | | | PID 0.0 ppm<br>CIG 0.0% LEL |
| | | | 1.1' | | | |
| | | | | | SAND (SP), TAN, FINE SAND, WELL SORTED (ic, POORLY GRADED) | |
| 4 | 64"-72" | Ø2-5 | 0.65' | | | PID 0.0 ppm<br>CIG 0.0% LEL |
| | | | | | MOIST | |
| 6 | | | | | | PID 0.0 ppm<br>CIG 0.0% LEL |
| | | | 1.1' | | SAME AS ABOVE | |
| 8 | | | | | | PID 0.0 ppm<br>CIG 0.0% LEL |
| | | | 1.8' | | SAME AS ABOVE | |
| 10 | 131"-139" | | 1.3' | | | GROUNDWATER @ ~11.3 FT |
| 12 | | | | | | |



REV 11/89 FORM D1586

CH2M HILL

PROJECT NUMBER 137125.ED.AF.RB | BORING NUMBER RBH63 | SHEET 2 OF 2

# SOIL BORING LOG

PROJECT EDISON PHASE II SUPPLEMENTAL INVES LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR ENVIRONMENTAL SUPPORT TECH., LAGUNA, CA

DRILLING METHOD AND EQUIPMENT DIRECT PUSH CONTINUOUS CORE

WATER LEVELS 11.3 FT BGS 1/28/97 START 1055 1/28/97 FINISH 1130 1/28/97 LOGGER G. BUTLER

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | | | | |
| 14 | | | | | END OF SOIL BORING AT 13.7 FT TEMP. PIEZOMETER INSTALLED TO 13.7 FT BGS. 5 FT 0.01 SLOT, SCH40, PVC, FLUSH THREADED | |
| 16 | | | | | | |
| 18 | | | | | | |



REV 11/89 FORM D1586

CH2M HILL

PROJECT NUMBER 137125.ED.AF.RD | BORING NUMBER RBH64 | SHEET 1 OF 2

# SOIL BORING LOG

PROJECT EDISON PHASE II SUPPLEMENTAL INVEST LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR ENVIRONMENTAL SUPPORT TECH., LAGUNA, CA

DRILLING METHOD AND EQUIPMENT DIRECT PUSH CONTINUOUS CORE

WATER LEVELS 11.8 ft BGS 1/28/97 START 1150 1/28/97 FINISH 1230 1/28/97 LOGGER G. BUTLER

| DEPTH BELOW SURFACE (FT) | SAMPLE INTERVAL | SAMPLE NUMBER AND TYPE | SAMPLE RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| | | | 15" | | SAND (SW), TAN, FINE TO MEDIUM SAND W. SOME COARSE SAND AND PEBBLES, POORLY SORTED (i.e, WELL GRADED). | PID 0.0 ppm CGI 0.0% LEL |
| | 12"-20" | #1-5 | | | | |
| 2 | | | | | | PID 0.0 ppm CGI 0.0% LEL |
| | | | 16" | | SAME AS ABOVE | |
| 4 | | | | | | |
| | 5' ↓ 5.8' | #2-5 | 17" | | SAND (SP), TAN, FINE SAND WELL SORTED (i.e, POORLY GRADED). | PID 0.0 ppm CGI 0.0% LEL |
| 6 | | | | | | |
| | | | 13" | | | PID 0.0 ppm CGI 0.0% LEL |
| 8 | | | | | | |
| | | | 12" | | SAND (SM), BROWN, MEDIUM TO COARSE SAND W SILT. MOIST. | PID 0.0 ppm CGI 0.0% LEL |
| 10 | | | | | | |
| | 11.4' ↓ 12.0' | #3-5 | 10" | | SAME AS ABOVE, SATURATED. | GROUNDWATER @ 11.8' BGS |
| 12 | | | | | | |



REV 11/89 FORM D1586

CH2M HILL

PROJECT NUMBER 137125. ED. AF. RD | BORING NUMBER RBH64 | SHEET 2 OF 2

# SOIL BORING LOG

PROJECT EDISON PHASE II SUPPLEMENTAL INVES LOCATION Redondo Beach

ELEVATION _____ DRILLING CONTRACTOR ENVIRONMENTAL SUPPORT TECH., LAGUNA, CA

DRILLING METHOD AND EQUIPMENT DIRECT PUSH CONTINUOUS CORE

WATER LEVELS 11.8 FT BGS 1/28/97 START 1150 1/28/97 FINISH 1230 1/28/97 LOGGER G. BUTLER

| DEPTH BELOW SURFACE (FT) | SAMPLE: INTERVAL | SAMPLE: NUMBER AND TYPE | SAMPLE: RECOVERY (FT) | STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N) | SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY | COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION |
|---|---|---|---|---|---|---|
| 14 | | | | | | |
| 16 | | | | | END OF SOIL BORING AT 15 FT<br>TEMP. PIEZOMETER INSTALLED TO 15.8 FT BGS. 5 FT, 0.01 SLOT, SCH 40, PVC, FLUSH THREADED. | |



REV 11/89 FORM D1586

**APPENDIX B - SAMPLE LOCATION CONTROL DATA**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SAMPLE LOCATION | SAMPLE LOCATION CONTROL POINT | DISTANCE TO PERMANENT SITE FEATURE (FEET) | DESCRIPTION OF PERMANENT SITE FEATURE |
|---|---|---|---|
| RBH01 | 1 | 5.0 | Tank 1 (on a perpendicular) |
| | 2 | 20.0 | Elbow on pipe to west that runs alongside Tank 1 |
| | 3 | 109.0 | Monitoring Well (P-30) east-northeast of RBH01 |
| RBH02 | 1 | 2.75 | Edge of concrete base of sump to north |
| | 2 | 35.5 | Edge of concrete base of sump to east |
| | 3 | 19.8 | Where small (~ 3-inch diameter) pipe enters berm to northwest |
| RBH03 | 1 | 79.0 | Southeastern-most Monitoring Well (P-35) |
| | 2 | 56.0 | Monitoring Well (P-36) to south and immediately west of well described in Swing-Tie Point #1 |
| | 3 | 16.0 | Heating Coil on the corner of fuel oil pipe; almost directly north of well described in Swing-Tie Point # 2 |
| RBH04 | 1 | 46.0 | Southeast corner of concrete pad for water pipes (blue) |
| | 2 | 10.0 | First step on stairs on Tank 2 |
| | 3 | 67.0 | Monitoring Well (P-31) directly north of RBH04 |
| RBH05 | 1 | 5.0 | Drain Pipe on Tank 2 |
| | 2 | 38.0 | Valve on pipe from Tank 2 |
| | 3 | 95.0 | Northeastern-most Montoring Well (P-33) |
| RBH06 | 1 | 45.75 | Utility Pole to southwest |
| | 2 | 40.33 | Monitoring Well P-22 |
| | 3 | 52.6 | Monitoring Well P-21 |
| RBH07 | 1 | 44.0 | Pole in front of Monitoring Well P-25 |
| | 2 | 28.0 | Northeast corner of concrete pad of sump located west of RBH07 |
| | 3 | 42.0 | Water pipe rising from ground northwest of RBH07 |

**APPENDIX B - SAMPLE LOCATION CONTROL DATA**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SAMPLE LOCATION | SAMPLE LOCATION CONTROL POINT | DISTANCE TO PERMANENT SITE FEATURE (FEET) | DESCRIPTION OF PERMANENT SITE FEATURE |
|---|---|---|---|
| RBH08 | 1 | 3.25 | Center of wall of sump located north-northwest of sump |
| | 2 | 23.75 | Twelve inch pipe to northwest; where wooden stairs and fuel oil pipe meet |
| | 3 | 106.7 | Center pole in front of Monitoring Well southeast of RBH08 |
| RBH09 | 1 | 14.6 | Tank 4 (on a perpendicular) |
| | 2 | 17.5 | Top-center of 33-inch diameter cover located on Tank 4 north-northeast of RBH09 |
| | 3 | 18.8 | Top-center of 19-inch cover located on pipe from Tank 4 north-northwest of RBH09 |
| RBH10 | 1 | 4.6 | Southwest corner of concrete pad of stairway that crosses pipes; northeast of RBH10 |
| | 2 | 5.6 | Conrete support for pipe (~10-inch diameter) that runs alongside Tank 4; southeast of RBH10 |
| | 3 | 4.6 | Northwest corner of conrete pad for valves and pipes that runs alongside Tank 4 |
| RBH11 | 1 | 80.2 | Monitoring Well P-8 |
| | 2 | 23.6 | Edge of 12-inch diameter pipe (directly above concrete support); northwest of RBH11 |
| | 3 | 11.8 | Tank 4 (directly above pipe that leads to sump) |
| RBH12 | 1 | 87.0 | Stairs to center of borehole RBH12 |
| | 2 | 8.5 | Tank 5 (on a perpendicular, towards stairs) |
| | 3 | 69.25 | From west roof drain on Tank 5 |
| RBH13 | 1 | 34.0 | Valve south-southwest of RBH13 |
| | 2 | 25.0 | Valve approximately 4 feet from bottom of Tank 5 |

| SAMPLE LOCATION | SAMPLE LOCATION CONTROL POINT | DISTANCE TO PERMANENT SITE FEATURE (FEET) | DESCRIPTION OF PERMANENT SITE FEATURE |
|---|---|---|---|
| | 3 | 24.0 | Location to north of RBH13 where a small diameter pipe from tank enters berm |
| RBH14 | 1 | 17.4 | Tank 5 (on a perpendicular) |
| | 2 | 145.0 | Electrical box north of RBH14 |
| | 3 | 64.5 | First drain pipe on Tank 5 south of RBH14 |
| RBH15 | 1 | 4.0 | Perpendicular from cutter stock tank |
| | 2 | 35.0 | Monitoring Well (DW-1) located west-southwest of RBH15 |
| | 3 | 35.0 | Drain pipe on Tank 1, south of RBH15 |
| RBH16 | 1 | 4.5 | Cutter Stock tank (on a perpendicular) |
| | 2 | 5.0 | Northeast corner of concrete pad for stairs on north side of Cutter Stock tank |
| | 3 | 15.0 | Southwest corner of stairs, leading to shack |
| RBH17 | 1 | 18.0 | West wall of Tool Room building |
| | 2 | 10.0 | Concrete wall north of RBH17 |
| RBH18 | 1 | 35.0 | West wall of Tool Room building |
| | 2 | 8.0 | Concrete wall north of RBH18 |
| RBH19 | 1 | 15.0 | East concrete pad of Units 1-4 Main Bank Transformers |
| | 2 | 3.25 | West fence of 66 kV Switchyard |
| | 3 | 58.5 | North fence of 66 kV Switchyard |
| RBH20 | 1 | 14.5 | East concrete pad of Units 1-4 Main Bank Transformers |
| | 2 | 4.0 | West fence of 66 kV Switchyard |
| | 3 | 169.0 | South fence of 66 kV Switchyard |
| RBH21 | 1 | 16.5 | South fence of 66 kV Switchyard |
| | 2 | 4.0 | West fence of 66 kV Switchyard |
| | 3 | 15.0 | East concrete pad of Units 1-4 Main |

**APPENDIX B - SAMPLE LOCATION CONTROL DATA**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SAMPLE LOCATION | SAMPLE LOCATION CONTROL POINT | DISTANCE TO PERMANENT SITE FEATURE (FEET) | DESCRIPTION OF PERMANENT SITE FEATURE |
|---|---|---|---|
| | | | Bank Transformers |
| RBH22 | 1 | 94.0 | Conrete wall north of RBH22 |
| | 2 | 38.0 | West wall of Tool Room building |
| | 3 | 44.0 | East side of Administration Building |
| RBH23 | 1 | 14.0 | Concrete curbing of Unit 5 Main Transformer |
| | 2 | 30.0 | Fire hydrant next to liquid nitrogen tank |
| | 3 | 115.0 | East wall of Unit 5 warehouse |
| RBH24 | 1 | 8.9 | Northeast pole of steel supports located west of RBH24 |
| | 2 | 11.6 | Steel support in northeast corner of concrete pad in graveled area south of RBH24 |
| RBH25 | 1 | 75.0 | Northeast corner fence post of Central Retention Basin |
| | 2 | 82.0 | Centerline of Units 5 & 6 south detector tank |
| | 3 | 40.5 | Centerline of fuel oil additive tank between units 5 & 6 |
| RBH26 | 1 | 8.7 | Steel support southwest of RBH26 |
| | 2 | 10.33 | Steel support northeast of RBH25 |
| | 3 | 25.0 | Steel pole at corner of graveled area southeast of RBH26 |
| RBH27 | 1 | 6.0 | Northwest corner of concrete wall surrounding Unit 7 Main LP Transformer |
| | 2 | 17.4 | Northeast corner of conrete wall surrounding Unit 7 Main LP Transformer |
| | 3 | 17.0 | First steel support (for sound wall) northwest of RBH27 |
| RBH28 | 1 | 6.0 | Southwest corner of concrete wall surrounding Unit 8 Main LP Transformer |

**APPENDIX B - SAMPLE LOCATION CONTROL DATA**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SAMPLE LOCATION | SAMPLE LOCATION CONTROL POINT | DISTANCE TO PERMANENT SITE FEATURE (FEET) | DESCRIPTION OF PERMANENT SITE FEATURE |
|---|---|---|---|
| | 2 | 18.0 | Southeast corner of concrete wall surrounding Unit 8 Main LP Transformer |
| | 3 | 16.0 | Northeast corner of concrete pad for steel support (for sound wall) southwest of RBH28 |
| RBH29 | 1 | 22.0 | Northwest steel girder (near transformer) |
| | 2 | 31.0 | Guard rail for valves on Service Water Tank on north side of driveway |
| | 3 | 17.0 | Steel support girder for sound wall near tank |
| RBH30 | 1 | 17.7 | Valve on water tank to the west |
| | 2 | 18.75 | Valve on water tank to the east |
| | 3 | 19.0 | Steel support on east side of entrance to Unit 8 area |
| RBH32 | 1 | 30.0 | North/northeast of Monitoring Well P-3 |
| | 2 | 7.0 | South of fence along southside of Hazardous Materials Storage Area |
| | 3 | 105.0 | Northwest of northwest corner of Fire Equipment House |
| RSS33 | 1 | NA | Oily residue at northwest corner of concrete pad (between rails) under Main Bank A Transformer 1 |
| RSS34 | 1 | NA | Oily residue at center of east side of concrete pad (between rails) under Main Bank A Transformer 3 |
| RSS35 | 1 | NA | Oily residue east of west rail, at north/south mid-point, under the east transformer of Unit 5 Transformer Bank |
| RSS36 | 1 | NA | Oily residue west of southeast wheels (on east rail), under west transformer of Unit 6 Transformer Bank |
| RBH37 | 1 | 2.0 | North of rail |

**APPENDIX B - SAMPLE LOCATION CONTROL DATA**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SAMPLE LOCATION | SAMPLE LOCATION CONTROL POINT | DISTANCE TO PERMANENT SITE FEATURE (FEET) | DESCRIPTION OF PERMANENT SITE FEATURE |
|---|---|---|---|
| | 2 | 5.5 | Northeast corner of firehouse |
| | 3 | 15.0 | Southeast corner of firehouse |
| RBH38 | 1 | 5.0 | Rail pole northeast of RBH38 |
| | 2 | 15.0 | Steel support in Switchyard (66 kV) northwest of RBH38 |
| | 3 | 25.0 | Explosion proof electrical plug on railing south of RBH38 |
| RBH39 | 1 | 4.0 | Southwest corner of concrete sump in fuel oil area |
| | 2 | 18.0 | Corner of soundwall southwest of RBH39 |
| | 3 | 11.0 | Southeast corner of concrete sump in fuel oil area |
| RBH40 | 1 | 2.0 | Ballard pole south of RBH40 |
| | 2 | 2.0 | Ballard pole north of RBH40 |
| | 3 | 31.0 | Fire hydrant east of RBH40 (across the road) |
| RBH41 | 1 | 10.0 | East side of fuel oil pump station wall (heading east) |
| | 2 | 38.0 | Northeast corner of fuel oil pump station house (heading south) |
| RBH42 | 1 | 4.0 | Northeast corner of fuel oil pump station house (heading north) |
| | 2 | 6.0 | East side of fuel oil pump station house (heading east) |
| RBH43 | 1 | 60.0 | South of northeast corner of fence at 66 kV switchyard |
| | 2 | 3.0 | East of east fence at 66 kV switchyard |
| RBH44 | 1 | 190.0 | South of northeast corner fence at 66 kV switchyard |
| | 2 | 3.0 | East of east fence at 66 kV switchyard |
| RBH45 | 1 | 64.0 | North of southeast corner fence at 66 kV switchyard |
| | 2 | 4.0 | East of east fence at 66 kV switchyard |

**APPENDIX B - SAMPLE LOCATION CONTROL DATA**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SAMPLE LOCATION | SAMPLE LOCATION CONTROL POINT | DISTANCE TO PERMANENT SITE FEATURE (FEET) | DESCRIPTION OF PERMANENT SITE FEATURE |
|---|---|---|---|
| RBH46 | 1 | 5.0 | North chainlink fence of 220 kV switchyard |
| | 2 | 25.0 | South edge of HDPE liner at retention basin (top of berm) |
| | 3 | 78.0 | West of chain-link fence post at northwest corner of 220 kV switchyard (heading east) |
| RBH47 | 1 | 30.0 | Fire hydrant west of RBH47 |
| | 2 | 70.0 | Fire hydrant east/southeast of RBH47 |
| | 3 | 14.0 | South side of 220 kV switchyard chain-link fence |
| | 4 | 93.0 | West side of 7500 gallon diesel aboveground fuel tank (east of RBH47) |
| RBH48 | 1 | 17.0 | South side of 220 kV switchyard chain-link fence |
| | 2 | 12.0 | Adjacent fire hydrant |
| | 3 | 56.0 | East side of 7500 gallon diesel aboveground fuel tank |
| RBH49 | 1 | 16.0 | South edge of HDPE liner at retention basin (top of berm) |
| | 2 | 19.0 | North chain-link fence of 220 kV switchyard |
| | 3 | 41.0 | Retention basin sump located west of sample location (east side of sump) |
| RBH51 | 1 | 35.0 | Southwest of southwest corner of nearby foamite house |
| | 2 | 22.0 | East/southeast of southeast transmission tower leg |
| | 3 | 5.0 | North edge of concrete wall/curb |
| RBH52 | 1 | 19.5 | East/northeast of foamite house (northeast corner) |
| | 2 | 17.5 | West/northwest of nearby fire |

**APPENDIX B - SAMPLE LOCATION CONTROL DATA**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SAMPLE LOCATION | SAMPLE LOCATION CONTROL POINT | DISTANCE TO PERMANENT SITE FEATURE (FEET) | DESCRIPTION OF PERMANENT SITE FEATURE |
|---|---|---|---|
| | | | equipment house |
| | 3 | 21.0 | North of nearby slope crest |
| RBH53 | 1 | 33.0 | Southeast corner of 220 kV switchyard chain-link fence post |
| | 2 | 4.0 | West corner of pig launching sump (concrete corner) |
| | 3 | 8.5 | East corner of building/ Shed No. 108 |
| RBH54 | 1 | 1.0 | North of northeast corner of wood sump casing |
| | 2 | 38.0 | West of eastern oil/gas separator tower (centerline) |
| | 3 | 59.0 | Southwest of southwest side of nearby service water tank |
| RBH55 | 1 | 15.0 | Northeast of telephone pole |
| | 2 | 23.0 | North of fire service pumphouse |
| | 3 | 12.0 | Northwest of manhole (north of fire service pumphouse) |
| RBH56 | 1 | 5.0 | East of curb |
| | 2 | 19.0 | East of southern high voltage tower leg |
| | 3 | 20.0 | East/southeast of eastern high voltage tower leg |
| RBH57 | 1 | 35.0 | West of gas line cross-over stairs |
| | 2 | 58.0 | West/southwest of fire equipment shed |
| | 3 | 22.0 | East/northeast of telephone pole |
| RBH58 | 1 | 32.0 | Northeast of roof drain on west side of Tank 1 |
| | 2 | 46.0 | Southwest of well DW-1 |
| RBH59 | 1 | 15.0 | South of valve on east side of Tank 2 |
| | 2 | 27.0 | North of roof drain on southeast side of Tank 2 |
| | 3 | 6.0 | West of pipeline on east side of Tank 2 |

**APPENDIX B - SAMPLE LOCATION CONTROL DATA**
**REDONDO GENERATING STATION**
**EDISON PHASE II ESA**

| SAMPLE LOCATION | SAMPLE LOCATION CONTROL POINT | DISTANCE TO PERMANENT SITE FEATURE (FEET) | DESCRIPTION OF PERMANENT SITE FEATURE |
|---|---|---|---|
| RBH60 | 1 | 33.0 | Northeast of roof drain on southeast side of Tank 3 |
| | 2 | 28.0 | South of roof drain on east side of Tank 3 |
| RBH61 | 1 | 19.0 | West of the base of stairs on north side of Tank 4 |
| | 2 | 42.0 | South of toe of the berm north of Tank 4 |
| RBH62 | 1 | 11.0 | Northwest of north corner of hazardous materials storage area |
| | 2 | 32.4 | Southwest of south leg of power line tower (north of hazardous materials storage area) |
| | 3 | 53.1 | South of west leg of power line tower (north of hazardous materials storage area) |
| RBH63 | 1 | 17.6 | Southwest of northwest corner of fire equipment building |
| | 2 | 16.6 | Northwest of southwest corner of fire equipment building |
| | 3 | 5.3 | East of north corner of sump box |
| RBH64 | 1 | 5.9 | Northwest of southwest corner of foamite house |
| | 2 | 42.0 | Northeast of southeast corner of power line tower (northeast of foamite house) |
| | 3 | 30.1 | East of northeast corner of power line tower (northeast of foamite house) |