CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833
Tel 916-920-0300
Fax 916-920-8463

June 11, 2013

469784.RB.DI

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 two items requested as Staff Query 1 – Geotechnical Reference Reports:

1. Phase I Environmental Site Assessment, Redondo Generating Station. May 1997.
2. Phase II Environmental Site Assessment Former Aboveground Storage Tank Nos. 2, 3, 4, and 5. October 13, 2009.

The additional reports requested will be submitted at a later date. 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

Staff Query 1

Privileged and Confidential

PHASE 1 ENVIRONMENTAL SITE ASSESSMENT REDONDO GENERATING STATION

May 1997

Submitted to
SOUTHERN CALIFORNIA EDISON COMPANY

Prepared by:

CH2M HILL

3 Hutton Centre Drive
Santa Ana, CA 92707

Revision: Final

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EXECUTIVE SUMMARY

CH2M HILL has performed a Phase 1 Environmental Site Assessment (ESA) at the Redondo Generating Station (RGS) property located at 1100 Harbor Drive, Redondo Beach, California in substantial conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Practice E1527 and the limitations described in Section 1 of this report. This assessment has revealed the following results in connection with the property. No other recognized environmental conditions or areas of potential concern were identified as a result of the Phase 1 ESA efforts.

Displacement Oil Tank

The displacement oil tank area located at the north east corner of the RGS was reported to have been the subject of remediation of a spill that occurred from a past leak in the displacement oil tank. The contaminated soil and a small quantity of groundwater was remediated, however, the report indicates that oil was observed to be seeping within the remedial excavation from several locations around the tank's perimeter just above the groundwater level. The report suggested that oil contamination may still exist below the displacement oil tank. This reported contamination at the displacement oil tank area is identified as a recognized environmental condition.

Retention Basin

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 will include soil chemistry and groundwater sampling at the retention basins. Past use of the retention basins warranted the on-going investigation, and because of the potential for subsurface contamination, the retention basins at the RGS are identified as an area of potential concern.

Former Underground Storage Tanks

A report on subsurface investigations performed at the former location of three underground storage tanks (USTS) located northeast of the administration office indicates that elevated levels of hydrocarbons exist at depths between 11 and 16 feet below ground surface. The report indicated that the contamination was not from light petroleum gasoline, naphtha, or kerosene but rather diesel fuel or some other heavier petroleum product. The area was reported to be the location of an unknown former process unit that was demolished over 30 years ago. This subsurface contamination at the former USTS location is identified as a recognized environmental condition.

Fuel Oil Storage Tank No. 1

An investigation completed by Edison at the location of fuel oil storage tank 1 indicated that elevated levels of diesel fuel and heavy hydrocarbons were detected in soil samples at depths of 6 inches and 2 feet below ground surface. An excavation and removal report indicated that the contaminated soils were removed except for approximately 15 cubic yards that remain directly below the fuel heater unit. The contaminated soil beneath the fuel oil storage tank 1 heater unit is considered a recognized environmental condition.

Fuel Oil Storage Tank No. 4

Edison staff reported that the number 4 fuel oil storage tank had overflowed in the past. The date of the overflow was not known. The spill area was reported to have been cleaned up. No documentation describing the spill cleanup was available from Edison during performance of the Phase 1 ESA investigation. The potentially contaminated soils resulting from this reported spill are considered an area of potential concern.

Oil/Gas Separator

An investigation at the oil/gas separator area located east of Units 1, 2, 3, and 4, concluded that low levels of soil contamination exists but does not require immediate remedial action. The report, however, contains discrepancies between the laboratory data and the field screening results that would indicate that there may be contamination at the site that was not apparent in the lab results. Field notes indicated a strong odor of an unknown substance within the top 5 feet of the ground surface adjacent to the oil/gas separator. The potential subsurface contamination at the oil/gas separator area is identified as a recognized environmental condition.

Valve Pit/Oily Waste Sump at Units 7 and 8

A subsurface investigation report for the valve pit/oily waste sump at Units 7 and 8 indicates that leakage has occurred and contamination is present in the subsurface soils below the valve pit. Measures were taken by Edison to stop the leakage, but the contamination was left in place due to the reported nonhazardous material characteristics of the soil and the difficulty of remediation. This subsurface contamination below the valve pit/oil waste sump is identified as a recognized environmental condition.

Transformers

Transformers in the powerblock area currently contain oil, which is documented by Edison to have less than 50 parts per million (ppm) polychlorinated biphenyls (PCBs). The transformers were reported to have contained higher concentrations of PCBs before 1976. No records or reports of spills of oil from transformers were discovered, however, it is possible that spillage or releases of transformer oil could have occurred. Because of the possibility for past release of PCBs, the areas around the transformers are identified as areas of potential concern.

Powerblock

Oil staining was observed on the floors of the powerblock around oil-containing equipment such as pumps and tanks. No records of soil sampling or spills in this area were discovered. Because the oil could have seeped through cracks or joints in the concrete or through the pores in the concrete, it is possible that there may be contaminated soils beneath the powerblock area. As such, the oil staining in the power block is identified as an area of potential concern.

Aboveground Storage Tanks

Review of existing investigation reports indicated that petroleum contamination exists at shallow depths near all RGS aboveground tank locations. The reports conclude that this

petroleum contamination resulted from the practice of applying oil to tank subgrades as corrosion protection and from some localized spills outside the tanks. The reports also conclude that the level of contamination detected is not significant. The Edison reports have recommended that no remedial action be conducted. Although it was concluded in the reports that petroleum concentrations associated with the aboveground tanks were not significant, no regulatory concurrence with this conclusion was provided by Edison. Consequently, oil-bearing soil in the aboveground storage tank areas is considered a recognized environmental condition.

Pipelines

Subsurface and aboveground pipelines have been used to convey fuel oil from the tanks to the powerblock and they have never been leak-tested. Therefore, soil around the pipelines at the RGS is identified as an area of potential concern.

Primary Fuel Oil Pumping Area

The primary fuel oil pumping area was reported by Edison to be a location of potentially contaminated soils. No known investigations or remediation have been completed at this location. This potential subsurface contamination is identified as an area of potential concern.

Fuel Oil Pipeline

The fuel oil pipeline located on the north side of the central retention basin was reported by Edison to have undergone repair and subsurface soil remediation in the past. No documentation was available from Edison for this activity. It was reported that the south side of the retention basin may still have some contamination as a result of the pipeline leak. This potential subsurface contamination is identified as an area of potential concern.

Resin Tanks

Edison reported the potential for subsurface contamination at the location of the resin tanks near the retention basin. Because of this, the resin tank area is identified as an area of potential concern.

Natural Gas Pit Area

Edison reported the potential for soil impacted with mercaptan contamination to exist in the vicinity of the natural gas pit area. Because of this, the natural gas pit area is identified as an area of potential concern.

SECTION 1

INTRODUCTION

CH2M HILL conducted a Phase 1 Environmental Site Assessment (ESA) of the Redondo Generating Station (RGS) at the request of southern California Edison Company (Edison). This report presents the results of the Phase 1 assessment activities.

1.1 OBJECTIVES

This Phase 1 environmental site assessment is the initial task in the environmental liability assessment template approach designed by CH2M HILL and Edison to achieve the following objectives:

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

This assessment has been completed in substantial conformance with the American Society for Testing and Materials (ASTM) E 1527-94 - Phase 1 Assessment Standard Process and the limitations described in Section 1 of this report. The ASTM process is defined as good commercial and customary practice for conducting an environmental site assessment of a parcel of commercial real estate with respect to the range of contaminants within the scope of Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and petroleum products. The primary focus of the Phase 1 process is to identify recognized environmental conditions. The term "recognized environmental conditions" means, *the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substance or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws. The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.*

Areas that do not satisfy the ASTM definition of a Recognized Environmental Condition but, for the reasons presented below, are recommended for investigation as part of the Phase II ESA, are identified in this report as "Areas of Potential Concern."

1.2 SPECIAL TERMS AND CONDITIONS

This report has been prepared for the exclusive use of Edison for specific application to the property as described in the report, and for the 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 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.

1.3 LIMITATIONS AND EXCEPTIONS OF ASSESSMENT

CH2M HILL is not responsible for any claims, damages, or liabilities associated with the interpretation of these findings or reuse of the analysis, associated site data, or recommendations 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; (8) liabilities associated with the offsite management of solid or hazardous wastes, (9) records beyond the Environmental Risk Information and Imaging Services (ERIIS) to search electronic environmental databases and readily available Edison files; or conduct interviews with owners and occupants beyond the Edison staff identified in Section 4.1 of this report or 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.

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.

This report is based, in part, on unverified information supplied to CH2M HILL from several Edison sources during the project research. CH2M HILL does not guarantee the completeness or accuracy of that information.

CH2M HILL assumes no responsibility for conditions we are not authorized to investigate or conditions not generally recognized as environmentally unacceptable when services were performed.

In connection with the Phase 1 ESA, CH2M HILL has not performed any surface or subsurface sampling, and, therefore, this report does not reach final conclusions regarding the absence or presence of surface or subsurface contamination.

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.

SECTION 2

SITE DESCRIPTION

2.1 LOCATION AND LEGAL DESCRIPTION

The Redondo Generating Station is located at 1100 Harbor Drive, Redondo Beach, California. A general plot plan and aerial photograph (taken in February 1995) of the facility are shown in Appendix A. A legal description was not available for the site.

2.2 SITE VICINITY CHARACTERISTICS

The topography of the station and vicinity is generally flat with little vegetation. The RGS is adjacent to hotels, residential property and Beryl Street on the south and Hernondo Street and commercial/residential property on the north. The station's eastern boundary backs onto Pacific Avenue and Catalina Avenue, the area across which consists of commercial, light industrial, and residential properties. To the west, across Harbor Drive, are the Occidental College marine education center, the King Harbor Marina, and the Pacific Ocean.

2.3 ROADS AND OTHER SITE IMPROVEMENTS

The developed RGS has numerous roads and structures comprising the current physical characteristics of the station. There have been many additions to the RGS associated with station operations and maintenance. The primary construction occurred over a period of 23 years from 1944 to 1967. The main station is comprised of eight power generation units and ancillary structures (see plot plan, Appendix A).

2.4 REPORTED ENVIRONMENTAL LIENS AND LITIGATION

CH2M HILL requested the following information from Edison representatives:

- Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the site
- Any pending, threatened, or past litigation relevant to past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the site
- Any notices from any governmental entity regarding any possible violation of environmental law or possible liability relating to hazardous substances or petroleum products

Edison reported that there are no environmental liens against the RGS. Edison did disclose that they were currently under a negotiated order with the California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC) to verify that their retention basins have not contributed to contamination of soils or groundwater. This order was negotiated on a company-wide basis and applies to all of their power generation facilities.

No pending, threatened or past litigation or administrative proceedings relating to the release of hazardous substances or petroleum products at the RGS were identified by Edison.

2.5 CURRENT USES OF THE PROPERTY

The current use of the subject property is an electric generating facility comprising eight gas/oil/distillate-fueled electric generating units (see Appendix A). Edison currently leases a portion of the property west of the station across Harbor Drive to Occidental College, a marine education and marine biology center. The portion of Edison's property leased to Occidental College was included in the Phase 1 ESA of the RGS. The RGS has various storage tanks, equipment, and structures designed to contain several petroleum products including fuel oil, distillate oil, lube oil, displacement oil ("cutter stock"), gear oil, mineral oil, gasoline fuel, and waste oil. A complete inventory of the equipment and storage tanks containing petroleum products is included in Appendix B.

Other processes exist at the RGS that utilize hazardous substances and/or generate hazardous wastes. A partial listing of these hazardous substances includes those listed in Appendix B. A complete inventory of hazardous materials storage containers, quantities, and locations of hazardous materials as assembled by Edison for the purposes of their Hazardous Materials Release Contingency Plan is included in Appendix B.

The predominant structures located at the RGS include large aboveground steel tanks storing petroleum products; process units that include boilers, tanks, and various mechanical equipment and vessels; lined retention basins; and buildings used for offices, training, and control and maintenance operations.

2.6 PAST USES OF THE PROPERTY

Review of existing records for the property indicates that the RGS is a former marsh and low lying area that has been graded to provide the present configuration. Records indicate that the first development at the RGS was associated with the construction of 4 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 electrical power generation with the addition of four more units as indicated below.

Unit Number	Initial Operation	Potential Fuel	Generating Capacity (MW)
Unit #1	February 1948	Natural gas, oil	70
Unit #2	April 1948	Natural gas, oil	70
Unit #3	August 1949	Natural gas, oil	74
Unit #4	October 1949	Natural gas, oil	74
Unit #5	September 1954	Natural gas, oil	175
Unit #6	May 1957	Natural gas, oil	175

Unit Number	Initial Operation	Potential Fuel	Generating Capacity (MW)
Unit #7	October 1966	Natural gas, oil	480
Unit #8	April 1967	Natural gas, distillate	480

2.7 CURRENT AND PAST USES OF ADJOINING PROPERTIES

The current and past use of the adjoining property to the west of the RGS is a marina. This area was a harbor before the early 1950s and has included a marina since the early 1960s. To the east of the station are commercial/industrial properties that were present in records dating back to 1952. The industrial area contained a number of above ground tanks during the period of 1952 to 1993. The property to the north of the RGS is primarily residential and has been used as such since initial development in the 1950s. Before the residential and industrial development, the area to the east and north of the station was used primarily as an oil well field. Properties to the south of the RGS are currently residential apartments and hotel development. Before approximately 1952, this area was undeveloped.

SECTION 3

RECORDS REVIEW

3.1 ENVIRONMENTAL RECORD SOURCES

The environmental records review was performed by CH2M HILL during the month of June 1996. The findings and results of this review are discussed in this Section.

3.1.1 Standard ASTM Environmental Record Sources

The purpose of the records review was to obtain and review records that would help identify recognized environmental condition and areas of potential concern in connection with the RGS property. CH2M HILL utilized an electronic database search to efficiently perform a records search of reasonably ascertainable electronic environmental databases, including the standard state and federal sources, to conform with the minimum database search requirements of the ASTM Standard Practice (see Table 3-1). Note that this database search performed as part of the Phase 1 ESA did not include a regulatory agency file review of reports and documentation that may be available from local regulatory agency offices including EPA, DTSC, RWQCB, fire department, and building department.

The ASTM Standard Practice list of regulatory databases to be reviewed, including the approximate minimum search distances and the resulting number of sites and features found within the ASTM search distance measured from the center of the RGS property are provided in Table 3-1.

Table 3-1
STANDARD ENVIRONMENTAL RECORD SOURCES

Record Sources †	Approximate Minimum Search Distance	# of Sites Found
Federal NPL site list	1.0 mile	0
Federal CERCLIS list	0.5 mile	0
Federal RCRA TSD facilities list	1.0 mile	0
Federal RCRA generators list	property & adjoining	1
Federal ERNS list	property only	0
State lists of hazardous waste sites identified for investigation or remediation (NPL and CERCLIS equivalents)	1.0 mile	14
State landfill and/or solid waste disposal site lists	0.5 mile	0
State leaking UST lists	0.5 mile	4
State registered UST lists	property & adjoining	1
TOTAL		20

† Note: Definitions of the record sources are provided in the Database Reference Guide in Appendix C.

For the above-referenced ASTM search parameters, the database report identified known sites of environmental significance within the ASTM standard search distances. These sites are summarized in Table 3-2.

Table 3-2
SITES OF ENVIRONMENTAL SIGNIFICANCE (ASTM Search Parameters)

Record Sources †	Site(s) Found ††
Federal RCRA generators list (RCRIS-LG)	Southern California Edison Company Redondo Generating Station 1100 N. Harbor Blvd, Redondo Beach
State lists of hazardous waste sites Identified for investigation or remediation (NPL and CERCLIS equivalents) (HWS)	Owen, N S and Son 511 Cypress St., Hermosa Beach Wilson Carle & Company, Inc. 634 Loma Dr., Hermosa Beach Black Magic Potting Soil, Inc. 530 6th St., Hermosa Beach Parks Barnes Inc. 530 6th Street., Hermosa Beach Can-Am Auto Works 725 Cypress St., Hermosa Beach Skys The Ltd. 665 Valley Dr., Hermosa Beach Fredrick William Designs 1233 Hermosa Ave., Hermosa Beach Gordon & Gordon Entrepreneurs 200 Pier Ave., Hermosa Beach South Bay Daily Breeze 131 South Pacific, Hermosa Beach Earthgate Corp. 215 Pier Ave., Hermosa Beach Hermosa Beach Review 38 14th St., Hermosa Beach Chem-Lab Supplies. 1409 Hermosa Ave., Hermosa Beach Microtronics, Inc. 116 S. Catalina Ave., Redondo Beach California Hand Prints Inc. 700 15th St., Hermosa Beach
State leaking UST lists (LRST)	Redondo Beach Marina 181 N. Harbor Dr., Redondo Beach USPS Main Post Office 1201 N. Catalina Ave, Redondo Beach

Table 3-2 SITES OF ENVIRONMENTAL SIGNIFICANCE (ASTM Search Parameters)	
Record Sources †	**Site(s) Found ††**
	GTE 102 Pacific Coast Hwy., Redondo Beach Sweetser Property 507 N. Gertruda Ave., Redondo Beach
State registered UST lists (RST)	Southern California Edison Company Redondo Generating Station 1100 N. Harbor Blvd, Redondo Beach Status: 2 tanks - active
† Note: Definitions of the record sources are provided in the Database Reference Guide in Appendix C. †† Details of the facilities found are included in Appendix C.	

3.1.2 Supplemental Environmental Record Sources

To supplement the information obtained in the ASTM-required database records search, CH2M HILL performed additional database searches that included: (1) larger search distances for those databases required by ASTM and (2) additional databases not specified by ASTM. A summary of the databases, search distances, and the number of sites identified as part of this supplemental regulatory database search is provided in Table 3-3. The locations of the sites identified from the records search are shown in Figure 3-1.

Table 3-3
SEARCH RADIUS STATISTICAL PROFILE

Record Sources†	Radius(mi.)	Property-1/4	1/4-1/2	1/2-1	>1	Total
NPL	1	0	0	0		0
RCRIS_TS	1	0	0	0		0
CERCLIS	1	0	0	0		0
NFRAP	1	0	0	1		1
RCRIS_LG	1	1	3	9		13
RCRIS_SG	1	0	3	8		11
DOCKET	1	0	0	0		0
TRI	1	0	0	0		0
FRDS	1	0	0	0		0
ERNS	1	0	1	0		1
FINDS	0.25	1	0	0		1

Table 3-3
SEARCH RADIUS STATISTICAL PROFILE

Record Sources†	Radius(mi.)	Property-1/4	1/4-1/2	1/2-1	>1	Total
OPENDUMP	insufficient data	-	-	-		0
NUCLEAR	insufficient data	-	-	-		0
HWS	1	0	5	9		14
LRST	1	1	3	3		7
SWF	1	0	0	0		0
RST	1	3	8	10+1unplottable		22
CORTS	1	0	0	2		2
HWIS	1	1	10	8		19
SPILLS	1	0	1	0		1
OGW	1	0	2	0		2
SWAT	1	0	0	0		0
WDS	1	2	0	1		3
TOTALS		9	36	52	0	97

†Note: Definitions of the record sources are provided in the Database Reference Guide in Appendix C.

Table 3-4 provides a summary of all the environmentally significant sites and features arising from the supplemental electronic database search within a radius of 1 mile.

Table 3-4
SITES OF ENVIRONMENTAL SIGNIFICANCE (Supplemental Records Search)

Record Sources †	Site(s) Found ††
NFRAP - No Further Remedial Action Planned Sites	Microtronics Inc. 116 S Catalina Avenue, Redondo Beach Preliminary Assessment 09/01/1984
RCRIS - LG Federal RCRA Large Quantity Generators List	Southern California Edison Company Redondo Generating Station 1100 N. Harbor Blvd, Redondo Beach
RCRIS-SG Federal RCRA Small Quantity Generators List	none of significance
ERNS - Emergency Response Notification System	none of significance
FINDS - Facility Index System	Southern California Edison Company Redondo Generating Station 1100 N. Harbor Blvd, Redondo Beach

Table 3-4
SITES OF ENVIRONMENTAL SIGNIFICANCE (Supplemental Records Search)

Record Sources †	Site(s) Found ††
HWS - Hazardous Waste Sites	none of significance
LRST - California Leaking Underground Storage Tank Report	Redondo Beach Marina 181 N Harbor Drive, Redondo Beach Status: no action 3/21/1990 USPS Main Post Office 1201 N Catalina Avenue, Redondo Beach Status: preliminary assessment 2/28/90 GTE 102 Pacific Coast Hwy., Redondo Beach Status: pollution characterization 4/25/88 Sweetser Property 507 N. Gertruda Ave., Redondo Beach Status: case closed 1/10/90 3 other locations of leaking tanks at distance greater than 1/2 mile
RST - State Registered UST Lists	22 locations within 1 mile (see detailed RST data report in Appendix C) Status : 22 Owners Listed - 52 active tanks
CORTS - California Cortese List (Hazardous Waste and Substance List)	Redondo Beach Marina 181 Harbor Drive North, Redondo Beach (leaking tank)
HWIS - California Hazardous Waste Information System	none of significance
SPILLS - Spills, Leaks, Investigations and Cleanup Reports	Triton Oil & Gas Corp. 612 North Francisca Avenue, Redondo Beach Status: unknown
OGW - California Oil and Gas Well Report	2 locations within 0.5 mile Status: all inactive wells (see detailed data report - Appendix C)
WDS - California Waste Discharge System	3 Active and Regulated Facilities within a 1 mile radius (see detailed report Appendix C)

† Note: Definitions of the record sources are provided in the database reference guide in Appendix C.
†† Details of the facilities found are included in Appendix C.

A more detailed description of the environmentally significant sites found in the search, including the owner's name, facility names, addresses, distances, and direction from the RGS and the current status of the environmental conditions, are provided in Appendix C.

The detailed database findings in Appendix C include a category of "unplottable" sites that could not be mapped on Figure 3-1 because the database information was not accurate enough to positive identify the site locations. These sites have been checked manually for actual locations and are included in the above tables, if appropriate.

3.2 EDISON RECORDS REVIEW

The following is a list of existing environmental records provided by Edison and reviewed by CH2M HILL prior to the site reconnaissance and during the preparation of this report.

- Spill Prevention and Countermeasure Plan – Redondo Generating Station dated December 1994
- Oil and Hazardous Substances Spills and Spill Prevention Plan dated December 1994
- Hazardous Materials Release Contingency Plan dated December 1994
- Report on Site Remediation Work, Cutter Stock Tank Spill dated February 24, 1994
- Redondo EPTC Pump Station, Displacement Oil Tank, Final Site Remediation Report dated March 1994
- Redondo Generating Station – Plot Plan (no date).

Additional documentation from the Edison geotechnical group files was reviewed during a visit to Edison headquarters. These files included the following:

- Underground Storage Tank Permit Application Records (various dates)
- Sump Integrity Certification Plan dated March 27, 1995
- Report of Limited Environmental Investigation for Redondo Generating Station dated June 1994
- Valve Pit/Oily Waste Sump Leakage Units 7 and 8 dated June 10, 1994
- Report of Observation and Testing Services for the Excavation/Removal of Hydrocarbon Impacted Soils at the Fuel Heater Unit Site, RGS dated January 10, 1992
- Report of Limited Geotechnical and Environmental Investigations of the Fuel Heater Unit Station Near Tank Number 1, RGS dated October 1995
- Report of Limited Geotechnical and Environmental Investigations at Oil/Gas Separator Area (RGS) dated August 1991
- Report of Limited Geotechnical and Environmental Investigations at No. 1 Tank Site (RGS) dated July 1991

Staff Query 1

PHASE II ENVIRONMENTAL SITE ASSESSMENT

FORMER ABOVEGROUND STORAGE TANK NOS. 2, 3, 4, AND 5

AES GENERATING STATION REDONDO BEACH

1100 HARBOR DRIVE

REDONDO BEACH, CA 90277

PROJECT NUMBER 09-020-002

Prepared for:

AES Redondo Beach

1100 Harbor Drive

Redondo Beach, California 90277

October 13, 2009

Essentia management services

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Executive Summary

This document presents the findings of a limited Phase II Environmental Site Assessment (ESA) conducted for former Fuel Oil Tank Nos. 2, 3, 4, and 5 at AES Redondo Generating Station (RGS) located at 1100 North Harbor Drive in Redondo Beach, California (Figure 1-1). The information provided in this report pertains specifically to investigations conducted within Tank Basin Nos. 2, 3, 4, and 5 (Figure 1-2).

This report was prepared by Essentia Management Services (Essentia) for submittal to the City of Redondo Beach, Engineering and Building Services Department (City) on behalf of AES Redondo Beach, LLC (AES).

On February 2, 2006, AES acquired a Building Permit (#20060347-B20071748) from the City of Redondo Beach Department of Building and Safety for the removal of the four aboveground storage tanks (ASTs). These tanks included Fuel Oil Tank Nos. 2, 3, 4, and 5. In 2006, AES procured Voege's Welding and Construction (VWC) to demolish the four fixed-roof fuel oil ASTs. The work was completed by May 2006. On March 26, 2009, AES received a letter from the City. The letter stated that the building permit had expired and requested that AES obtain a new permit and conduct the proper inspections in order for the City to close the file on this permit. As a result, AES was required to conduct subsurface soil sampling at the locations of the former ASTs within each of the four tank basins. On June 10, 2009, a Tank Closure Work Plan (Essentia, 2009) was submitted to the City by Essentia to conduct a sampling program for soil beneath the four former fuel oil AST tank basins. On June 22, 2009, Essentia received a letter from the City approving the Tank Closure Work Plan. The letter stated that if a submitted report shows no contamination or contamination levels below acceptable standards, the report will be accepted as closure and the above-referenced Building Permit issued for AST removal would be closed.

Per the approved Work Plan, four sample locations were designated for each AST. Three sample locations were designated within the footprint of each former AST, while one sample location was designated within the area where piping once connected to each AST. One discreet soil sample was collected per boring location. Soil samples were collected at approximately 1 foot below the unpaved ground surface for Fuel Oil Tank Nos. 2, 3, and 4. Tank Basin No. 5 contained approximately 6 to 12 inches of asphaltic and gravel base material in the footprint of the former AST. Tank No. 5 also sat upon a 3- to 4-foot high bench constructed within the basin of sand. For these reasons, samples were collected from a depth of 5 feet below ground surface (bgs) for each Tank Basin No. 5 sample location, or approximately 1 foot below the invert of the tank basin.

The City of Redondo Beach has directed RGS to utilize the Huntington Beach Fire Department (HBFD) Soil Clean-Up Standard. The HBFD Soil Clean-Up Standard is presented as Appendix

D. The HBFD has established screening criteria for hydrocarbon cleanup. The screening criteria have been set, depending on the proposed future land use, for either residential and recreational or commercial and industrial land uses. Residential and recreational land use has been assigned a TPH screening criteria of 500 milligrams per kilogram (mg/kg). Industrial and commercial land use has been assigned a total petroleum hydrocarbon (TPH) screening criteria of 1,000 mg/kg. If the TPH results are below screening criteria for the appropriate land use, no further testing or remediation shall be required. Soils exceeding the screening criteria will require remedial actions in order to meet the soil cleanup standards. The analytical results for TPH carbon chain range C6-C44 are compared to the HBFD Soil Clean-Up Standards. Because RGS is an industrial facility, results are compared to the industrial screening criteria.

The analytical results for volatile organic compounds (VOCs) are compared to HBFD screening criteria for residential or recreational and industrial or commercial land uses. The screening criteria for both residential and recreational or industrial and commercial land use are 1.0 mg/kg for benzene and 10.0 mg/kg for toluene, ethylbenzene, and xylenes, individually. In addition to HBFD screening criteria, Essentia compared the VOC concentrations to U.S. Environmental Protection Agency (EPA) Region IX Preliminary Remediation Goals (PRGs) for residential and industrial land uses (EPA, 2009). The PRGs are used as remediation guidance when considering potential removal actions for impacted soil at sites with current or future residential or industrial land uses. California Human Health Screening Levels (CHSSLs) have also been established by the California Environmental Protection Agency (Cal-EPA); however, CHSSLs have not been established for the VOCs detected during this investigation but not otherwise covered in the HBFD Soil Clean-Up Standard. Comparison of the analytical results to HBFD screening criteria and PRGs aided in determining which of the detected chemicals may be considered chemicals of concern. Comparison of the analytical results to PRG values and Department of Toxic Substances Control (DTSC) criteria also will facilitate RGS with the identification of mitigation to manage impacted soil in the future.

The HBFD Soil Clean-Up Standard states that soils that fail California Assessment Manual (CAM) criteria for hazardous waste must be excavated and disposed of at a proper disposal facility. The VOC concentrations detected at Fuel Oil Tank Nos. 2, 3, 4, or 5 are non-hazardous with respect to California and federal standards.

Based on the review of data collected as part of this Phase II ESA, the following conclusions and recommendations are made with respect to chemicals of concern in Tank Basin Nos. 2, 3, 4, and 5.

Conclusions

Based on the review of the data collected as part of this Phase II ESA, the following conclusions are made with respect to chemicals of potential concern (COPCs) at the former Fuel Oil Tanks.

- For Tank No. 2, TPH detected in one sample within the footprint of the former AST exceeded the HBFD screening level for residential or recreational land use. TPH detected in the sample collected from the area where piping connected to the AST exceeded the HBFD screening criteria for industrial or commercial land use. The soil from approximately 12 inches bgs to approximately 24 inches bgs exhibited black staining and petroleum odor.

- For Tank Nos. 3 and 4, TPH was not detected at concentrations exceeding either the residential and recreational or the industrial and commercial HBFD screening criteria. VOCs were not detected at concentrations exceeding the HBFD screening levels or Region IX PRGs

- For Tank No. 5, TPH detected in two samples collected from within the footprint of the former AST and one sample collected from the area where piping connected to the AST exceeded the HBFD screening criteria for industrial or commercial land use. Naphthalene was detected in one sample collected from within the footprint of the former AST at a concentration exceeding the residential PRG, but below the industrial PRG.

Recommendations

Based on the findings and conclusions of this Phase II ESA for Fuel Oil Tanks No. 2, 3, 4, and 5, Essentia recommends the following:

Tank No. 2

Soil sampled from beneath the footprint of Tank No. 2 does not exhibit concentrations above the HBFD screening levels for industrial and commercial land use, no further action is recommended for soil beneath the footprint of this tank.

Soil with TPH concentrations above the HBFD screening level for industrial and commercial land use is present in a visually stained area where piping once connected to Tank No. 2. A limited spot removal is recommended for this soil. It is estimated that approximately 15 to 20 cubic yards (cy) of soil will require excavation from the area and transportation to a licensed soil recycling facility. Once complete, no further action will be required for Tank No. 2.

Tank No. 3

Soil sampled from beneath the footprint of and piping connections to Tank No. 3 does not exhibit concentrations above the HBFD screening levels for industrial and commercial land use, no further action is recommended for this tank.

Tank No. 4

Soil sampled from beneath the footprint of and piping connections to Tank No. 4 does not exhibit concentrations above the HBFD screening level for industrial and commercial land use, no further action is recommended for this tank.

Tank No. 5

For Tank No. 5, TPH detected in two samples collected from within the footprint of the former AST and one sample collected from the area where piping connected to the AST exceeded the HBFD screening criteria for industrial or commercial land use.

Further investigation is warranted in order to delineate both the vertical and horizontal extent of contamination. The results of the supplemental site investigation will be utilized to evaluate future actions for Tank No. 5 and also evaluate possible remedial options (e.g., soil washing, bioventing, enhanced biodegradation, land farming, biopiles, or excavation for offsite treatment).

However, it should be noted that RGS is of the opinion that the TPH contamination beneath former Tank No. 5 is not the result of a release of the Low Sulfur Fuel Oil (LSFO) stored in the tank. The TPH is thought to be the result of pumping oil beneath the tank in order to delay corrosion, an approved engineering control once practiced at RGS. The former practice is summarized in the Southern California Edison document attached as Appendix E. The contamination is likely directly underneath the footprint of Tank No. 5 and thought to be immobile because it consists of heavier range hydrocarbons and has not reached groundwater. In addition, Tank Basin No. 5 is currently not serving any purpose and is not in use. Therefore, cleanup actions are not time sensitive.

A Work Plan to conduct a supplemental site investigation for Tank Basin No. 5 will be submitted to the City for review and approval.

1.0 Introduction

This document presents the findings of a limited Phase II Environmental Site Assessment (ESA) conducted for former Fuel Oil Tank Nos. 2, 3, 4, and 5 at AES Redondo Generating Station (RGS) located at 1100 North Harbor Drive in Redondo Beach, California (Figure 1-1). The information provided in this report pertains specifically to investigations conducted within Tank Basin Nos. 2, 3, 4, and 5 (Figure 1-2).

This report was prepared by Essentia Management Services (Essentia) for submittal to the City of Redondo Beach, Engineering and Building Services Department (City) on behalf of AES Redondo Beach, LLC (AES).

1.1 Site Background

Background

On February 2, 2006, AES acquired a Building Permit (#20060347-B20071748) from the City of Redondo Beach Department of Building and Safety for the removal of the four aboveground storage tanks (ASTs). These tanks included Fuel Oil Tank Nos. 2, 3, 4, and 5. The only stipulation of the permit was that all tanks must be certified as clean by an industrial hygienist prior to removal. Tank No. 1 was removed prior to the four subject tanks.

In 2006, AES procured Voege's Welding and Construction (VWC) to demolish the four fixed-roof fuel oil ASTs. The work was completed by May 2006.

On March 26, 2009, AES received a letter from the City. The letter stated that the building permit had expired and requested that AES obtain a new permit and conduct the proper inspections in order for the City to close the file on this permit. As a result, AES was required to conduct subsurface soil sampling at the locations of the former ASTs within each of the four tank basins.

On June 10, 2009, a Tank Closure Work Plan (Essentia, 2009) was submitted to the City by Essentia to conduct a sampling program for soil beneath the four former fuel oil AST tank basins.

On June 22, 2009, Essentia received a letter from the City approving the Tank Closure Work Plan. The letter stated that if a submitted report shows no contamination or contamination levels below acceptable standards, the report will be accepted as closure and the above-referenced Building Permit issued for AST removal would be closed.

Site Location and Description

RGS is located at 1100 Harbor Drive in Redondo Beach, California. The site is located east of King Harbor Marina and the Pacific Ocean. RGS is bordered by Herondo Street and residential and commercial property to the north; commercial property and Catalina Avenue to the east; a hotel to the south; and Harbor Drive and commercial property, including a marina, to the west.

Tank Basin Nos. 1 through 5 are located along the eastern and southern portions of RGS. These are the locations of former Fuel Oil Tank Nos. 1 through 5. Tank Basin No. 1 is the northernmost tank basin while Tank Basin No. 5 is the southernmost tank basin. Each of the tank basins is surrounded with concrete-covered earthen dikes and has unlined bottoms.

Fuel Tank 2 was constructed in 1947 of carbon steel, had a capacity of 100,000 barrels (bbls), and was used to store Low Sulfur Fuel Oil (LSFO). The diameter was approximately 140 feet and the footprint is approximately 15,000 feet. This tank was brought out of service in 1993.

Fuel Tank 3 was constructed in 1954 of carbon steel, had a capacity of 140,000 bbls, and was used to store LSFO. The diameter was approximately 160 feet and the footprint is approximately 20,000 feet. This tank was brought out of service in 1993.

Fuel Tank 4 was constructed in 1956 of carbon steel, had a capacity of 140,000 bbls, and was used to store LSFO. The diameter was approximately 160 feet and the footprint is approximately 20,000 feet. This tank was brought out of service in 1993.

Fuel Tank 5 was constructed of carbon steel, had a capacity of 322,000 bbls, and was used to store LSFO. The diameter was approximately 219 feet and the footprint is approximately 37,600 feet. The construction date and date this tank was brought out of service were not available.

Site History/Previous Land Uses

The former Redondo Steam Plant, owned by Pacific Light and Power Corporation (PL&P), was constructed on the site approximately from 1906 to 1907. Generating units became operational between 1907 and 1910. The former steam plant became part of the Southern California Edison (SCE) system in 1917 when PL&P and SCE merged. Certain equipment, including but not necessarily limited to the generating units, was reported to have been dismantled and removed from approximately 1934 to 1935. The former steam plant was demolished in approximately 1946. Equipment, structures, or other facilities associated with the steam plant, including but not limited to tanks, impoundments, and piping, may have been abandoned in place or demolished and buried in place. RGS has operated as a natural-gas-/oil-fired electric generating station since 1947. The facility currently comprises eight gas-/oil-/distillate-fueled electric power-generating units. Four of the units are out of commission. (Woodward-Clyde, 1998).

Geology/Hydrogeology

The eastern portion of the site and the adjoining AST basins are located on a former salt lake, which was filled to the present topography sometime in the mid-1940s (CH2M HILL, 1997). A series of groundwater monitoring and two active dewatering wells are located within the tank basin area. The dewatering wells are necessary to keep the groundwater levels below the invert elevation of the tank basins. Dewatering became necessary following the installation of freshwater injection wells by Los Angeles County Department of Public Works (LACDPW) in 1965 as part of the saltwater intrusion barrier project. Injection wells associated with the freshwater injection program are located approximately ½ mile to the east of the site.

2.0 PREVIOUS INVESTIGATIONS

Numerous environmental site assessments have been conducted at RGS, including Phase II soil and groundwater investigations. RGS is also responsible for conducting quarterly groundwater monitoring at 23 wells located throughout the site and reporting the results to the Department of Toxic Substances Control (DTSC).

To date, no subsurface investigations are known to have been conducted for the soils beneath the footprints of Fuel Tanks 2, 3, and 4. It is reported that subsurface soil samples were collected by SCE from within the footprint of Tank Basin No. 5 in 1997. The results are summarized in a document titled *Report Baseline Environmental Study Tank 5, Redondo Generating Station* that was prepared by SCE (CH2M HILL, 2000). Attempts to contact SCE regarding this report have been unsuccessful.

3.0 Site Investigation

Essentia was contracted by RGS to conduct a Phase II ESA for Fuel Oil Tank Nos. 2, 3, 4, and 5. Essentia developed a scope of work that included a Work Plan to assess the possible presence of petroleum hydrocarbon contamination beneath the former ASTs. The Work Plan outlined chemicals of potential concern (COPCs) at the Tank Basins beneath the footprints of the former ASTs and laboratory analytical methods were selected to address the COPCs. A description of the approved Work Plan and the associated COPCs at the respective tank basins are discussed in the following sections.

3.1 Purpose and Objectives

The objectives of this investigation include the following:

- Carry out the Tank Closure Work Plan, dated June 8, 2009, that was approved by the City.
- Evaluate the presence of total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs) in the subsurface soil beneath former Fuel Oil Tank Nos. 2 through 5.
- Summarize field procedures, results, conclusions and recommendations in a report and submit the report to the City
- Obtain file closure for Building Permit (#20060347-B20071748) issued by the City of Redondo Beach Department of Building and Safety.

3.2 Chemicals of Potential Concern

Based on previous usage of the ASTs, which was storage of LSFO, the following COPCs were identified for the ASTs:

- **Total Petroleum Hydrocarbon – Carbon Chain C6-C44 (TPH-cc).** Because LSFO is a petroleum product, the full carbon chain spectrum analysis for petroleum hydrocarbons was utilized.

- **Volatile Organic Compounds (VOCs).** Light VOCs are commonly present in LSFOs.

3.3 Scope of Work

On June 25 and 26, 2009, Essentia conducted limited soil sampling within the four tank basins identified above. The purpose of the soil sampling program was to assess whether potential releases of LSFO from the former ASTs resulted in contamination. The following section further describes the scope and methodology of the Phase II ESA.

Pre-Field Activities: Health and Safety Plan, Boring Locations, and Utility Clearance

Essentia utilized a previously prepared Health & Safety Plan that outlined hazards communication and emergency response, and included recommended personal protection equipment (PPE) appropriate for the COPCs (URS, 2001).

Prior to mobilization, Essentia marked 16 boring locations (four per AST) in the field per the approved Work Plan. Three borings were spaced evenly within the outline of each former AST. In addition, one boring was located in the area where piping connected to each AST. All piping associated with the ASTs is aboveground. The boring locations are illustrated on Figure 1-2. A Photographic Log, including a picture of a typical tank basin and a typical area where piping once connected to each AST, is provided as Appendix A.

Proposed soil sampling locations were marked at the site. Essentia then notified Underground Services Alert (Dig Alert), the public utility locating service, prior to initiating the field work.

Geophysical Survey

On June 25, 2009, a geophysical survey was conducted by Essentia subcontractor Subsurface Surveys, Inc. The purpose of the survey was to locate and identify, if possible, piping, conduit, and other buried features that may exist around the proposed boring locations. A combination of electromagnetic induction, magnetometry, ground penetrating radar (GPR), and a utility locator was applied to the search. Each boring was cleared of subsurface obstructions prior to drilling. The geophysical report is attached as Appendix B.

Soil Sampling Procedure

Essentia utilized a direct-push sampling rig to advance the 16 borings, collecting one discrete soil sample per boring. Undisturbed soil samples were collected using Geoprobe drilling rods lined with acetate. Upon removal of the liner from the Geoprobe rod, the samples were collected by cutting the acetate liner at the desired depth and filling one 8 oz jar with soil collected from the liner for TPH analysis. The containers were labeled with the sampler's name, time, and date of collection, sample identification number, and requested analysis. Prior to collecting the sample, 5-gram soil "plugs" were collected from the undisturbed ends of the acetate liners containing the sample using a special sampling tool. In accordance with the U.S. Environmental Protection Agency (EPA) Method 5035 for VOC analysis, the soil plugs were immediately placed into pre-weighed 40-milliliter (ml) Teflon®-septum vials containing methanol or sodium bisulfate preservative.

Headspace analysis measurements were collected by placing the soil from each sample location and depth in a sealable plastic bag for approximately 20 minutes to allow organic vapors within

the soil to accumulate in the headspace of the bag. The headspace was then measured by inserting a photoionization detector (PID) probe into the plastic bag.

Soil retrieved from the sample tubes was inspected for visual and/or olfactory characteristics. Evidence of hydrocarbon or VOC odors or staining was noted in the field log.

Soil samples collected during the field investigation were placed in a cooler with ice for transport to Calscience Environmental Laboratories (Calscience), a State-certified laboratory in Garden Grove, California, for chemical analyses. Eighteen soil samples, including two duplicates, were analyzed for TPH – cc C6-C44 in accordance with EPA Method 8015B and VOCs in accordance with EPA Method 8260B.

Per the approved Work Plan, four sample locations were designated for each AST. Three sample locations were designated within the footprint of each former AST, while one sample location was designated within the area where piping once connected to each AST. One discreet soil sample was collected per boring location. Soil samples were collected at approximately 1 foot below the unpaved ground surface for Fuel Oil Tank Nos. 2, 3, and 4. Tank Basin No. 5 contained approximately 6 to 12 inches of asphaltic and gravel base material in the footprint of the former AST. Tank No. 5 also sat upon a 3- to 4-foot high bench constructed within the basin of sand. For these reasons, samples were collected from a depth of 5 feet below ground surface (bgs) for each Tank Basin No. 5 sample location, or approximately 1 foot below the invert of the tank basin.

Soil Sample Analytical Program

Soil samples collected with the direct push drill rig were analyzed by Calscience Environmental Laboratories, Inc. (Calscience) in Garden Grove, California. The following table summarizes the soil sampling and laboratory analytical program for each sample:

Table 3-1 – Sampling and Analyses

Matrix	Analysis	Analytical Method	Sample Container	Sample Preservation	Holding Time
Soil	TPH Carbon Chain C7 – C44	USEPA 8015B	8 oz Sample Jar	None	14 days
Soil	VOCs (including fuel oxygenates)	USEPA 8260B USEPA 5035	3 x 40 ml Glass VOA	Methanol (VOA 1) Sodium bisulfate (VOAs 2 and 3)	14 days

Sample Nomenclature

Sample identifications for borings advanced during the field investigation were established using a two-part naming convention separated by hyphens. The first part identifies the AST footprint within which the sample was collected (e.g., T2 refers to Tank No. 2). Second, each sample location inside the tank basin area was assigned a unique one-digit number. Only one sample was collected from each boring location. The sample's IDs and locations are illustrated on Figure 1-2.

4.0 Results

4.1 Field Observations

Based on field descriptions, the upper 4 feet of soil consisted of brown fine- to course-grain sand with silt. All but one of the headspace readings were below 20 parts per million (ppm); these low detections were most likely the result of moisture within the baggie.

4.2 Soil Analytical Results

Soil analytical results for TPH-cc C6-C44 and VOCs are summarized in Tables 4-1 and 4-2, respectively. A complete laboratory analytical report, including chain-of-custody documentation for soil samples collected from the site is presented in Appendix C.

Tank No. 2

TPH Carbon Chain C6-C44

Soil samples collected from each of the four sample locations were analyzed for TPH-cc C6-C44. TPH was detected in all but one sample (T2-3). TPH-cc was detected in the range of C17 to C44. The analytical results are summarized in Table 4-1.

TPH-cc C6-C44 (total concentration) was detected at concentrations ranging from 32 mg/kg to 7,100 mg/kg in sample T2-1.

VOCs

Soil samples collected from each of the four sample locations were analyzed for VOCs. Of the 71 VOCs targeted by EPA Method 8260B, two were detected in soil collected from Tank No. 2. The analytical results are summarized below and in Table 4-2.

- Acetone was detected at a concentration of 110 micrograms per kilogram (µg/kg) in sample T2-1 and 57 µg/kg in sample T2-4.
- 2-Butanone was detected at a concentration of 20 µg/kg in sample T2-1.

Tank No. 3

TPH Carbon Chain C6-C44

Soil samples collected from each of the four sample locations were analyzed for TPH carbon chain C6-C44. TPH-cc was detected in only one sample (T3-4). Carbon chains were detected in the range of C13 to C44. The analytical results are summarized in Table 4-1.

TPH carbon chain C6-C44 (total concentration) was detected at a concentration of 78 milligrams per kilogram (mg/kg) in sample T3-4.

VOCs

Soil samples collected from each of the four sample locations were analyzed for VOCs. Of the 71 VOCs detectable by EPA Method 8260B, none were detected in soil collected from Tank No. 3. The analytical results are summarized below and in Table 4-2.

Tank No. 4

TPH Carbon Chain C6-C44

Soil samples collected from each of the four sample locations were analyzed for TPH-cc C6-C44. TPH-cc was detected in each of the samples. TPH-cc was detected in the range of C11 to C44. The analytical results are summarized in Table 4-1.

TPH-cc C6-C44 (total concentration) was detected at concentrations ranging from 48 mg/kg to 440 mg/kg in sample T4-1.

VOCs

Soil samples collected from each of the four sample locations were analyzed for VOCs. Of the 71 VOCs targeted by EPA Method 8260B, three were detected in soil collected from Tank No. 4. The analytical results are summarized below and in Table 4-2.

- Acetone was detected at a concentration of 26 µg/kg in sample T4-3.
- Benzene was detected at a concentration of 0.69 µg/kg in sample T4-2 and 1.3 µg/kg in sample T4-3
- Carbon disulfide was detected at a concentration of 7.8 µg/kg in sample T4-2 and 15 µg/kg in sample T4-3.

Tank No. 5

TPH Carbon Chain C6-C44

Soil samples collected from each of the four sample locations were analyzed for TPH-cc C6-C44. TPH-cc was detected in each of the samples. Carbon chains were detected in the range of C13 to C44. The analytical results are summarized in Table 4-1.

TPH carbon chain C6-C44 (total concentration) was detected at concentrations ranging from 11 mg/kg to 6,200 mg/kg in sample T5-4.

VOCs

Soil samples collected from each of the four sample locations were analyzed for VOCs. Of the 71 VOCs targeted by EPA Method 8260B, seven were detected in soil collected from Tank No. 5. The analytical results are summarized below and in Table 4-2.

- Acetone was detected at a concentration of 28 µg/kg in sample T5-1.
- 2-Butylbenzene was detected at a concentration of 210 µg/kg in sample T5-4.
- p-Isopropyltoluene was detected at a concentration of 63 µg/kg in sample T5-4.
- Naphthalene was detected at a concentration of 4,100 µg/kg in sample T5-4.
- 1,2,4-Trimethylbenzene was detected at a concentration of 410 µg/kg in sample T5-4.
- p/m-Xylene was detected at a concentration of 190 µg/kg in sample T5-4.
- o-Xylene was detected at a concentration of 120 µg/kg in sample T5-4.

Quality Control Review

Calscience conducted quality control measures to ensure the accuracy and precision of the results. All analytical methods were tested using laboratory control samples (LCS) and testing for percent recovery. All LCSs tested were within the acceptable percent recovery ranges. Additionally, the laboratory conducted matrix spike (MS) and matrix spike duplicate (MSD) samples and measured the relative difference of the results to ensure precision. All samples were within acceptable relative percent difference (RPD) ranges. Where the surrogate compound recovery was out of control due to matrix interference, the associated method blank surrogate spike compound was in control and the data were reported without further clarification.

5.0 Discussion and Conclusions

5.1 Discussion

The City of Redondo Beach has directed RGS to utilize the Huntington Beach Fire Department (HBFD) Soil Clean-Up Standard. The HBFD Soil Clean-Up Standard is presented as Appendix D. The HBFD has established screening criteria for hydrocarbon cleanup. The screening criteria have been set, depending on the proposed future land use, for either residential and recreational or commercial and industrial land uses. Residential and recreational land use has been assigned a TPH screening criteria of 500 mg/kg. Industrial and commercial land use has been assigned a TPH screening criteria of 1,000 mg/kg. If the TPH results are below screening criteria for the appropriate land use, no further testing or remediation shall be required. Soils exceeding the screening criteria will require remedial actions in order to meet the soil cleanup standards. The analytical results for TPH-cc range C6-C44 are compared to the HBFD Soil Clean-Up Standards. Because RGS is an industrial facility, results are compared to the industrial screening criteria.

The analytical results for VOCs are compared to HBFD screening criteria for residential or recreational and industrial or commercial land uses. The screening criteria for both residential and recreational or industrial and commercial land use are 1.0 mg/kg for benzene and 10.0 mg/kg for toluene, ethylbenzene, and xylenes, individually. In addition to HBFD screening criteria, Essentia compared the VOC concentrations to (EPA Region IX Preliminary Remediation Goals (PRGs) for residential and industrial land uses (EPA, 2009). The PRGs are used as remediation guidance when considering potential removal actions for impacted soil at sites with current or future residential or industrial land uses. California Human Health Screening Levels (CHSSLs) have also been established by the California Environmental Protection Agency (Cal-EPA); however, CHSSLs have not been established for the VOCs detected during this investigation but not otherwise covered in the HBFD Soil Clean-Up Standard. Comparison of the analytical results to HBFD screening criteria and PRGs aided in determining which of the detected chemicals may be considered chemicals of concern. Comparison of the analytical results to PRG values and DTSC criteria also will facilitate RGS with the identification of mitigation to manage impacted soil in the future.

The HBFD Soil Clean-Up Standard states that soils that fail California Assessment Manual (CAM) criteria for hazardous waste must be excavated and disposed of at a proper disposal facility. The VOC concentrations detected at Fuel Oil Tank Nos. 2, 3, 4, or 5 are non-hazardous with respect to California and federal standards.

Based on the results of the soil sampling, the following observations with respect to COPCs at this site are provided below.

Tank No. 2

The TPH concentration detected in one sample collected for Tank No. 2 exceeded the HBFD screening criteria of 1,000 mg/kg for industrial and commercial land use. TPH was detected at a concentration of 7,100 mg/kg in sample T2-2. TPH detected in two samples, T2-2 and T2-4 (900 mg/kg), exceeded the HBFD screening level for residential or recreational land use (500 mg/kg). Sample T2-1 was collected in the area where piping connected to the AST. The soil from approximately 12 inches bgs to approximately 24 inches bgs was stained black and possessed a petroleum odor.

Of the two VOCs detected at Tank No. 2, none were detected at concentrations exceeding the HBFD screening levels or Region IX PRGs.

Tank No. 3

TPH was not detected at concentrations exceeding either the residential and recreational or the industrial and commercial HBFD screening criteria at Tank No. 3.

VOCs were not detected at Tank No. 3.

Tank No. 4

TPH was not detected at concentrations exceeding either the residential and recreational or the industrial and commercial HBFD screening criteria at Tank No. 4.

Of the three VOCs detected at Tank No. 4, none were detected at concentrations exceeding the HBFD screening levels or Region IX PRGs.

Tank No. 5

TPH concentrations detected in three samples collected for Tank No. 2 exceeded both the HBFD screening criteria of 500 mg/kg for residential and recreational land use and the screening criteria of 1,000 mg/kg for industrial or commercial land use. Sample T5-1 (1,600 mg/kg) was collected in the area where piping connected to the AST. Samples T5-2 (3,900 mg/kg) and T5-4 (6,200 mg/kg) were collected from within the footprint of the former AST.

Of the seven VOCs detected at Tank No. 4, none were detected at concentrations exceeding HBFD screening levels. Naphthalene was detected in T5-4 at a concentration (4,100 µg/kg) exceeding the residential PRG of 3,900 µg/kg, but below the industrial PRG of 20,000 µg/kg.

A headspace reading of 66.0 ppm was collected from sample T5-4.

5.2 CONCLUSIONS

Based on the review of the data collected as part of this Phase II ESA, the following conclusions are made with respect to COPCs at the former Fuel Oil Tanks.

- For Tank No. 2, TPH detected in one sample within the footprint of the former AST exceeded the HBFD screening level for residential or recreational land use. TPH detected in the sample collected from the area where piping connected to the AST exceeded the HBFD screening criteria for industrial or commercial land use. The soil from approximately 12 inches bgs to approximately 24 inches bgs exhibited black staining and petroleum odor.

- For Tank Nos. 3 and 4, TPH was not detected at concentrations exceeding either the residential and recreational or the industrial and commercial HBFD screening criteria. VOCs were not detected at concentrations exceeding the HBFD screening levels or Region IX PRGs

- For Tank No. 5, TPH detected in two samples collected from within the footprint of the former AST and one sample collected from the area where piping connected to the AST exceeded the HBFD screening criteria for industrial or commercial land use. Naphthalene was detected in one sample collected from within the footprint of the former AST at a concentration exceeding the residential PRG, but below the industrial PRG.

6.0 Recommendations

Based on the findings and conclusions of this Phase II ESA for Fuel Oil Tanks No. 2, 3, 4, and 5, Essentia recommends the following:

Tank No. 2

Soil sampled from beneath the footprint of Tank No. 2 does not exhibit concentrations above the HBFD screening levels for industrial and commercial land use, no further action is recommended for soil beneath the footprint of this tank.

Soil with TPH concentrations above the HBFD screening level for industrial and commercial land use is present in a visually stained area where piping once connected to Tank No. 2. A limited spot removal is recommended for this soil. It is estimated that approximately 15 to 20 cubic yards (cy) of soil will require excavation from the area and transportation to a licensed soil recycling facility. Once complete, no further action will be required for Tank No. 2.

Tank No. 3

Soil sampled from beneath the footprint of and piping connections to Tank No. 3 does not exhibit concentrations above the HBFD screening levels for industrial and commercial land use, no further action is recommended for this tank.

Tank No. 4

Soil sampled from beneath the footprint of and piping connections to Tank No. 4 does not exhibit concentrations above the HBFD screening level for industrial and commercial land use, no further action is recommended for this tank.

Tank No. 5

For Tank No. 5, TPH detected in two samples collected from within the footprint of the former AST and one sample collected from the area where piping connected to the AST exceeded the HBFD screening criteria for industrial or commercial land use.

Further investigation is warranted in order to delineate both the vertical and horizontal extent of contamination. The results of the supplemental site investigation will be utilized to evaluate future actions for Tank No. 5 and also evaluate possible remedial options (e.g., soil washing, bioventing, enhanced biodegradation, land farming, biopiles, or excavation for offsite treatment).

However, it should be noted that RGS is of the opinion that the TPH contamination beneath former Tank No. 5 is not the result of a release of the LSFO stored in the tank. The TPH is

thought to be the result of pumping oil beneath the tank in order to delay corrosion, an approved engineering control once practiced at RGS. The former practice is summarized in the Southern California Edison document attached as Appendix E. The contamination is likely directly underneath the footprint of Tank No. 5 and thought to be immobile because it consists of heavier range hydrocarbons and has not reached groundwater. In addition, Tank Basin No. 5 is currently not serving any purpose and is not in use. Therefore, cleanup actions are not time sensitive.

A Work Plan to conduct a supplemental site investigation for Tank Basin No. 5 will be submitted to the City for review and approval.

7.0 Limitations and Certification

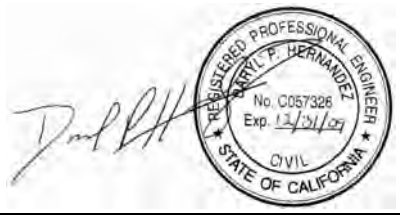
The environmental services described in this report have been conducted in general accordance with current regulatory guidelines and the standard of care exercised by environmental consultants performing similar work in the project area. No warranty, expressed or implied, is made regarding the professional opinions presented in this report. Please note that this study did not include an evaluation of geotechnical conditions or potential geologic hazards.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Essentia should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

The findings and opinions are based on an analysis of the observed site conditions. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Essentia and their subcontractors have no control.

This report is intended exclusively for use by AES; any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

Prepared and Certified by:



Daryl Hernandez, P.E.
Senior Consultant

Jack Packwood
Assistance Project Professional

8.0 References

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TABLES

TABLE 4-1
SOIL ANALYTICAL RESULTS
TPH CARBON CHAIN C6-C44

Sample ID	C6	C7	C8	C9-C10	C11-C12	C13-C14	C15-C16	C17-C18	C19-C20	C21-C22	C23-C24	C25-C28	C29-C32	C33-C36	C37-C40	C41-C44	C6-C44
Tank 2																	
T2-1	ND	ND	ND	ND	ND	ND	ND	200	470	690	990	1400	1300	820	610	570	7100
T2-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.5	8.9	15	19	10	12	12	83
T2-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T2-4	ND	ND	ND	ND	ND	ND	ND	ND	61	77	77	170	200	140	100	67	900
Dup-2 (T2-4)	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.6	2.7	6.7	8.3	5.5	1.8	4.4	32
Tank 3																	
T3-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T3-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T3-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T3-4	ND	ND	ND	ND	ND	1.7	0.56	0.0086	0.47	1.3	2.4	8.7	20	16	12	15	78
Tank 4																	
T4-1	ND	ND	ND	ND	ND	ND	3.8	5.0	26	28	33	89	130	56	36	32	440
T4-2	ND	ND	ND	ND	ND	1.1	0.72	0.023	3.0	6.4	12	23	43	26	26	21	160
T4-3	ND	ND	ND	ND	ND	ND	ND	ND	0.097	0.68	2.6	6.5	12	9.6	7.8	8.3	48
T4-4	ND	ND	ND	ND	0.56	1.2	ND	ND	ND	4.9	5.0	14	24	24	20	19	110
Dup-1 (T4-4)	ND	ND	ND	ND	1.4	ND	ND	ND	4.6	7.8	12	38	59	41	34	28	230
Tank 5																	
T5-1	ND	ND	ND	ND	ND	ND	ND	7.0	19	44	100	210	390	250	230	310	1600
T5-2	ND	ND	ND	ND	ND	72	230	330	450	310	310	630	600	410	320	230	3900
T5-3	ND	ND	ND	ND	ND	ND	ND	ND	0.48	ND	0.47	ND	2.9	4.1	0.57	2.8	11
T5-4	ND	ND	ND	ND	ND	140	530	800	580	520	490	830	1000	600	430	340	6200

Notes:
ND = not detected above laboratory detection limits
Concentations given in mg/kg (parts per million by weight)
All analysis done using EPA Method 8015B (M)

TABLE 4-2
SOIL ANALYTICAL RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

Sample ID	Acetone	Benzene	2-Butanone	n-Butylbenzene	Carbon Disulfide	p-Isopropyltoluene	Naphthalene	1,2,4-Trimethylbenzene	p/m-Xylene	o-Xylene
Tank 2										
T2-1	**110**	ND	**20**	ND	ND	ND	ND	ND	ND	ND
T2-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T2-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T2-4	**57**	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dup-2 (T2-4)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tank 3										
T3-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T3-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T3-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T3-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tank 4										
T4-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T4-2	ND	**0.69**	ND	ND	**7.8**	ND	ND	ND	ND	ND
T4-3	**26**	**1.3**	ND	ND	**15**	ND	ND	ND	ND	ND
T4-4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dup-1 (T4-4)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tank 5										
T5-1	**28**	ND	ND	ND	ND	ND	ND	ND	ND	ND
T5-2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T5-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T5-4	ND	ND	ND	**210**	ND	**63**	**4100**	**410**	**190**	**120**

Notes:
ND = not detected at levels above laboratory detection limits
Concentrations reported in µg/kg (or parts per billion by weight)

FIGURES

Essentia

Project No: 09-020-002

N

AES Redondo Beach
Redondo Generating Station
1100 North Harbor Drive

FIGURE 1-1
FACILITY LOCATION MAP

LEGEND:

T1-1 BORING LOCATION

Essentia management services

Site Name: AES REDONDO BEACH GENERATING STATION	STATION FACILITY MAP WITH BORING LOCATIONS	
Project No: 09-020-002	Date: JULY 2009	**Figure** 1-2

APPENDIX A

PHOTOGRAPHIC RECORD

ESSENTIA MANAGEMENT SERVICES

PHOTOGRAPHIC RECORD

PROJECT NAME	AES Redondo Generating Station	Project No.	09-020-002	SHEET	1	OF	1

PROJECT PHOTOGRAPHIC NUMBER	1		
DESCRIPTION: Typical Tank Basin (Tank Basin No. 4).			
PHOTOGRAPHED BY	Jack Packwood	DATE	6-26-09

PROJECT PHOTOGRAPHIC NUMBER	2		
DESCRIPTION: Area where piping connected to Fuel Oil Tank No. 4.			
PHOTOGRAPHED BY	Jack Packwood	DATE	6-26-09

APPENDIX B

GEOPHYSICAL SURVEY REPORT, SUBSURFACE SURVEYS & ASSOCIATES, INC.

SubSurface Surveys
& Associates, Inc.
An Applied Geophysical Company

2075 Corte Del Nogal, Suite W
Carlsbad, California 92011

Office: (760) 476-0492
Fax: (760) 476-0493

June 29, 2009

E2 ManageTech, Inc.
5000 East Spring Street, Suite 720
Long Beach, California 90815

Project Number: 09-259

Attn: **Jack Packwood**

Re: Geophysical Survey, 16 Boreholes, AES Facility, 1100 North Harbor Drive, Redondo Beach, California.

This report is to present the results of our geophysical survey carried out over portions of AES Facility located at 1100 North Harbor Drive in Redondo Beach, California (Figure 1), on June 25, 2009. Purpose of the survey was to locate and identify, insofar as possible, piping, conduit, and other buried features that may exist around sixteen (16) specific locations designated for future drilling activities.

A combination of electromagnetic induction (EM), magnetometry, and ground penetrating radar (GPR) was applied to the search. A utility locator with line tracing capabilities was also brought to the field and used where risers exist onto which a signal could be impressed and traced.

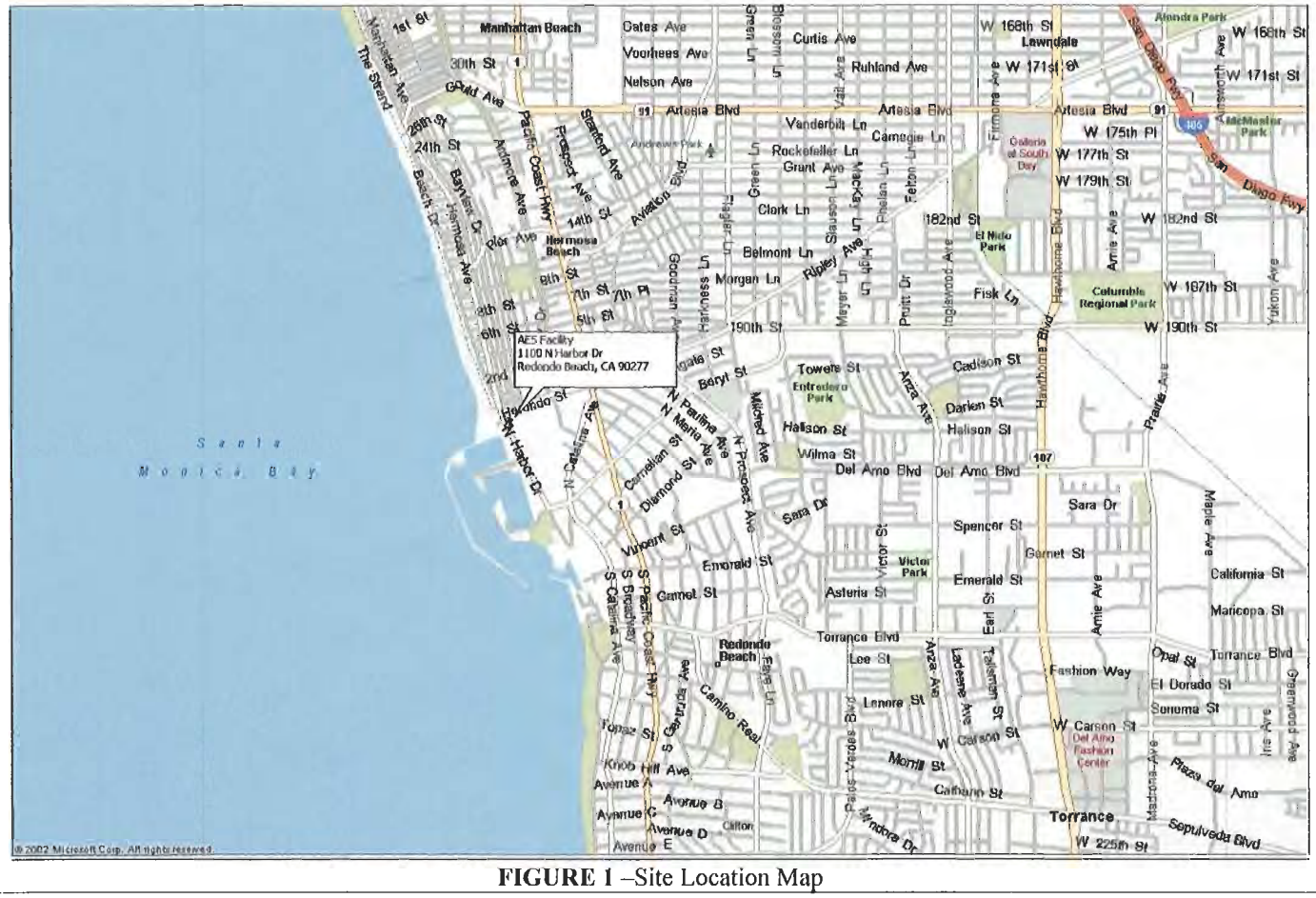


FIGURE 1 –Site Location Map

Multiple methods were utilized because each instrument senses different material properties of the ground and buried objects. At any given site the situation, geologic and cultural, may be such that one or more of the instruments may record excessive "noise", the ground may not provide sufficient contrasts, or there may be overlapping anomalies, for a given instrument to be effective. Summarily stated, there are generally instrumental limits and interpretational impediments.

Survey Design – The general areas to be surveyed, along with the specific drilling locations, were indicated in the field by the client. The magnetic gradiometer, line tracer, EM-61, M-Scope and GPR were traversed systematically over each specific proposed borehole location along the eight lines of the standard search pattern (Figure 2), wherein, there are two sets of three parallel lines, mutually orthogonal, and two diagonals, all centered on the marked drill location. Adjacent parallel lines are approximately 5 feet apart, and each line is approximately 20 feet long, access permitting. Other traverses were taken, access permitting, for detailing and confirmation where anomalous conditions were found.

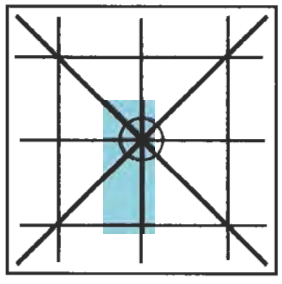


Figure 2: Standard search pattern around borehole

Hard copy of the EM and other data was not acquired, that is, discrete readings on the nodes of a grid were not recorded that could be put into a contoured map format. Rather, the instruments' meters were read continuously during traverses to detect excursions of the readouts that might have meaning in terms of buried objects. The lack of hard copy for EM and other data sets does not degrade the quality of the surveys in any way. Hard copy merely provides a basis for report documentation of these geophysical fields, if such documentation is needed.

A Geonic's model EM61 and a Fischer M-Scope was used for the EM sampling. A Sensors and Software Noggin Ground Penetrating Radar unit with a 500 MHz antenna produced the radar images. The magnetic gradiometer was a Schonstedt GA-52 and a Metrotech 9890 utility locator rounded out the tools applied.

Brief Description of the Geophysical Methods Applied - The magnetic gradiometer has two flux gate magnetic fixed sensors that are passed closely to and over the ground. When not in close proximity to a magnetic object, that is, only in the earth's field, the instrument emits a sound signal at a low frequency. When the instrument passes over a buried iron or steel object, so that locally there is a high magnetic gradient, the frequency of the emitted sound increases. The frequency is a function of the gradient between the two sensors.

The EM61 instrument is a high resolution, time-domain device for detecting buried conductive objects. It consists of a powerful transmitter that generates a pulsed primary magnetic field when its coils are energized, which induces eddy currents in nearby conductive objects. The decay of the eddy currents, following the input pulse, is measured by the coils, which in turn serve as receiver coils. The decay rate is measured for two coils, mounted concentrically, one above the other. By making the measurements at a relatively long time interval (measured in milliseconds) after termination of the primary pulse, the response is nearly independent of the

electrical conductivity of the ground. Thus, the instrument is a super-sensitive metal detector. Due to its unique coil arrangement, the response curve is a single well-defined positive peak directly over a buried conductive object. This facilitates quick and accurate location of targets.

The M-Scope device energizes the ground by producing an alternating primary magnetic field with AC current in a transmitting coil. If conducting materials are within the area of influence of the primary field, AC eddy currents are induced to flow in the conductors. A receiving coil senses the secondary magnetic field produced by these eddy currents, and outputs the response as anomalous conditions. The strength of the secondary field is a function of the conductivity of the object, say a pipe, tank or cluster of drums, its size, and its depth and position relative to the instrument's two coils. Conductive objects, to a depth of approximately 7 feet below ground surface (bgs) for the M-Scope are sensed. The device is also somewhat focused; that is, it is more sensitive to conductors below the instrument than they are to conductors off to the side.

The line locator is used to passively detect energized high voltage electric lines and electrical conduit (50-60 Hz), VLF signals (14-22 kHz), as well as to actively trace other utilities. Where risers are present, the utility locator transmitter can be connected directly to the object, and a signal (9.8-82 kHz) is sent traveling along the conductor, pipe, conduit, etc. In the absence of a riser, the transmitter can be used to impress an input signal on the utility by induction. In either case, the receiver unit is tuned to the input signal, and is used to actively trace the signal along the pipe's surface projection.

The GPR instrument beams energy into the ground from its transducer/antenna, in the form of electromagnetic waves. A portion of this energy is reflected back to the antenna at a boundary in the subsurface across which there is an electrical contrast. The instrument produces a continuous record of the reflected energy as the antenna is traversed across the ground surface. The greater the electrical contrast, the higher the amplitude of the returned energy. The radar wave travels at a velocity unique to the material properties of the ground being investigated, and when these velocities are known, the two-way travel times can be converted to depth. The depth of penetration and image resolution produced are a function of ground electrical conductivity and dielectric constant.

Interpretation and Conclusions - The interpretation took place in real time as the survey progressed, and accordingly, the findings of our investigation were marked on the ground cover with spray chalk paint at the site, and further documented with photographs (Figures 3-18).

The EM and magnetic instruments were effective at locating and delineating metallic objects and utilities over the search areas. Most obstructions were removed from the site; however, there were still some areas of the survey site that were in close proximity to debris, exposed piping or other aboveground metallic objects. In these areas the GPR and the line tracer were the main tools applied to the search, due to the substantial distortion to the EM and magnetic readings caused by the high concentration of metal.

GPR was useful at detecting both metallic and non-metallic lines and utilities. According to principles of physics, radar penetration is a function of soil conductivity and dielectric constant. At this site, local conditions were favorable for radar penetration due to the nature of the soil and materials covering the survey areas. This resulted in radar penetration down to approximately 2.5 to 3.0 feet bgs.

Piping and utilities detected during the survey were marked with spray chalk paint on the ground cover, using red for electric and white for unknown.

Once all detectable buried cultural objects were marked and accounted for, our findings were discussed in the

field with the client, at the conclusion of the survey. After our findings were discussed each borehole was revisited and repositioned, if applicable. Each borehole was cleared by Subsurface Surveys and Associates and marked in paint with a white circle, yellow pin flag and yellow "SSS".

Where obstructions from adjacent cultural objects limited passes in at least one direction, or a resolute image of the subsurface was partially drowned out by localized non-target anomalies, certainty was compromised. All detected utilities were marked out around each borehole location and it was left up to the client to determine if drilling activities should proceed there in the future.

Subsurface Survey's and Associates professional personnel are trained and experienced and have completed thousands of projects since the company's inception in 1988. It is our policy to work diligently to bring this training and experience to bear to acquire quality data sets, which in turn, can provide clues useful in formulating our interpretations. Still, non-uniqueness of interpretations, methodological limitations, and non-target interferences are prevailing problems. Subsurface Surveys and Associates makes no guarantee either expressed or implied regarding the accuracy of the interpretations presented. And, in no event will Subsurface Surveys and Associates be liable for any direct, indirect, special, incidental, or consequential damages resulting from interpretations and opinions presented herewith.

All data acquired in these surveys are in confidential file in this office, and are available for review by your staff, or by us at your request, at any time. We appreciate the opportunity to participate in this project. Please call, if there are questions.

Bret Herman
Staff Geophysicist

Travis Crosby, GP# 1044
Staff Geophysicist

BOREHOLE PHOTOGRAPHS

Former Tank Basin 5
1100 North Harbor Drive
Redondo Beach, California

FIGURE 3

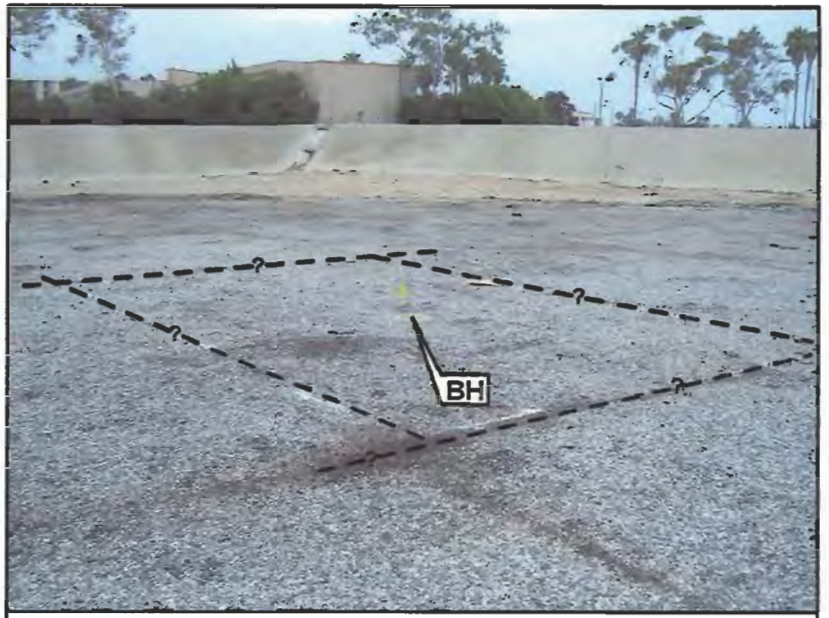


FIGURE 4

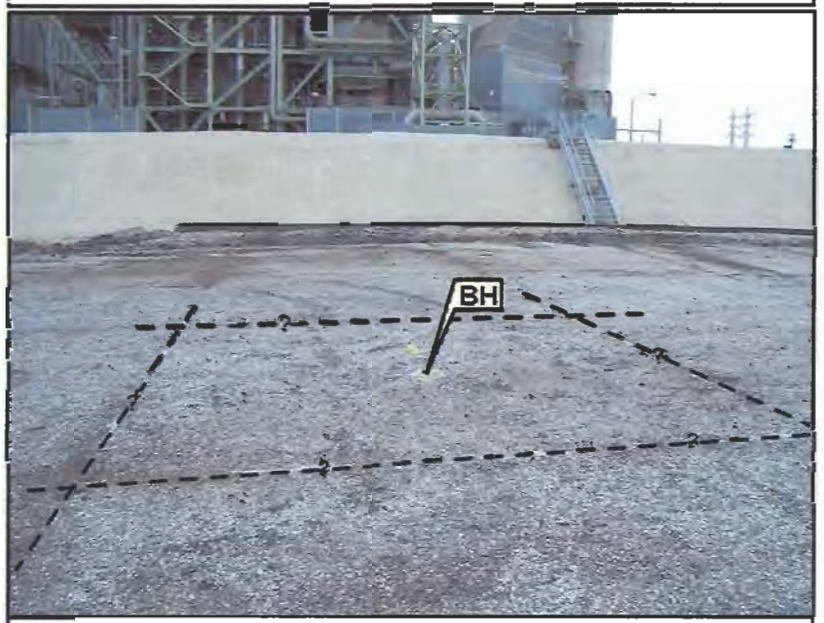


FIGURE 5

FIGURE 6

BOREHOLE PHOTOGRAPHS

Former Tank Basin 4
1100 North Harbor Drive
Redondo Beach, California

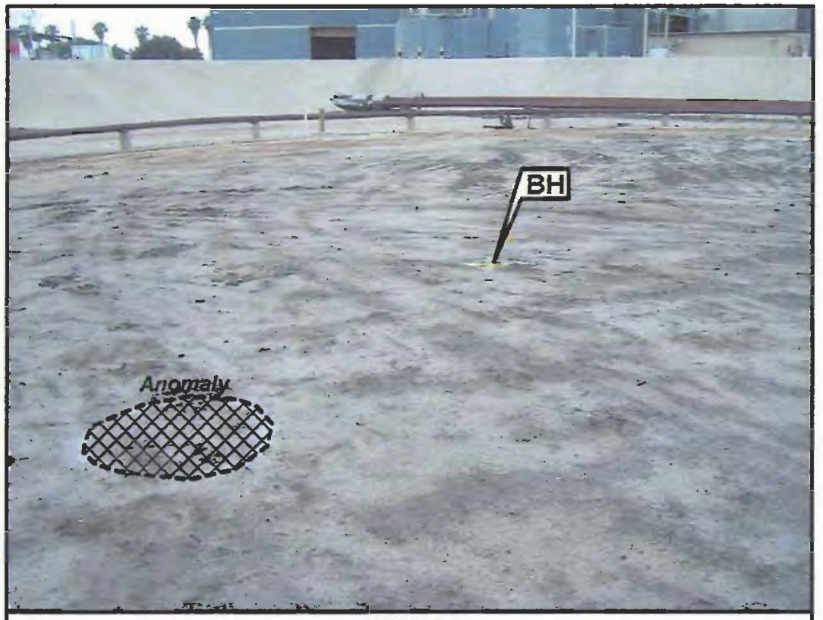


FIGURE 7

FIGURE 8

FIGURE 9

FIGURE 10

BOREHOLE PHOTOGRAPHS

Former Tank Basin 3
1100 North Harbor Drive
Redondo Beach, California

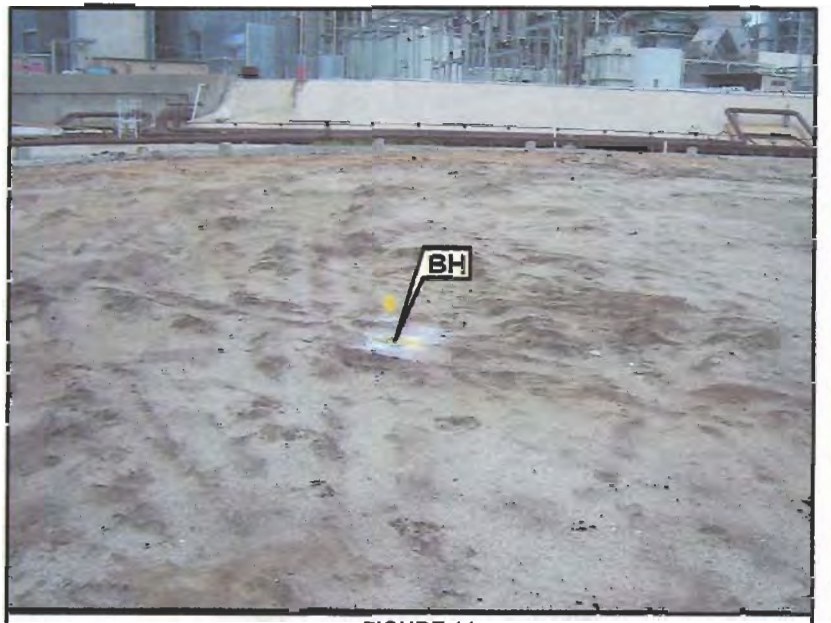


FIGURE 11

FIGURE 12

FIGURE 13

FIGURE 14

BOREHOLE PHOTOGRAPHS

Former Tank Basin 2
1100 North Harbor Drive
Redondo Beach, California

FIGURE 15

FIGURE 16

FIGURE 17

FIGURE 18

APPENDIX C

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY RECORD,
CALSCIENCE ENVIRONMENTAL LABORATORIES, INC.

Calscience
Environmental
Laboratories, Inc.

July 07, 2009

Jack Packwood
E2 ManageTech, Inc.
5000 East Spring Street, Suite 720
Long Beach, CA 90815-1270

Subject: **Calscience Work Order No.: 09-06-2333**
Client Reference: AES AST Closure / 09-020-002

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 6/26/2009 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Vikas Patel

Calscience Environmental
Laboratories, Inc.
Vikas Patel
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.
5000 East Spring Street, Suite 720
Long Beach, CA 90815-1270

Date Received: 06/26/09
Work Order No: 09-06-2333
Preparation: EPA 3550B
Method: EPA 8015B (M)
Units: mg/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T2-1	**09-06-2333-1-A**	**06/26/09 12:00**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 14:31**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		50		C21-C22	690		50	
C7	ND		50		C23-C24	990		50	
C8	ND		50		C25-C28	1400		50	
C9-C10	ND		50		C29-C32	1300		50	
C11-C12	ND		50		C33-C36	820		50	
C13-C14	ND		50		C37-C40	610		50	
C15-C16	ND		50		C41-C44	570		50	
C17-C18	200		50		C6-C44 Total	7100	250	50	
C19-C20	470		50						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	127	61-145	

T2-2	**09-06-2333-2-B**	**06/26/09 12:15**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 04:26**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		1		C21-C22	5.5		1	
C7	ND		1		C23-C24	8.9		1	
C8	ND		1		C25-C28	15		1	
C9-C10	ND		1		C29-C32	19		1	
C11-C12	ND		1		C33-C36	10		1	
C13-C14	ND		1		C37-C40	12		1	
C15-C16	ND		1		C41-C44	12		1	
C17-C18	ND		1		C6-C44 Total	83	5.0	1	
C19-C20	ND		1						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	96	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.		Date Received:	06/26/09
5000 East Spring Street, Suite 720		Work Order No:	09-06-2333
Long Beach, CA 90815-1270		Preparation:	EPA 3550B
		Method:	EPA 8015B (M)
		Units:	mg/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T2-3	**09-06-2333-3-B**	**06/26/09 12:30**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 04:41**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		1		C21-C22	ND		1	
C7	ND		1		C23-C24	ND		1	
C8	ND		1		C25-C28	ND		1	
C9-C10	ND		1		C29-C32	ND		1	
C11-C12	ND		1		C33-C36	ND		1	
C13-C14	ND		1		C37-C40	ND		1	
C15-C16	ND		1		C41-C44	ND		1	
C17-C18	ND		1		C6-C44 Total	ND	5.0	1	
C19-C20	ND		1						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	92	61-145	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T2-4	**09-06-2333-4-B**	**06/26/09 12:45**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 09:22**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		5		C21-C22	77		5	
C7	ND		5		C23-C24	77		5	
C8	ND		5		C25-C28	170		5	
C9-C10	ND		5		C29-C32	200		5	
C11-C12	ND		5		C33-C36	140		5	
C13-C14	ND		5		C37-C40	100		5	
C15-C16	ND		5		C41-C44	67		5	
C17-C18	ND		5		C6-C44 Total	900	25	5	
C19-C20	61		5						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	83	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.		Date Received:	06/26/09
5000 East Spring Street, Suite 720		Work Order No:	09-06-2333
Long Beach, CA 90815-1270		Preparation:	EPA 3550B
		Method:	EPA 8015B (M)
		Units:	mg/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T3-1	**09-06-2333-5-B**	**06/26/09 07:40**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 05:12**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		1		C21-C22	ND		1	
C7	ND		1		C23-C24	ND		1	
C8	ND		1		C25-C28	ND		1	
C9-C10	ND		1		C29-C32	ND		1	
C11-C12	ND		1		C33-C36	ND		1	
C13-C14	ND		1		C37-C40	ND		1	
C15-C16	ND		1		C41-C44	ND		1	
C17-C18	ND		1		C6-C44 Total	ND	5.0	1	
C19-C20	ND		1						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	89	61-145	

T3-2	09-06-2333-6-B	06/26/09 07:50	Solid	GC 46	06/30/09	07/01/09 05:28	090630B11

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		1		C21-C22	ND		1	
C7	ND		1		C23-C24	ND		1	
C8	ND		1		C25-C28	ND		1	
C9-C10	ND		1		C29-C32	ND		1	
C11-C12	ND		1		C33-C36	ND		1	
C13-C14	ND		1		C37-C40	ND		1	
C15-C16	ND		1		C41-C44	ND		1	
C17-C18	ND		1		C6-C44 Total	ND	5.0	1	
C19-C20	ND		1						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	89	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.		Date Received:	06/26/09
5000 East Spring Street, Suite 720		Work Order No:	09-06-2333
Long Beach, CA 90815-1270		Preparation:	EPA 3550B
		Method:	EPA 8015B (M)
		Units:	mg/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T3-3	**09-06-2333-7-B**	**06/26/09 08:16**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 05:43**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		1		C21-C22	ND		1	
C7	ND		1		C23-C24	ND		1	
C8	ND		1		C25-C28	ND		1	
C9-C10	ND		1		C29-C32	ND		1	
C11-C12	ND		1		C33-C36	ND		1	
C13-C14	ND		1		C37-C40	ND		1	
C15-C16	ND		1		C41-C44	ND		1	
C17-C18	ND		1		C6-C44 Total	ND	5.0	1	
C19-C20	ND		1						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	87	61-145	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T3-4	**09-06-2333-8-A**	**06/26/09 08:25**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 05:59**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		1		C21-C22	1.3		1	
C7	ND		1		C23-C24	2.4		1	
C8	ND		1		C25-C28	8.7		1	
C9-C10	ND		1		C29-C32	20		1	
C11-C12	ND		1		C33-C36	16		1	
C13-C14	1.7		1		C37-C40	12		1	
C15-C16	0.56		1		C41-C44	15		1	
C17-C18	0.0086		1		C6-C44 Total	78	5.0	1	
C19-C20	0.47		1						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	90	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.
5000 East Spring Street, Suite 720
Long Beach, CA 90815-1270

Date Received: 06/26/09
Work Order No: 09-06-2333
Preparation: EPA 3550B
Method: EPA 8015B (M)
Units: mg/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T4-1	**09-06-2333-9-B**	**06/26/09 08:50**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 06:30**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		1		C21-C22	28		1	
C7	ND		1		C23-C24	33		1	
C8	ND		1		C25-C28	89		1	
C9-C10	ND		1		C29-C32	130		1	
C11-C12	ND		1		C33-C36	56		1	
C13-C14	ND		1		C37-C40	36		1	
C15-C16	3.8		1		C41-C44	32		1	
C17-C18	5.0		1		C6-C44 Total	440	5.0	1	
C19-C20	26		1						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	94	61-145	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T4-2	**09-06-2333-10-B**	**06/26/09 09:05**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 06:45**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		1		C21-C22	6.4		1	
C7	ND		1		C23-C24	12		1	
C8	ND		1		C25-C28	23		1	
C9-C10	ND		1		C29-C32	43		1	
C11-C12	ND		1		C33-C36	26		1	
C13-C14	1.1		1		C37-C40	26		1	
C15-C16	0.72		1		C41-C44	21		1	
C17-C18	0.023		1		C6-C44 Total	160	5.0	1	
C19-C20	3.0		1						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	98	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.
5000 East Spring Street, Suite 720
Long Beach, CA 90815-1270

Date Received: 06/26/09
Work Order No: 09-06-2333
Preparation: EPA 3550B
Method: EPA 8015B (M)
Units: mg/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T4-3	**09-06-2333-11-B**	**06/26/09 09:15**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 07:01**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		1		C21-C22	0.68		1	
C7	ND		1		C23-C24	2.6		1	
C8	ND		1		C25-C28	6.5		1	
C9-C10	ND		1		C29-C32	12		1	
C11-C12	ND		1		C33-C36	9.6		1	
C13-C14	ND		1		C37-C40	7.8		1	
C15-C16	ND		1		C41-C44	8.3		1	
C17-C18	ND		1		C6-C44 Total	48	5.0	1	
C19-C20	0.097		1						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	91	61-145	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T4-4	**09-06-2333-12-B**	**06/26/09 09:30**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 07:17**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		1		C21-C22	4.9		1	
C7	ND		1		C23-C24	5.0		1	
C8	ND		1		C25-C28	14		1	
C9-C10	ND		1		C29-C32	24		1	
C11-C12	0.56		1		C33-C36	24		1	
C13-C14	1.2		1		C37-C40	20		1	
C15-C16	ND		1		C41-C44	19		1	
C17-C18	ND		1		C6-C44 Total	110	5.0	1	
C19-C20	ND		1						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	93	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 3550B
	Method:	EPA 8015B (M)
	Units:	mg/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T5-1	**09-06-2333-13-B**	**06/26/09 10:00**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 07:33**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		25		C21-C22	44		25	
C7	ND		25		C23-C24	100		25	
C8	ND		25		C25-C28	210		25	
C9-C10	ND		25		C29-C32	390		25	
C11-C12	ND		25		C33-C36	250		25	
C13-C14	ND		25		C37-C40	230		25	
C15-C16	ND		25		C41-C44	310		25	
C17-C18	7.0		25		C6-C44 Total	1600	120	25	
C19-C20	19		25						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	82	61-145	

T5-2	**09-06-2333-14-B**	**06/26/09 10:30**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 09:37**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		15		C21-C22	310		15	
C7	ND		15		C23-C24	310		15	
C8	ND		15		C25-C28	630		15	
C9-C10	ND		15		C29-C32	600		15	
C11-C12	ND		15		C33-C36	410		15	
C13-C14	72		15		C37-C40	320		15	
C15-C16	230		15		C41-C44	230		15	
C17-C18	330		15		C6-C44 Total	3900	75	15	
C19-C20	450		15						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	85	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.		Date Received:	06/26/09
5000 East Spring Street, Suite 720		Work Order No:	09-06-2333
Long Beach, CA 90815-1270		Preparation:	EPA 3550B
		Method:	EPA 8015B (M)
		Units:	mg/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T5-3	**09-06-2333-15-A**	**06/26/09 11:00**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 13:36**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		1		C21-C22	ND		1	
C7	ND		1		C23-C24	0.47		1	
C8	ND		1		C25-C28	ND		1	
C9-C10	ND		1		C29-C32	2.9		1	
C11-C12	ND		1		C33-C36	4.1		1	
C13-C14	ND		1		C37-C40	0.57		1	
C15-C16	ND		1		C41-C44	2.8		1	
C17-C18	ND		1		C6-C44 Total	11	5.0	1	
C19-C20	0.48		1						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	91	61-145	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T5-4	**09-06-2333-16-B**	**06/26/09 11:30**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 10:09**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		20		C21-C22	520		20	
C7	ND		20		C23-C24	490		20	
C8	ND		20		C25-C28	830		20	
C9-C10	ND		20		C29-C32	1000		20	
C11-C12	ND		20		C33-C36	600		20	
C13-C14	140		20		C37-C40	430		20	
C15-C16	530		20		C41-C44	340		20	
C17-C18	800		20		C6-C44 Total	6200	100	20	
C19-C20	580		20						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	96	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.
5000 East Spring Street, Suite 720
Long Beach, CA 90815-1270

Date Received: 06/26/09
Work Order No: 09-06-2333
Preparation: EPA 3550B
Method: EPA 8015B (M)
Units: mg/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DUP 1	**09-06-2333-17-A**	**06/26/09 00:00**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 13:05**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		2		C21-C22	7.8		2	
C7	ND		2		C23-C24	12		2	
C8	ND		2		C25-C28	38		2	
C9-C10	ND		2		C29-C32	59		2	
C11-C12	1.4		2		C33-C36	41		2	
C13-C14	ND		2		C37-C40	34		2	
C15-C16	ND		2		C41-C44	28		2	
C17-C18	ND		2		C6-C44 Total	230	10	2	
C19-C20	4.6		2						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	91	61-145	

DUP 2	**09-06-2333-18-A**	**06/26/09 00:00**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 13:20**	**090630B11**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
C6	ND		1		C21-C22	2.6		1	
C7	ND		1		C23-C24	2.7		1	
C8	ND		1		C25-C28	6.7		1	
C9-C10	ND		1		C29-C32	8.3		1	
C11-C12	ND		1		C33-C36	5.5		1	
C13-C14	ND		1		C37-C40	1.8		1	
C15-C16	ND		1		C41-C44	4.4		1	
C17-C18	ND		1		C6-C44 Total	32	5.0	1	
C19-C20	ND		1						

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	90	61-145	

Method Blank	**099-12-275-2,811**	**N/A**	**Solid**	**GC 46**	**06/30/09**	**07/01/09 02:20**	**090630B11**

Parameter	Result	RL	DF	Qual
TPH as Diesel	ND	5.0	1	

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	93	61-145	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T2-1	**09-06-2333-1-D**	**06/26/09 12:00**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 13:28**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	110	43	0.853		c-1,3-Dichloropropene	ND	0.85	0.853	
Benzene	ND	0.85	0.853		t-1,3-Dichloropropene	ND	1.7	0.853	
Bromobenzene	ND	0.85	0.853		Ethylbenzene	ND	0.85	0.853	
Bromochloromethane	ND	1.7	0.853		2-Hexanone	ND	17	0.853	
Bromodichloromethane	ND	0.85	0.853		Isopropylbenzene	ND	0.85	0.853	
Bromoform	ND	4.3	0.853		p-Isopropyltoluene	ND	0.85	0.853	
Bromomethane	ND	17	0.853		Methylene Chloride	ND	8.5	0.853	
2-Butanone	20	17	0.853		4-Methyl-2-Pentanone	ND	17	0.853	
n-Butylbenzene	ND	0.85	0.853		Naphthalene	ND	8.5	0.853	
sec-Butylbenzene	ND	0.85	0.853		n-Propylbenzene	ND	1.7	0.853	
tert-Butylbenzene	ND	0.85	0.853		Styrene	ND	0.85	0.853	
Carbon Disulfide	ND	8.5	0.853		1,1,1,2-Tetrachloroethane	ND	0.85	0.853	
Carbon Tetrachloride	ND	0.85	0.853		1,1,2,2-Tetrachloroethane	ND	1.7	0.853	
Chlorobenzene	ND	0.85	0.853		Tetrachloroethene	ND	0.85	0.853	
Chloroethane	ND	1.7	0.853		Toluene	ND	0.85	0.853	
Chloroform	ND	0.85	0.853		1,2,3-Trichlorobenzene	ND	1.7	0.853	
Chloromethane	ND	17	0.853		1,2,4-Trichlorobenzene	ND	1.7	0.853	
2-Chlorotoluene	ND	0.85	0.853		1,1,1-Trichloroethane	ND	0.85	0.853	
4-Chlorotoluene	ND	0.85	0.853		1,1,2-Trichloroethane	ND	0.85	0.853	
Dibromochloromethane	ND	1.7	0.853		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.5	0.853	
1,2-Dibromo-3-Chloropropane	ND	4.3	0.853		Trichloroethene	ND	1.7	0.853	
1,2-Dibromoethane	ND	0.85	0.853		Trichlorofluoromethane	ND	8.5	0.853	
Dibromomethane	ND	0.85	0.853		1,2,3-Trichloropropane	ND	1.7	0.853	
1,2-Dichlorobenzene	ND	0.85	0.853		1,2,4-Trimethylbenzene	ND	1.7	0.853	
1,3-Dichlorobenzene	ND	0.85	0.853		1,3,5-Trimethylbenzene	ND	1.7	0.853	
1,4-Dichlorobenzene	ND	0.85	0.853		Vinyl Acetate	ND	8.5	0.853	
Dichlorodifluoromethane	ND	1.7	0.853		Vinyl Chloride	ND	0.85	0.853	
1,1-Dichloroethane	ND	0.85	0.853		p/m-Xylene	ND	1.7	0.853	
1,2-Dichloroethane	ND	0.85	0.853		o-Xylene	ND	0.85	0.853	
1,1-Dichloroethene	ND	0.85	0.853		Methyl-t-Butyl Ether (MTBE)	ND	1.7	0.853	
c-1,2-Dichloroethene	ND	0.85	0.853		Tert-Butyl Alcohol (TBA)	ND	17	0.853	
t-1,2-Dichloroethene	ND	0.85	0.853		Diisopropyl Ether (DIPE)	ND	0.85	0.853	
1,2-Dichloropropane	ND	0.85	0.853		Ethyl-t-Butyl Ether (ETBE)	ND	0.85	0.853	
1,3-Dichloropropane	ND	0.85	0.853		Tert-Amyl-Methyl Ether (TAME)	ND	0.85	0.853	
2,2-Dichloropropane	ND	4.3	0.853		Ethanol	ND	430	0.853	
1,1-Dichloropropene	ND	1.7	0.853						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	151	71-137	2,1	1,2-Dichloroethane-d4	175	58-160	2,1
1,4-Bromofluorobenzene	74	66-126		Toluene-d8	81	87-111	2,1

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T2-2	**09-06-2333-2-D**	**06/26/09 12:15**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 13:55**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	45	0.903		c-1,3-Dichloropropene	ND	0.90	0.903	
Benzene	ND	0.90	0.903		t-1,3-Dichloropropene	ND	1.8	0.903	
Bromobenzene	ND	0.90	0.903		Ethylbenzene	ND	0.90	0.903	
Bromochloromethane	ND	1.8	0.903		2-Hexanone	ND	18	0.903	
Bromodichloromethane	ND	0.90	0.903		Isopropylbenzene	ND	0.90	0.903	
Bromoform	ND	4.5	0.903		p-Isopropyltoluene	ND	0.90	0.903	
Bromomethane	ND	18	0.903		Methylene Chloride	ND	9.0	0.903	
2-Butanone	ND	18	0.903		4-Methyl-2-Pentanone	ND	18	0.903	
n-Butylbenzene	ND	0.90	0.903		Naphthalene	ND	9.0	0.903	
sec-Butylbenzene	ND	0.90	0.903		n-Propylbenzene	ND	1.8	0.903	
tert-Butylbenzene	ND	0.90	0.903		Styrene	ND	0.90	0.903	
Carbon Disulfide	ND	9.0	0.903		1,1,1,2-Tetrachloroethane	ND	0.90	0.903	
Carbon Tetrachloride	ND	0.90	0.903		1,1,2,2-Tetrachloroethane	ND	1.8	0.903	
Chlorobenzene	ND	0.90	0.903		Tetrachloroethene	ND	0.90	0.903	
Chloroethane	ND	1.8	0.903		Toluene	ND	0.90	0.903	
Chloroform	ND	0.90	0.903		1,2,3-Trichlorobenzene	ND	1.8	0.903	
Chloromethane	ND	18	0.903		1,2,4-Trichlorobenzene	ND	1.8	0.903	
2-Chlorotoluene	ND	0.90	0.903		1,1,1-Trichloroethane	ND	0.90	0.903	
4-Chlorotoluene	ND	0.90	0.903		1,1,2-Trichloroethane	ND	0.90	0.903	
Dibromochloromethane	ND	1.8	0.903		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	9.0	0.903	
1,2-Dibromo-3-Chloropropane	ND	4.5	0.903		Trichloroethene	ND	1.8	0.903	
1,2-Dibromoethane	ND	0.90	0.903		Trichlorofluoromethane	ND	9.0	0.903	
Dibromomethane	ND	0.90	0.903		1,2,3-Trichloropropane	ND	1.8	0.903	
1,2-Dichlorobenzene	ND	0.90	0.903		1,2,4-Trimethylbenzene	ND	1.8	0.903	
1,3-Dichlorobenzene	ND	0.90	0.903		1,3,5-Trimethylbenzene	ND	1.8	0.903	
1,4-Dichlorobenzene	ND	0.90	0.903		Vinyl Acetate	ND	9.0	0.903	
Dichlorodifluoromethane	ND	1.8	0.903		Vinyl Chloride	ND	0.90	0.903	
1,1-Dichloroethane	ND	0.90	0.903		p/m-Xylene	ND	1.8	0.903	
1,2-Dichloroethane	ND	0.90	0.903		o-Xylene	ND	0.90	0.903	
1,1-Dichloroethene	ND	0.90	0.903		Methyl-t-Butyl Ether (MTBE)	ND	1.8	0.903	
c-1,2-Dichloroethene	ND	0.90	0.903		Tert-Butyl Alcohol (TBA)	ND	18	0.903	
t-1,2-Dichloroethene	ND	0.90	0.903		Diisopropyl Ether (DIPE)	ND	0.90	0.903	
1,2-Dichloropropane	ND	0.90	0.903		Ethyl-t-Butyl Ether (ETBE)	ND	0.90	0.903	
1,3-Dichloropropane	ND	0.90	0.903		Tert-Amyl-Methyl Ether (TAME)	ND	0.90	0.903	
2,2-Dichloropropane	ND	4.5	0.903		Ethanol	ND	450	0.903	
1,1-Dichloropropene	ND	1.8	0.903						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	119	71-137		1,2-Dichloroethane-d4	132	58-160	
1,4-Bromofluorobenzene	98	66-126		Toluene-d8	104	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T2-3	**09-06-2333-3-D**	**06/26/09 12:30**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 14:22**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	43	0.864		c-1,3-Dichloropropene	ND	0.86	0.864	
Benzene	ND	0.86	0.864		t-1,3-Dichloropropene	ND	1.7	0.864	
Bromobenzene	ND	0.86	0.864		Ethylbenzene	ND	0.86	0.864	
Bromochloromethane	ND	1.7	0.864		2-Hexanone	ND	17	0.864	
Bromodichloromethane	ND	0.86	0.864		Isopropylbenzene	ND	0.86	0.864	
Bromoform	ND	4.3	0.864		p-Isopropyltoluene	ND	0.86	0.864	
Bromomethane	ND	17	0.864		Methylene Chloride	ND	8.6	0.864	
2-Butanone	ND	17	0.864		4-Methyl-2-Pentanone	ND	17	0.864	
n-Butylbenzene	ND	0.86	0.864		Naphthalene	ND	8.6	0.864	
sec-Butylbenzene	ND	0.86	0.864		n-Propylbenzene	ND	1.7	0.864	
tert-Butylbenzene	ND	0.86	0.864		Styrene	ND	0.86	0.864	
Carbon Disulfide	ND	8.6	0.864		1,1,1,2-Tetrachloroethane	ND	0.86	0.864	
Carbon Tetrachloride	ND	0.86	0.864		1,1,2,2-Tetrachloroethane	ND	1.7	0.864	
Chlorobenzene	ND	0.86	0.864		Tetrachloroethene	ND	0.86	0.864	
Chloroethane	ND	1.7	0.864		Toluene	ND	0.86	0.864	
Chloroform	ND	0.86	0.864		1,2,3-Trichlorobenzene	ND	1.7	0.864	
Chloromethane	ND	17	0.864		1,2,4-Trichlorobenzene	ND	1.7	0.864	
2-Chlorotoluene	ND	0.86	0.864		1,1,1-Trichloroethane	ND	0.86	0.864	
4-Chlorotoluene	ND	0.86	0.864		1,1,2-Trichloroethane	ND	0.86	0.864	
Dibromochloromethane	ND	1.7	0.864		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.6	0.864	
1,2-Dibromo-3-Chloropropane	ND	4.3	0.864		Trichloroethene	ND	1.7	0.864	
1,2-Dibromoethane	ND	0.86	0.864		Trichlorofluoromethane	ND	8.6	0.864	
Dibromomethane	ND	0.86	0.864		1,2,3-Trichloropropane	ND	1.7	0.864	
1,2-Dichlorobenzene	ND	0.86	0.864		1,2,4-Trimethylbenzene	ND	1.7	0.864	
1,3-Dichlorobenzene	ND	0.86	0.864		1,3,5-Trimethylbenzene	ND	1.7	0.864	
1,4-Dichlorobenzene	ND	0.86	0.864		Vinyl Acetate	ND	8.6	0.864	
Dichlorodifluoromethane	ND	1.7	0.864		Vinyl Chloride	ND	0.86	0.864	
1,1-Dichloroethane	ND	0.86	0.864		p/m-Xylene	ND	1.7	0.864	
1,2-Dichloroethane	ND	0.86	0.864		o-Xylene	ND	0.86	0.864	
1,1-Dichloroethene	ND	0.86	0.864		Methyl-t-Butyl Ether (MTBE)	ND	1.7	0.864	
c-1,2-Dichloroethene	ND	0.86	0.864		Tert-Butyl Alcohol (TBA)	ND	17	0.864	
t-1,2-Dichloroethene	ND	0.86	0.864		Diisopropyl Ether (DIPE)	ND	0.86	0.864	
1,2-Dichloropropane	ND	0.86	0.864		Ethyl-t-Butyl Ether (ETBE)	ND	0.86	0.864	
1,3-Dichloropropane	ND	0.86	0.864		Tert-Amyl-Methyl Ether (TAME)	ND	0.86	0.864	
2,2-Dichloropropane	ND	4.3	0.864		Ethanol	ND	430	0.864	
1,1-Dichloropropene	ND	1.7	0.864						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	117	71-137		1,2-Dichloroethane-d4	130	58-160	
1,4-Bromofluorobenzene	93	66-126		Toluene-d8	104	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T2-4	**09-06-2333-4-D**	**06/26/09 12:45**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 14:48**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	57	46	0.911		c-1,3-Dichloropropene	ND	0.91	0.911	
Benzene	ND	0.91	0.911		t-1,3-Dichloropropene	ND	1.8	0.911	
Bromobenzene	ND	0.91	0.911		Ethylbenzene	ND	0.91	0.911	
Bromochloromethane	ND	1.8	0.911		2-Hexanone	ND	18	0.911	
Bromodichloromethane	ND	0.91	0.911		Isopropylbenzene	ND	0.91	0.911	
Bromoform	ND	4.6	0.911		p-Isopropyltoluene	ND	0.91	0.911	
Bromomethane	ND	18	0.911		Methylene Chloride	ND	9.1	0.911	
2-Butanone	ND	18	0.911		4-Methyl-2-Pentanone	ND	18	0.911	
n-Butylbenzene	ND	0.91	0.911		Naphthalene	ND	9.1	0.911	
sec-Butylbenzene	ND	0.91	0.911		n-Propylbenzene	ND	1.8	0.911	
tert-Butylbenzene	ND	0.91	0.911		Styrene	ND	0.91	0.911	
Carbon Disulfide	ND	9.1	0.911		1,1,1,2-Tetrachloroethane	ND	0.91	0.911	
Carbon Tetrachloride	ND	0.91	0.911		1,1,2,2-Tetrachloroethane	ND	1.8	0.911	
Chlorobenzene	ND	0.91	0.911		Tetrachloroethene	ND	0.91	0.911	
Chloroethane	ND	1.8	0.911		Toluene	ND	0.91	0.911	
Chloroform	ND	0.91	0.911		1,2,3-Trichlorobenzene	ND	1.8	0.911	
Chloromethane	ND	18	0.911		1,2,4-Trichlorobenzene	ND	1.8	0.911	
2-Chlorotoluene	ND	0.91	0.911		1,1,1-Trichloroethane	ND	0.91	0.911	
4-Chlorotoluene	ND	0.91	0.911		1,1,2-Trichloroethane	ND	0.91	0.911	
Dibromochloromethane	ND	1.8	0.911		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	9.1	0.911	
1,2-Dibromo-3-Chloropropane	ND	4.6	0.911		Trichloroethene	ND	1.8	0.911	
1,2-Dibromoethane	ND	0.91	0.911		Trichlorofluoromethane	ND	9.1	0.911	
Dibromomethane	ND	0.91	0.911		1,2,3-Trichloropropane	ND	1.8	0.911	
1,2-Dichlorobenzene	ND	0.91	0.911		1,2,4-Trimethylbenzene	ND	1.8	0.911	
1,3-Dichlorobenzene	ND	0.91	0.911		1,3,5-Trimethylbenzene	ND	1.8	0.911	
1,4-Dichlorobenzene	ND	0.91	0.911		Vinyl Acetate	ND	9.1	0.911	
Dichlorodifluoromethane	ND	1.8	0.911		Vinyl Chloride	ND	0.91	0.911	
1,1-Dichloroethane	ND	0.91	0.911		p/m-Xylene	ND	1.8	0.911	
1,2-Dichloroethane	ND	0.91	0.911		o-Xylene	ND	0.91	0.911	
1,1-Dichloroethene	ND	0.91	0.911		Methyl-t-Butyl Ether (MTBE)	ND	1.8	0.911	
c-1,2-Dichloroethene	ND	0.91	0.911		Tert-Butyl Alcohol (TBA)	ND	18	0.911	
t-1,2-Dichloroethene	ND	0.91	0.911		Diisopropyl Ether (DIPE)	ND	0.91	0.911	
1,2-Dichloropropane	ND	0.91	0.911		Ethyl-t-Butyl Ether (ETBE)	ND	0.91	0.911	
1,3-Dichloropropane	ND	0.91	0.911		Tert-Amyl-Methyl Ether (TAME)	ND	0.91	0.911	
2,2-Dichloropropane	ND	4.6	0.911		Ethanol	ND	460	0.911	
1,1-Dichloropropene	ND	1.8	0.911						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	121	71-137		1,2-Dichloroethane-d4	133	58-160	
1,4-Bromofluorobenzene	85	66-126		Toluene-d8	98	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T3-1	**09-06-2333-5-D**	**06/26/09 07:40**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 15:15**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	40	0.809		c-1,3-Dichloropropene	ND	0.81	0.809	
Benzene	ND	0.81	0.809		t-1,3-Dichloropropene	ND	1.6	0.809	
Bromobenzene	ND	0.81	0.809		Ethylbenzene	ND	0.81	0.809	
Bromochloromethane	ND	1.6	0.809		2-Hexanone	ND	16	0.809	
Bromodichloromethane	ND	0.81	0.809		Isopropylbenzene	ND	0.81	0.809	
Bromoform	ND	4.0	0.809		p-Isopropyltoluene	ND	0.81	0.809	
Bromomethane	ND	16	0.809		Methylene Chloride	ND	8.1	0.809	
2-Butanone	ND	16	0.809		4-Methyl-2-Pentanone	ND	16	0.809	
n-Butylbenzene	ND	0.81	0.809		Naphthalene	ND	8.1	0.809	
sec-Butylbenzene	ND	0.81	0.809		n-Propylbenzene	ND	1.6	0.809	
tert-Butylbenzene	ND	0.81	0.809		Styrene	ND	0.81	0.809	
Carbon Disulfide	ND	8.1	0.809		1,1,1,2-Tetrachloroethane	ND	0.81	0.809	
Carbon Tetrachloride	ND	0.81	0.809		1,1,2,2-Tetrachloroethane	ND	1.6	0.809	
Chlorobenzene	ND	0.81	0.809		Tetrachloroethene	ND	0.81	0.809	
Chloroethane	ND	1.6	0.809		Toluene	ND	0.81	0.809	
Chloroform	ND	0.81	0.809		1,2,3-Trichlorobenzene	ND	1.6	0.809	
Chloromethane	ND	16	0.809		1,2,4-Trichlorobenzene	ND	1.6	0.809	
2-Chlorotoluene	ND	0.81	0.809		1,1,1-Trichloroethane	ND	0.81	0.809	
4-Chlorotoluene	ND	0.81	0.809		1,1,2-Trichloroethane	ND	0.81	0.809	
Dibromochloromethane	ND	1.6	0.809		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.1	0.809	
1,2-Dibromo-3-Chloropropane	ND	4.0	0.809		Trichloroethene	ND	1.6	0.809	
1,2-Dibromoethane	ND	0.81	0.809		Trichlorofluoromethane	ND	8.1	0.809	
Dibromomethane	ND	0.81	0.809		1,2,3-Trichloropropane	ND	1.6	0.809	
1,2-Dichlorobenzene	ND	0.81	0.809		1,2,4-Trimethylbenzene	ND	1.6	0.809	
1,3-Dichlorobenzene	ND	0.81	0.809		1,3,5-Trimethylbenzene	ND	1.6	0.809	
1,4-Dichlorobenzene	ND	0.81	0.809		Vinyl Acetate	ND	8.1	0.809	
Dichlorodifluoromethane	ND	1.6	0.809		Vinyl Chloride	ND	0.81	0.809	
1,1-Dichloroethane	ND	0.81	0.809		p/m-Xylene	ND	1.6	0.809	
1,2-Dichloroethane	ND	0.81	0.809		o-Xylene	ND	0.81	0.809	
1,1-Dichloroethene	ND	0.81	0.809		Methyl-t-Butyl Ether (MTBE)	ND	1.6	0.809	
c-1,2-Dichloroethene	ND	0.81	0.809		Tert-Butyl Alcohol (TBA)	ND	16	0.809	
t-1,2-Dichloroethene	ND	0.81	0.809		Diisopropyl Ether (DIPE)	ND	0.81	0.809	
1,2-Dichloropropane	ND	0.81	0.809		Ethyl-t-Butyl Ether (ETBE)	ND	0.81	0.809	
1,3-Dichloropropane	ND	0.81	0.809		Tert-Amyl-Methyl Ether (TAME)	ND	0.81	0.809	
2,2-Dichloropropane	ND	4.0	0.809		Ethanol	ND	400	0.809	
1,1-Dichloropropene	ND	1.6	0.809						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	121	71-137		1,2-Dichloroethane-d4	134	58-160	
1,4-Bromofluorobenzene	95	66-126		Toluene-d8	104	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T3-2	**09-06-2333-6-D**	**06/26/09 07:50**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 15:42**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	42	0.847		c-1,3-Dichloropropene	ND	0.85	0.847	
Benzene	ND	0.85	0.847		t-1,3-Dichloropropene	ND	1.7	0.847	
Bromobenzene	ND	0.85	0.847		Ethylbenzene	ND	0.85	0.847	
Bromochloromethane	ND	1.7	0.847		2-Hexanone	ND	17	0.847	
Bromodichloromethane	ND	0.85	0.847		Isopropylbenzene	ND	0.85	0.847	
Bromoform	ND	4.2	0.847		p-Isopropyltoluene	ND	0.85	0.847	
Bromomethane	ND	17	0.847		Methylene Chloride	ND	8.5	0.847	
2-Butanone	ND	17	0.847		4-Methyl-2-Pentanone	ND	17	0.847	
n-Butylbenzene	ND	0.85	0.847		Naphthalene	ND	8.5	0.847	
sec-Butylbenzene	ND	0.85	0.847		n-Propylbenzene	ND	1.7	0.847	
tert-Butylbenzene	ND	0.85	0.847		Styrene	ND	0.85	0.847	
Carbon Disulfide	ND	8.5	0.847		1,1,1,2-Tetrachloroethane	ND	0.85	0.847	
Carbon Tetrachloride	ND	0.85	0.847		1,1,2,2-Tetrachloroethane	ND	1.7	0.847	
Chlorobenzene	ND	0.85	0.847		Tetrachloroethene	ND	0.85	0.847	
Chloroethane	ND	1.7	0.847		Toluene	ND	0.85	0.847	
Chloroform	ND	0.85	0.847		1,2,3-Trichlorobenzene	ND	1.7	0.847	
Chloromethane	ND	17	0.847		1,2,4-Trichlorobenzene	ND	1.7	0.847	
2-Chlorotoluene	ND	0.85	0.847		1,1,1-Trichloroethane	ND	0.85	0.847	
4-Chlorotoluene	ND	0.85	0.847		1,1,2-Trichloroethane	ND	0.85	0.847	
Dibromochloromethane	ND	1.7	0.847		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	8.5	0.847	
1,2-Dibromo-3-Chloropropane	ND	4.2	0.847		Trichloroethene	ND	1.7	0.847	
1,2-Dibromoethane	ND	0.85	0.847		Trichlorofluoromethane	ND	8.5	0.847	
Dibromomethane	ND	0.85	0.847		1,2,3-Trichloropropane	ND	1.7	0.847	
1,2-Dichlorobenzene	ND	0.85	0.847		1,2,4-Trimethylbenzene	ND	1.7	0.847	
1,3-Dichlorobenzene	ND	0.85	0.847		1,3,5-Trimethylbenzene	ND	1.7	0.847	
1,4-Dichlorobenzene	ND	0.85	0.847		Vinyl Acetate	ND	8.5	0.847	
Dichlorodifluoromethane	ND	1.7	0.847		Vinyl Chloride	ND	0.85	0.847	
1,1-Dichloroethane	ND	0.85	0.847		p/m-Xylene	ND	1.7	0.847	
1,2-Dichloroethane	ND	0.85	0.847		o-Xylene	ND	0.85	0.847	
1,1-Dichloroethene	ND	0.85	0.847		Methyl-t-Butyl Ether (MTBE)	ND	1.7	0.847	
c-1,2-Dichloroethene	ND	0.85	0.847		Tert-Butyl Alcohol (TBA)	ND	17	0.847	
t-1,2-Dichloroethene	ND	0.85	0.847		Diisopropyl Ether (DIPE)	ND	0.85	0.847	
1,2-Dichloropropane	ND	0.85	0.847		Ethyl-t-Butyl Ether (ETBE)	ND	0.85	0.847	
1,3-Dichloropropane	ND	0.85	0.847		Tert-Amyl-Methyl Ether (TAME)	ND	0.85	0.847	
2,2-Dichloropropane	ND	4.2	0.847		Ethanol	ND	420	0.847	
1,1-Dichloropropene	ND	1.7	0.847						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	122	71-137		1,2-Dichloroethane-d4	136	58-160	
1,4-Bromofluorobenzene	97	66-126		Toluene-d8	103	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T3-3	**09-06-2333-7-D**	**06/26/09 08:16**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 16:08**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	29	0.577		c-1,3-Dichloropropene	ND	0.58	0.577	
Benzene	ND	0.58	0.577		t-1,3-Dichloropropene	ND	1.2	0.577	
Bromobenzene	ND	0.58	0.577		Ethylbenzene	ND	0.58	0.577	
Bromochloromethane	ND	1.2	0.577		2-Hexanone	ND	12	0.577	
Bromodichloromethane	ND	0.58	0.577		Isopropylbenzene	ND	0.58	0.577	
Bromoform	ND	2.9	0.577		p-Isopropyltoluene	ND	0.58	0.577	
Bromomethane	ND	12	0.577		Methylene Chloride	ND	5.8	0.577	
2-Butanone	ND	12	0.577		4-Methyl-2-Pentanone	ND	12	0.577	
n-Butylbenzene	ND	0.58	0.577		Naphthalene	ND	5.8	0.577	
sec-Butylbenzene	ND	0.58	0.577		n-Propylbenzene	ND	1.2	0.577	
tert-Butylbenzene	ND	0.58	0.577		Styrene	ND	0.58	0.577	
Carbon Disulfide	ND	5.8	0.577		1,1,1,2-Tetrachloroethane	ND	0.58	0.577	
Carbon Tetrachloride	ND	0.58	0.577		1,1,2,2-Tetrachloroethane	ND	1.2	0.577	
Chlorobenzene	ND	0.58	0.577		Tetrachloroethene	ND	0.58	0.577	
Chloroethane	ND	1.2	0.577		Toluene	ND	0.58	0.577	
Chloroform	ND	0.58	0.577		1,2,3-Trichlorobenzene	ND	1.2	0.577	
Chloromethane	ND	12	0.577		1,2,4-Trichlorobenzene	ND	1.2	0.577	
2-Chlorotoluene	ND	0.58	0.577		1,1,1-Trichloroethane	ND	0.58	0.577	
4-Chlorotoluene	ND	0.58	0.577		1,1,2-Trichloroethane	ND	0.58	0.577	
Dibromochloromethane	ND	1.2	0.577		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	5.8	0.577	
1,2-Dibromo-3-Chloropropane	ND	2.9	0.577		Trichloroethene	ND	1.2	0.577	
1,2-Dibromoethane	ND	0.58	0.577		Trichlorofluoromethane	ND	5.8	0.577	
Dibromomethane	ND	0.58	0.577		1,2,3-Trichloropropane	ND	1.2	0.577	
1,2-Dichlorobenzene	ND	0.58	0.577		1,2,4-Trimethylbenzene	ND	1.2	0.577	
1,3-Dichlorobenzene	ND	0.58	0.577		1,3,5-Trimethylbenzene	ND	1.2	0.577	
1,4-Dichlorobenzene	ND	0.58	0.577		Vinyl Acetate	ND	5.8	0.577	
Dichlorodifluoromethane	ND	1.2	0.577		Vinyl Chloride	ND	0.58	0.577	
1,1-Dichloroethane	ND	0.58	0.577		p/m-Xylene	ND	1.2	0.577	
1,2-Dichloroethane	ND	0.58	0.577		o-Xylene	ND	0.58	0.577	
1,1-Dichloroethene	ND	0.58	0.577		Methyl-t-Butyl Ether (MTBE)	ND	1.2	0.577	
c-1,2-Dichloroethene	ND	0.58	0.577		Tert-Butyl Alcohol (TBA)	ND	12	0.577	
t-1,2-Dichloroethene	ND	0.58	0.577		Diisopropyl Ether (DIPE)	ND	0.58	0.577	
1,2-Dichloropropane	ND	0.58	0.577		Ethyl-t-Butyl Ether (ETBE)	ND	0.58	0.577	
1,3-Dichloropropane	ND	0.58	0.577		Tert-Amyl-Methyl Ether (TAME)	ND	0.58	0.577	
2,2-Dichloropropane	ND	2.9	0.577		Ethanol	ND	290	0.577	
1,1-Dichloropropene	ND	1.2	0.577						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	119	71-137		1,2-Dichloroethane-d4	135	58-160	
1,4-Bromofluorobenzene	98	66-126		Toluene-d8	104	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T3-4	**09-06-2333-8-D**	**06/26/09 08:25**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 16:35**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	27	0.536		c-1,3-Dichloropropene	ND	0.54	0.536	
Benzene	ND	0.54	0.536		t-1,3-Dichloropropene	ND	1.1	0.536	
Bromobenzene	ND	0.54	0.536		Ethylbenzene	ND	0.54	0.536	
Bromochloromethane	ND	1.1	0.536		2-Hexanone	ND	11	0.536	
Bromodichloromethane	ND	0.54	0.536		Isopropylbenzene	ND	0.54	0.536	
Bromoform	ND	2.7	0.536		p-Isopropyltoluene	ND	0.54	0.536	
Bromomethane	ND	11	0.536		Methylene Chloride	ND	5.4	0.536	
2-Butanone	ND	11	0.536		4-Methyl-2-Pentanone	ND	11	0.536	
n-Butylbenzene	ND	0.54	0.536		Naphthalene	ND	5.4	0.536	
sec-Butylbenzene	ND	0.54	0.536		n-Propylbenzene	ND	1.1	0.536	
tert-Butylbenzene	ND	0.54	0.536		Styrene	ND	0.54	0.536	
Carbon Disulfide	ND	5.4	0.536		1,1,1,2-Tetrachloroethane	ND	0.54	0.536	
Carbon Tetrachloride	ND	0.54	0.536		1,1,2,2-Tetrachloroethane	ND	1.1	0.536	
Chlorobenzene	ND	0.54	0.536		Tetrachloroethene	ND	0.54	0.536	
Chloroethane	ND	1.1	0.536		Toluene	ND	0.54	0.536	
Chloroform	ND	0.54	0.536		1,2,3-Trichlorobenzene	ND	1.1	0.536	
Chloromethane	ND	11	0.536		1,2,4-Trichlorobenzene	ND	1.1	0.536	
2-Chlorotoluene	ND	0.54	0.536		1,1,1-Trichloroethane	ND	0.54	0.536	
4-Chlorotoluene	ND	0.54	0.536		1,1,2-Trichloroethane	ND	0.54	0.536	
Dibromochloromethane	ND	1.1	0.536		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	5.4	0.536	
1,2-Dibromo-3-Chloropropane	ND	2.7	0.536		Trichloroethene	ND	1.1	0.536	
1,2-Dibromoethane	ND	0.54	0.536		Trichlorofluoromethane	ND	5.4	0.536	
Dibromomethane	ND	0.54	0.536		1,2,3-Trichloropropane	ND	1.1	0.536	
1,2-Dichlorobenzene	ND	0.54	0.536		1,2,4-Trimethylbenzene	ND	1.1	0.536	
1,3-Dichlorobenzene	ND	0.54	0.536		1,3,5-Trimethylbenzene	ND	1.1	0.536	
1,4-Dichlorobenzene	ND	0.54	0.536		Vinyl Acetate	ND	5.4	0.536	
Dichlorodifluoromethane	ND	1.1	0.536		Vinyl Chloride	ND	0.54	0.536	
1,1-Dichloroethane	ND	0.54	0.536		p/m-Xylene	ND	1.1	0.536	
1,2-Dichloroethane	ND	0.54	0.536		o-Xylene	ND	0.54	0.536	
1,1-Dichloroethene	ND	0.54	0.536		Methyl-t-Butyl Ether (MTBE)	ND	1.1	0.536	
c-1,2-Dichloroethene	ND	0.54	0.536		Tert-Butyl Alcohol (TBA)	ND	11	0.536	
t-1,2-Dichloroethene	ND	0.54	0.536		Diisopropyl Ether (DIPE)	ND	0.54	0.536	
1,2-Dichloropropane	ND	0.54	0.536		Ethyl-t-Butyl Ether (ETBE)	ND	0.54	0.536	
1,3-Dichloropropane	ND	0.54	0.536		Tert-Amyl-Methyl Ether (TAME)	ND	0.54	0.536	
2,2-Dichloropropane	ND	2.7	0.536		Ethanol	ND	270	0.536	
1,1-Dichloropropene	ND	1.1	0.536						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	119	71-137		1,2-Dichloroethane-d4	135	58-160	
1,4-Bromofluorobenzene	96	66-126		Toluene-d8	103	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T4-1	**09-06-2333-9-D**	**06/26/09 08:50**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 17:02**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	31	0.618		c-1,3-Dichloropropene	ND	0.62	0.618	
Benzene	ND	0.62	0.618		t-1,3-Dichloropropene	ND	1.2	0.618	
Bromobenzene	ND	0.62	0.618		Ethylbenzene	ND	0.62	0.618	
Bromochloromethane	ND	1.2	0.618		2-Hexanone	ND	12	0.618	
Bromodichloromethane	ND	0.62	0.618		Isopropylbenzene	ND	0.62	0.618	
Bromoform	ND	3.1	0.618		p-Isopropyltoluene	ND	0.62	0.618	
Bromomethane	ND	12	0.618		Methylene Chloride	ND	6.2	0.618	
2-Butanone	ND	12	0.618		4-Methyl-2-Pentanone	ND	12	0.618	
n-Butylbenzene	ND	0.62	0.618		Naphthalene	ND	6.2	0.618	
sec-Butylbenzene	ND	0.62	0.618		n-Propylbenzene	ND	1.2	0.618	
tert-Butylbenzene	ND	0.62	0.618		Styrene	ND	0.62	0.618	
Carbon Disulfide	ND	6.2	0.618		1,1,1,2-Tetrachloroethane	ND	0.62	0.618	
Carbon Tetrachloride	ND	0.62	0.618		1,1,2,2-Tetrachloroethane	ND	1.2	0.618	
Chlorobenzene	ND	0.62	0.618		Tetrachloroethene	ND	0.62	0.618	
Chloroethane	ND	1.2	0.618		Toluene	ND	0.62	0.618	
Chloroform	ND	0.62	0.618		1,2,3-Trichlorobenzene	ND	1.2	0.618	
Chloromethane	ND	12	0.618		1,2,4-Trichlorobenzene	ND	1.2	0.618	
2-Chlorotoluene	ND	0.62	0.618		1,1,1-Trichloroethane	ND	0.62	0.618	
4-Chlorotoluene	ND	0.62	0.618		1,1,2-Trichloroethane	ND	0.62	0.618	
Dibromochloromethane	ND	1.2	0.618		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	6.2	0.618	
1,2-Dibromo-3-Chloropropane	ND	3.1	0.618		Trichloroethene	ND	1.2	0.618	
1,2-Dibromoethane	ND	0.62	0.618		Trichlorofluoromethane	ND	6.2	0.618	
Dibromomethane	ND	0.62	0.618		1,2,3-Trichloropropane	ND	1.2	0.618	
1,2-Dichlorobenzene	ND	0.62	0.618		1,2,4-Trimethylbenzene	ND	1.2	0.618	
1,3-Dichlorobenzene	ND	0.62	0.618		1,3,5-Trimethylbenzene	ND	1.2	0.618	
1,4-Dichlorobenzene	ND	0.62	0.618		Vinyl Acetate	ND	6.2	0.618	
Dichlorodifluoromethane	ND	1.2	0.618		Vinyl Chloride	ND	0.62	0.618	
1,1-Dichloroethane	ND	0.62	0.618		p/m-Xylene	ND	1.2	0.618	
1,2-Dichloroethane	ND	0.62	0.618		o-Xylene	ND	0.62	0.618	
1,1-Dichloroethene	ND	0.62	0.618		Methyl-t-Butyl Ether (MTBE)	ND	1.2	0.618	
c-1,2-Dichloroethene	ND	0.62	0.618		Tert-Butyl Alcohol (TBA)	ND	12	0.618	
t-1,2-Dichloroethene	ND	0.62	0.618		Diisopropyl Ether (DIPE)	ND	0.62	0.618	
1,2-Dichloropropane	ND	0.62	0.618		Ethyl-t-Butyl Ether (ETBE)	ND	0.62	0.618	
1,3-Dichloropropane	ND	0.62	0.618		Tert-Amyl-Methyl Ether (TAME)	ND	0.62	0.618	
2,2-Dichloropropane	ND	3.1	0.618		Ethanol	ND	310	0.618	
1,1-Dichloropropene	ND	1.2	0.618						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	122	71-137		1,2-Dichloroethane-d4	138	58-160	
1,4-Bromofluorobenzene	91	66-126		Toluene-d8	100	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T4-2	**09-06-2333-10-D**	**06/26/09 09:05**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 17:29**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	33	0.656		c-1,3-Dichloropropene	ND	0.66	0.656	
Benzene	0.69	0.66	0.656		t-1,3-Dichloropropene	ND	1.3	0.656	
Bromobenzene	ND	0.66	0.656		Ethylbenzene	ND	0.66	0.656	
Bromochloromethane	ND	1.3	0.656		2-Hexanone	ND	13	0.656	
Bromodichloromethane	ND	0.66	0.656		Isopropylbenzene	ND	0.66	0.656	
Bromoform	ND	3.3	0.656		p-Isopropyltoluene	ND	0.66	0.656	
Bromomethane	ND	13	0.656		Methylene Chloride	ND	6.6	0.656	
2-Butanone	ND	13	0.656		4-Methyl-2-Pentanone	ND	13	0.656	
n-Butylbenzene	ND	0.66	0.656		Naphthalene	ND	6.6	0.656	
sec-Butylbenzene	ND	0.66	0.656		n-Propylbenzene	ND	1.3	0.656	
tert-Butylbenzene	ND	0.66	0.656		Styrene	ND	0.66	0.656	
Carbon Disulfide	7.8	6.6	0.656		1,1,1,2-Tetrachloroethane	ND	0.66	0.656	
Carbon Tetrachloride	ND	0.66	0.656		1,1,2,2-Tetrachloroethane	ND	1.3	0.656	
Chlorobenzene	ND	0.66	0.656		Tetrachloroethene	ND	0.66	0.656	
Chloroethane	ND	1.3	0.656		Toluene	ND	0.66	0.656	
Chloroform	ND	0.66	0.656		1,2,3-Trichlorobenzene	ND	1.3	0.656	
Chloromethane	ND	13	0.656		1,2,4-Trichlorobenzene	ND	1.3	0.656	
2-Chlorotoluene	ND	0.66	0.656		1,1,1-Trichloroethane	ND	0.66	0.656	
4-Chlorotoluene	ND	0.66	0.656		1,1,2-Trichloroethane	ND	0.66	0.656	
Dibromochloromethane	ND	1.3	0.656		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	6.6	0.656	
1,2-Dibromo-3-Chloropropane	ND	3.3	0.656		Trichloroethene	ND	1.3	0.656	
1,2-Dibromoethane	ND	0.66	0.656		Trichlorofluoromethane	ND	6.6	0.656	
Dibromomethane	ND	0.66	0.656		1,2,3-Trichloropropane	ND	1.3	0.656	
1,2-Dichlorobenzene	ND	0.66	0.656		1,2,4-Trimethylbenzene	ND	1.3	0.656	
1,3-Dichlorobenzene	ND	0.66	0.656		1,3,5-Trimethylbenzene	ND	1.3	0.656	
1,4-Dichlorobenzene	ND	0.66	0.656		Vinyl Acetate	ND	6.6	0.656	
Dichlorodifluoromethane	ND	1.3	0.656		Vinyl Chloride	ND	0.66	0.656	
1,1-Dichloroethane	ND	0.66	0.656		p/m-Xylene	ND	1.3	0.656	
1,2-Dichloroethane	ND	0.66	0.656		o-Xylene	ND	0.66	0.656	
1,1-Dichloroethene	ND	0.66	0.656		Methyl-t-Butyl Ether (MTBE)	ND	1.3	0.656	
c-1,2-Dichloroethene	ND	0.66	0.656		Tert-Butyl Alcohol (TBA)	ND	13	0.656	
t-1,2-Dichloroethene	ND	0.66	0.656		Diisopropyl Ether (DIPE)	ND	0.66	0.656	
1,2-Dichloropropane	ND	0.66	0.656		Ethyl-t-Butyl Ether (ETBE)	ND	0.66	0.656	
1,3-Dichloropropane	ND	0.66	0.656		Tert-Amyl-Methyl Ether (TAME)	ND	0.66	0.656	
2,2-Dichloropropane	ND	3.3	0.656		Ethanol	ND	330	0.656	
1,1-Dichloropropene	ND	1.3	0.656						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	122	71-137		1,2-Dichloroethane-d4	135	58-160	
1,4-Bromofluorobenzene	93	66-126		Toluene-d8	102	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T4-3	**09-06-2333-11-D**	**06/26/09 09:15**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 17:56**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	26	26	0.514		c-1,3-Dichloropropene	ND	0.51	0.514	
Benzene	1.3	0.51	0.514		t-1,3-Dichloropropene	ND	1.0	0.514	
Bromobenzene	ND	0.51	0.514		Ethylbenzene	ND	0.51	0.514	
Bromochloromethane	ND	1.0	0.514		2-Hexanone	ND	10	0.514	
Bromodichloromethane	ND	0.51	0.514		Isopropylbenzene	ND	0.51	0.514	
Bromoform	ND	2.6	0.514		p-Isopropyltoluene	ND	0.51	0.514	
Bromomethane	ND	10	0.514		Methylene Chloride	ND	5.1	0.514	
2-Butanone	ND	10	0.514		4-Methyl-2-Pentanone	ND	10	0.514	
n-Butylbenzene	ND	0.51	0.514		Naphthalene	ND	5.1	0.514	
sec-Butylbenzene	ND	0.51	0.514		n-Propylbenzene	ND	1.0	0.514	
tert-Butylbenzene	ND	0.51	0.514		Styrene	ND	0.51	0.514	
Carbon Disulfide	15	5.1	0.514		1,1,1,2-Tetrachloroethane	ND	0.51	0.514	
Carbon Tetrachloride	ND	0.51	0.514		1,1,2,2-Tetrachloroethane	ND	1.0	0.514	
Chlorobenzene	ND	0.51	0.514		Tetrachloroethene	ND	0.51	0.514	
Chloroethane	ND	1.0	0.514		Toluene	ND	0.51	0.514	
Chloroform	ND	0.51	0.514		1,2,3-Trichlorobenzene	ND	1.0	0.514	
Chloromethane	ND	10	0.514		1,2,4-Trichlorobenzene	ND	1.0	0.514	
2-Chlorotoluene	ND	0.51	0.514		1,1,1-Trichloroethane	ND	0.51	0.514	
4-Chlorotoluene	ND	0.51	0.514		1,1,2-Trichloroethane	ND	0.51	0.514	
Dibromochloromethane	ND	1.0	0.514		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	5.1	0.514	
1,2-Dibromo-3-Chloropropane	ND	2.6	0.514		Trichloroethene	ND	1.0	0.514	
1,2-Dibromoethane	ND	0.51	0.514		Trichlorofluoromethane	ND	5.1	0.514	
Dibromomethane	ND	0.51	0.514		1,2,3-Trichloropropane	ND	1.0	0.514	
1,2-Dichlorobenzene	ND	0.51	0.514		1,2,4-Trimethylbenzene	ND	1.0	0.514	
1,3-Dichlorobenzene	ND	0.51	0.514		1,3,5-Trimethylbenzene	ND	1.0	0.514	
1,4-Dichlorobenzene	ND	0.51	0.514		Vinyl Acetate	ND	5.1	0.514	
Dichlorodifluoromethane	ND	1.0	0.514		Vinyl Chloride	ND	0.51	0.514	
1,1-Dichloroethane	ND	0.51	0.514		p/m-Xylene	ND	1.0	0.514	
1,2-Dichloroethane	ND	0.51	0.514		o-Xylene	ND	0.51	0.514	
1,1-Dichloroethene	ND	0.51	0.514		Methyl-t-Butyl Ether (MTBE)	ND	1.0	0.514	
c-1,2-Dichloroethene	ND	0.51	0.514		Tert-Butyl Alcohol (TBA)	ND	10	0.514	
t-1,2-Dichloroethene	ND	0.51	0.514		Diisopropyl Ether (DIPE)	ND	0.51	0.514	
1,2-Dichloropropane	ND	0.51	0.514		Ethyl-t-Butyl Ether (ETBE)	ND	0.51	0.514	
1,3-Dichloropropane	ND	0.51	0.514		Tert-Amyl-Methyl Ether (TAME)	ND	0.51	0.514	
2,2-Dichloropropane	ND	2.6	0.514		Ethanol	ND	260	0.514	
1,1-Dichloropropene	ND	1.0	0.514						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	118	71-137		1,2-Dichloroethane-d4	134	58-160	
1,4-Bromofluorobenzene	90	66-126		Toluene-d8	102	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T4-4	**09-06-2333-12-D**	**06/26/09 09:30**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 18:22**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	49	0.977		c-1,3-Dichloropropene	ND	0.98	0.977	
Benzene	ND	0.98	0.977		t-1,3-Dichloropropene	ND	2.0	0.977	
Bromobenzene	ND	0.98	0.977		Ethylbenzene	ND	0.98	0.977	
Bromochloromethane	ND	2.0	0.977		2-Hexanone	ND	20	0.977	
Bromodichloromethane	ND	0.98	0.977		Isopropylbenzene	ND	0.98	0.977	
Bromoform	ND	4.9	0.977		p-Isopropyltoluene	ND	0.98	0.977	
Bromomethane	ND	20	0.977		Methylene Chloride	ND	9.8	0.977	
2-Butanone	ND	20	0.977		4-Methyl-2-Pentanone	ND	20	0.977	
n-Butylbenzene	ND	0.98	0.977		Naphthalene	ND	9.8	0.977	
sec-Butylbenzene	ND	0.98	0.977		n-Propylbenzene	ND	2.0	0.977	
tert-Butylbenzene	ND	0.98	0.977		Styrene	ND	0.98	0.977	
Carbon Disulfide	ND	9.8	0.977		1,1,1,2-Tetrachloroethane	ND	0.98	0.977	
Carbon Tetrachloride	ND	0.98	0.977		1,1,2,2-Tetrachloroethane	ND	2.0	0.977	
Chlorobenzene	ND	0.98	0.977		Tetrachloroethene	ND	0.98	0.977	
Chloroethane	ND	2.0	0.977		Toluene	ND	0.98	0.977	
Chloroform	ND	0.98	0.977		1,2,3-Trichlorobenzene	ND	2.0	0.977	
Chloromethane	ND	20	0.977		1,2,4-Trichlorobenzene	ND	2.0	0.977	
2-Chlorotoluene	ND	0.98	0.977		1,1,1-Trichloroethane	ND	0.98	0.977	
4-Chlorotoluene	ND	0.98	0.977		1,1,2-Trichloroethane	ND	0.98	0.977	
Dibromochloromethane	ND	2.0	0.977		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	9.8	0.977	
1,2-Dibromo-3-Chloropropane	ND	4.9	0.977		Trichloroethene	ND	2.0	0.977	
1,2-Dibromoethane	ND	0.98	0.977		Trichlorofluoromethane	ND	9.8	0.977	
Dibromomethane	ND	0.98	0.977		1,2,3-Trichloropropane	ND	2.0	0.977	
1,2-Dichlorobenzene	ND	0.98	0.977		1,2,4-Trimethylbenzene	ND	2.0	0.977	
1,3-Dichlorobenzene	ND	0.98	0.977		1,3,5-Trimethylbenzene	ND	2.0	0.977	
1,4-Dichlorobenzene	ND	0.98	0.977		Vinyl Acetate	ND	9.8	0.977	
Dichlorodifluoromethane	ND	2.0	0.977		Vinyl Chloride	ND	0.98	0.977	
1,1-Dichloroethane	ND	0.98	0.977		p/m-Xylene	ND	2.0	0.977	
1,2-Dichloroethane	ND	0.98	0.977		o-Xylene	ND	0.98	0.977	
1,1-Dichloroethene	ND	0.98	0.977		Methyl-t-Butyl Ether (MTBE)	ND	2.0	0.977	
c-1,2-Dichloroethene	ND	0.98	0.977		Tert-Butyl Alcohol (TBA)	ND	20	0.977	
t-1,2-Dichloroethene	ND	0.98	0.977		Diisopropyl Ether (DIPE)	ND	0.98	0.977	
1,2-Dichloropropane	ND	0.98	0.977		Ethyl-t-Butyl Ether (ETBE)	ND	0.98	0.977	
1,3-Dichloropropane	ND	0.98	0.977		Tert-Amyl-Methyl Ether (TAME)	ND	0.98	0.977	
2,2-Dichloropropane	ND	4.9	0.977		Ethanol	ND	490	0.977	
1,1-Dichloropropene	ND	2.0	0.977						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	112	71-137		1,2-Dichloroethane-d4	125	58-160	
1,4-Bromofluorobenzene	107	66-126		Toluene-d8	92	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T5-1	**09-06-2333-13-E**	**06/26/09 10:00**	**Solid**	**GC/MS XX**	**06/26/09**	**06/29/09 15:55**	**090629L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	28	18	0.358		c-1,3-Dichloropropene	ND	0.36	0.358	
Benzene	ND	0.36	0.358		t-1,3-Dichloropropene	ND	0.72	0.358	
Bromobenzene	ND	0.36	0.358		Ethylbenzene	ND	0.36	0.358	
Bromochloromethane	ND	0.72	0.358		2-Hexanone	ND	7.2	0.358	
Bromodichloromethane	ND	0.36	0.358		Isopropylbenzene	ND	0.36	0.358	
Bromoform	ND	1.8	0.358		p-Isopropyltoluene	ND	0.36	0.358	
Bromomethane	ND	7.2	0.358		Methylene Chloride	ND	3.6	0.358	
2-Butanone	ND	7.2	0.358		4-Methyl-2-Pentanone	ND	7.2	0.358	
n-Butylbenzene	ND	0.36	0.358		Naphthalene	ND	3.6	0.358	
sec-Butylbenzene	ND	0.36	0.358		n-Propylbenzene	ND	0.72	0.358	
tert-Butylbenzene	ND	0.36	0.358		Styrene	ND	0.36	0.358	
Carbon Disulfide	ND	3.6	0.358		1,1,1,2-Tetrachloroethane	ND	0.36	0.358	
Carbon Tetrachloride	ND	0.36	0.358		1,1,2,2-Tetrachloroethane	ND	0.72	0.358	
Chlorobenzene	ND	0.36	0.358		Tetrachloroethene	ND	0.36	0.358	
Chloroethane	ND	0.72	0.358		Toluene	ND	0.36	0.358	
Chloroform	ND	0.36	0.358		1,2,3-Trichlorobenzene	ND	0.72	0.358	
Chloromethane	ND	7.2	0.358		1,2,4-Trichlorobenzene	ND	0.72	0.358	
2-Chlorotoluene	ND	0.36	0.358		1,1,1-Trichloroethane	ND	0.36	0.358	
4-Chlorotoluene	ND	0.36	0.358		1,1,2-Trichloroethane	ND	0.36	0.358	
Dibromochloromethane	ND	0.72	0.358		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	3.6	0.358	
1,2-Dibromo-3-Chloropropane	ND	1.8	0.358		Trichloroethene	ND	0.72	0.358	
1,2-Dibromoethane	ND	0.36	0.358		Trichlorofluoromethane	ND	3.6	0.358	
Dibromomethane	ND	0.36	0.358		1,2,3-Trichloropropane	ND	0.72	0.358	
1,2-Dichlorobenzene	ND	0.36	0.358		1,2,4-Trimethylbenzene	ND	0.72	0.358	
1,3-Dichlorobenzene	ND	0.36	0.358		1,3,5-Trimethylbenzene	ND	0.72	0.358	
1,4-Dichlorobenzene	ND	0.36	0.358		Vinyl Acetate	ND	3.6	0.358	
Dichlorodifluoromethane	ND	0.72	0.358		Vinyl Chloride	ND	0.36	0.358	
1,1-Dichloroethane	ND	0.36	0.358		p/m-Xylene	ND	0.72	0.358	
1,2-Dichloroethane	ND	0.36	0.358		o-Xylene	ND	0.36	0.358	
1,1-Dichloroethene	ND	0.36	0.358		Methyl-t-Butyl Ether (MTBE)	ND	0.72	0.358	
c-1,2-Dichloroethene	ND	0.36	0.358		Tert-Butyl Alcohol (TBA)	ND	7.2	0.358	
t-1,2-Dichloroethene	ND	0.36	0.358		Diisopropyl Ether (DIPE)	ND	0.36	0.358	
1,2-Dichloropropane	ND	0.36	0.358		Ethyl-t-Butyl Ether (ETBE)	ND	0.36	0.358	
1,3-Dichloropropane	ND	0.36	0.358		Tert-Amyl-Methyl Ether (TAME)	ND	0.36	0.358	
2,2-Dichloropropane	ND	1.8	0.358		Ethanol	ND	180	0.358	
1,1-Dichloropropene	ND	0.72	0.358						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	129	71-137		1,2-Dichloroethane-d4	148	58-160	
1,4-Bromofluorobenzene	81	66-126		Toluene-d8	92	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T5-2	**09-06-2333-14-D**	**06/26/09 10:30**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 19:16**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	60	1.2		c-1,3-Dichloropropene	ND	1.2	1.2	
Benzene	ND	1.2	1.2		t-1,3-Dichloropropene	ND	2.4	1.2	
Bromobenzene	ND	1.2	1.2		Ethylbenzene	ND	1.2	1.2	
Bromochloromethane	ND	2.4	1.2		2-Hexanone	ND	24	1.2	
Bromodichloromethane	ND	1.2	1.2		Isopropylbenzene	ND	1.2	1.2	
Bromoform	ND	6.0	1.2		p-Isopropyltoluene	ND	1.2	1.2	
Bromomethane	ND	24	1.2		Methylene Chloride	ND	12	1.2	
2-Butanone	ND	24	1.2		4-Methyl-2-Pentanone	ND	24	1.2	
n-Butylbenzene	ND	1.2	1.2		Naphthalene	ND	12	1.2	
sec-Butylbenzene	ND	1.2	1.2		n-Propylbenzene	ND	2.4	1.2	
tert-Butylbenzene	ND	1.2	1.2		Styrene	ND	1.2	1.2	
Carbon Disulfide	ND	12	1.2		1,1,1,2-Tetrachloroethane	ND	1.2	1.2	
Carbon Tetrachloride	ND	1.2	1.2		1,1,2,2-Tetrachloroethane	ND	2.4	1.2	
Chlorobenzene	ND	1.2	1.2		Tetrachloroethene	ND	1.2	1.2	
Chloroethane	ND	2.4	1.2		Toluene	ND	1.2	1.2	
Chloroform	ND	1.2	1.2		1,2,3-Trichlorobenzene	ND	2.4	1.2	
Chloromethane	ND	24	1.2		1,2,4-Trichlorobenzene	ND	2.4	1.2	
2-Chlorotoluene	ND	1.2	1.2		1,1,1-Trichloroethane	ND	1.2	1.2	
4-Chlorotoluene	ND	1.2	1.2		1,1,2-Trichloroethane	ND	1.2	1.2	
Dibromochloromethane	ND	2.4	1.2		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	12	1.2	
1,2-Dibromo-3-Chloropropane	ND	6.0	1.2		Trichloroethene	ND	2.4	1.2	
1,2-Dibromoethane	ND	1.2	1.2		Trichlorofluoromethane	ND	12	1.2	
Dibromomethane	ND	1.2	1.2		1,2,3-Trichloropropane	ND	2.4	1.2	
1,2-Dichlorobenzene	ND	1.2	1.2		1,2,4-Trimethylbenzene	ND	2.4	1.2	
1,3-Dichlorobenzene	ND	1.2	1.2		1,3,5-Trimethylbenzene	ND	2.4	1.2	
1,4-Dichlorobenzene	ND	1.2	1.2		Vinyl Acetate	ND	12	1.2	
Dichlorodifluoromethane	ND	2.4	1.2		Vinyl Chloride	ND	1.2	1.2	
1,1-Dichloroethane	ND	1.2	1.2		p/m-Xylene	ND	2.4	1.2	
1,2-Dichloroethane	ND	1.2	1.2		o-Xylene	ND	1.2	1.2	
1,1-Dichloroethene	ND	1.2	1.2		Methyl-t-Butyl Ether (MTBE)	ND	2.4	1.2	
c-1,2-Dichloroethene	ND	1.2	1.2		Tert-Butyl Alcohol (TBA)	ND	24	1.2	
t-1,2-Dichloroethene	ND	1.2	1.2		Diisopropyl Ether (DIPE)	ND	1.2	1.2	
1,2-Dichloropropane	ND	1.2	1.2		Ethyl-t-Butyl Ether (ETBE)	ND	1.2	1.2	
1,3-Dichloropropane	ND	1.2	1.2		Tert-Amyl-Methyl Ether (TAME)	ND	1.2	1.2	
2,2-Dichloropropane	ND	6.0	1.2		Ethanol	ND	600	1.2	
1,1-Dichloropropene	ND	2.4	1.2						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	123	71-137		1,2-Dichloroethane-d4	138	58-160	
1,4-Bromofluorobenzene	95	66-126		Toluene-d8	104	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T5-3	**09-06-2333-15-D**	**06/26/09 11:00**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 19:42**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	51	1.02		c-1,3-Dichloropropene	ND	1.0	1.02	
Benzene	ND	1.0	1.02		t-1,3-Dichloropropene	ND	2.0	1.02	
Bromobenzene	ND	1.0	1.02		Ethylbenzene	ND	1.0	1.02	
Bromochloromethane	ND	2.0	1.02		2-Hexanone	ND	20	1.02	
Bromodichloromethane	ND	1.0	1.02		Isopropylbenzene	ND	1.0	1.02	
Bromoform	ND	5.1	1.02		p-Isopropyltoluene	ND	1.0	1.02	
Bromomethane	ND	20	1.02		Methylene Chloride	ND	10	1.02	
2-Butanone	ND	20	1.02		4-Methyl-2-Pentanone	ND	20	1.02	
n-Butylbenzene	ND	1.0	1.02		Naphthalene	ND	10	1.02	
sec-Butylbenzene	ND	1.0	1.02		n-Propylbenzene	ND	2.0	1.02	
tert-Butylbenzene	ND	1.0	1.02		Styrene	ND	1.0	1.02	
Carbon Disulfide	ND	10	1.02		1,1,1,2-Tetrachloroethane	ND	1.0	1.02	
Carbon Tetrachloride	ND	1.0	1.02		1,1,2,2-Tetrachloroethane	ND	2.0	1.02	
Chlorobenzene	ND	1.0	1.02		Tetrachloroethene	ND	1.0	1.02	
Chloroethane	ND	2.0	1.02		Toluene	ND	1.0	1.02	
Chloroform	ND	1.0	1.02		1,2,3-Trichlorobenzene	ND	2.0	1.02	
Chloromethane	ND	20	1.02		1,2,4-Trichlorobenzene	ND	2.0	1.02	
2-Chlorotoluene	ND	1.0	1.02		1,1,1-Trichloroethane	ND	1.0	1.02	
4-Chlorotoluene	ND	1.0	1.02		1,1,2-Trichloroethane	ND	1.0	1.02	
Dibromochloromethane	ND	2.0	1.02		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1.02	
1,2-Dibromo-3-Chloropropane	ND	5.1	1.02		Trichloroethene	ND	2.0	1.02	
1,2-Dibromoethane	ND	1.0	1.02		Trichlorofluoromethane	ND	10	1.02	
Dibromomethane	ND	1.0	1.02		1,2,3-Trichloropropane	ND	2.0	1.02	
1,2-Dichlorobenzene	ND	1.0	1.02		1,2,4-Trimethylbenzene	ND	2.0	1.02	
1,3-Dichlorobenzene	ND	1.0	1.02		1,3,5-Trimethylbenzene	ND	2.0	1.02	
1,4-Dichlorobenzene	ND	1.0	1.02		Vinyl Acetate	ND	10	1.02	
Dichlorodifluoromethane	ND	2.0	1.02		Vinyl Chloride	ND	1.0	1.02	
1,1-Dichloroethane	ND	1.0	1.02		p/m-Xylene	ND	2.0	1.02	
1,2-Dichloroethane	ND	1.0	1.02		o-Xylene	ND	1.0	1.02	
1,1-Dichloroethene	ND	1.0	1.02		Methyl-t-Butyl Ether (MTBE)	ND	2.0	1.02	
c-1,2-Dichloroethene	ND	1.0	1.02		Tert-Butyl Alcohol (TBA)	ND	20	1.02	
t-1,2-Dichloroethene	ND	1.0	1.02		Diisopropyl Ether (DIPE)	ND	1.0	1.02	
1,2-Dichloropropane	ND	1.0	1.02		Ethyl-t-Butyl Ether (ETBE)	ND	1.0	1.02	
1,3-Dichloropropane	ND	1.0	1.02		Tert-Amyl-Methyl Ether (TAME)	ND	1.0	1.02	
2,2-Dichloropropane	ND	5.1	1.02		Ethanol	ND	510	1.02	
1,1-Dichloropropene	ND	2.0	1.02						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	103	71-137		1,2-Dichloroethane-d4	115	58-160	
1,4-Bromofluorobenzene	95	66-126		Toluene-d8	90	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
T5-4	**09-06-2333-16-E**	**06/26/09 11:30**	**Solid**	**GC/MS XX**	**06/26/09**	**06/29/09 16:22**	**090629L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	2400	48.7		c-1,3-Dichloropropene	ND	49	48.7	
Benzene	ND	49	48.7		t-1,3-Dichloropropene	ND	97	48.7	
Bromobenzene	ND	49	48.7		Ethylbenzene	ND	49	48.7	
Bromochloromethane	ND	97	48.7		2-Hexanone	ND	970	48.7	
Bromodichloromethane	ND	49	48.7		Isopropylbenzene	ND	49	48.7	
Bromoform	ND	240	48.7		p-Isopropyltoluene	63	49	48.7	
Bromomethane	ND	970	48.7		Methylene Chloride	ND	490	48.7	
2-Butanone	ND	970	48.7		4-Methyl-2-Pentanone	ND	970	48.7	
n-Butylbenzene	210	49	48.7		Naphthalene	4100	490	48.7	
sec-Butylbenzene	ND	49	48.7		n-Propylbenzene	ND	97	48.7	
tert-Butylbenzene	ND	49	48.7		Styrene	ND	49	48.7	
Carbon Disulfide	ND	490	48.7		1,1,1,2-Tetrachloroethane	ND	49	48.7	
Carbon Tetrachloride	ND	49	48.7		1,1,2,2-Tetrachloroethane	ND	97	48.7	
Chlorobenzene	ND	49	48.7		Tetrachloroethene	ND	49	48.7	
Chloroethane	ND	97	48.7		Toluene	ND	49	48.7	
Chloroform	ND	49	48.7		1,2,3-Trichlorobenzene	ND	97	48.7	
Chloromethane	ND	970	48.7		1,2,4-Trichlorobenzene	ND	97	48.7	
2-Chlorotoluene	ND	49	48.7		1,1,1-Trichloroethane	ND	49	48.7	
4-Chlorotoluene	ND	49	48.7		1,1,2-Trichloroethane	ND	49	48.7	
Dibromochloromethane	ND	97	48.7		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	490	48.7	
1,2-Dibromo-3-Chloropropane	ND	240	48.7		Trichloroethene	ND	97	48.7	
1,2-Dibromoethane	ND	49	48.7		Trichlorofluoromethane	ND	490	48.7	
Dibromomethane	ND	49	48.7		1,2,3-Trichloropropane	ND	97	48.7	
1,2-Dichlorobenzene	ND	49	48.7		1,2,4-Trimethylbenzene	410	97	48.7	
1,3-Dichlorobenzene	ND	49	48.7		1,3,5-Trimethylbenzene	ND	97	48.7	
1,4-Dichlorobenzene	ND	49	48.7		Vinyl Acetate	ND	490	48.7	
Dichlorodifluoromethane	ND	97	48.7		Vinyl Chloride	ND	49	48.7	
1,1-Dichloroethane	ND	49	48.7		p/m-Xylene	190	97	48.7	
1,2-Dichloroethane	ND	49	48.7		o-Xylene	120	49	48.7	
1,1-Dichloroethene	ND	49	48.7		Methyl-t-Butyl Ether (MTBE)	ND	97	48.7	
c-1,2-Dichloroethene	ND	49	48.7		Tert-Butyl Alcohol (TBA)	ND	970	48.7	
t-1,2-Dichloroethene	ND	49	48.7		Diisopropyl Ether (DIPE)	ND	49	48.7	
1,2-Dichloropropane	ND	49	48.7		Ethyl-t-Butyl Ether (ETBE)	ND	49	48.7	
1,3-Dichloropropane	ND	49	48.7		Tert-Amyl-Methyl Ether (TAME)	ND	49	48.7	
2,2-Dichloropropane	ND	240	48.7		Ethanol	ND	24000	48.7	
1,1-Dichloropropene	ND	97	48.7						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	111	71-137		1,2-Dichloroethane-d4	115	58-160	
1,4-Bromofluorobenzene	110	66-126		Toluene-d8	111	87-111	1

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DUP 1	**09-06-2333-17-D**	**06/26/09 00:00**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 20:09**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	22	0.441		c-1,3-Dichloropropene	ND	0.44	0.441	
Benzene	ND	0.44	0.441		t-1,3-Dichloropropene	ND	0.88	0.441	
Bromobenzene	ND	0.44	0.441		Ethylbenzene	ND	0.44	0.441	
Bromochloromethane	ND	0.88	0.441		2-Hexanone	ND	8.8	0.441	
Bromodichloromethane	ND	0.44	0.441		Isopropylbenzene	ND	0.44	0.441	
Bromoform	ND	2.2	0.441		p-Isopropyltoluene	ND	0.44	0.441	
Bromomethane	ND	8.8	0.441		Methylene Chloride	ND	4.4	0.441	
2-Butanone	ND	8.8	0.441		4-Methyl-2-Pentanone	ND	8.8	0.441	
n-Butylbenzene	ND	0.44	0.441		Naphthalene	ND	4.4	0.441	
sec-Butylbenzene	ND	0.44	0.441		n-Propylbenzene	ND	0.88	0.441	
tert-Butylbenzene	ND	0.44	0.441		Styrene	ND	0.44	0.441	
Carbon Disulfide	ND	4.4	0.441		1,1,1,2-Tetrachloroethane	ND	0.44	0.441	
Carbon Tetrachloride	ND	0.44	0.441		1,1,2,2-Tetrachloroethane	ND	0.88	0.441	
Chlorobenzene	ND	0.44	0.441		Tetrachloroethene	ND	0.44	0.441	
Chloroethane	ND	0.88	0.441		Toluene	ND	0.44	0.441	
Chloroform	ND	0.44	0.441		1,2,3-Trichlorobenzene	ND	0.88	0.441	
Chloromethane	ND	8.8	0.441		1,2,4-Trichlorobenzene	ND	0.88	0.441	
2-Chlorotoluene	ND	0.44	0.441		1,1,1-Trichloroethane	ND	0.44	0.441	
4-Chlorotoluene	ND	0.44	0.441		1,1,2-Trichloroethane	ND	0.44	0.441	
Dibromochloromethane	ND	0.88	0.441		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	4.4	0.441	
1,2-Dibromo-3-Chloropropane	ND	2.2	0.441		Trichloroethene	ND	0.88	0.441	
1,2-Dibromoethane	ND	0.44	0.441		Trichlorofluoromethane	ND	4.4	0.441	
Dibromomethane	ND	0.44	0.441		1,2,3-Trichloropropane	ND	0.88	0.441	
1,2-Dichlorobenzene	ND	0.44	0.441		1,2,4-Trimethylbenzene	ND	0.88	0.441	
1,3-Dichlorobenzene	ND	0.44	0.441		1,3,5-Trimethylbenzene	ND	0.88	0.441	
1,4-Dichlorobenzene	ND	0.44	0.441		Vinyl Acetate	ND	4.4	0.441	
Dichlorodifluoromethane	ND	0.88	0.441		Vinyl Chloride	ND	0.44	0.441	
1,1-Dichloroethane	ND	0.44	0.441		p/m-Xylene	ND	0.88	0.441	
1,2-Dichloroethane	ND	0.44	0.441		o-Xylene	ND	0.44	0.441	
1,1-Dichloroethene	ND	0.44	0.441		Methyl-t-Butyl Ether (MTBE)	ND	0.88	0.441	
c-1,2-Dichloroethene	ND	0.44	0.441		Tert-Butyl Alcohol (TBA)	ND	8.8	0.441	
t-1,2-Dichloroethene	ND	0.44	0.441		Diisopropyl Ether (DIPE)	ND	0.44	0.441	
1,2-Dichloropropane	ND	0.44	0.441		Ethyl-t-Butyl Ether (ETBE)	ND	0.44	0.441	
1,3-Dichloropropane	ND	0.44	0.441		Tert-Amyl-Methyl Ether (TAME)	ND	0.44	0.441	
2,2-Dichloropropane	ND	2.2	0.441		Ethanol	ND	220	0.441	
1,1-Dichloropropene	ND	0.88	0.441						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	121	71-137		1,2-Dichloroethane-d4	144	58-160	
1,4-Bromofluorobenzene	96	66-126		Toluene-d8	103	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
DUP 2	**09-06-2333-18-D**	**06/26/09 00:00**	**Solid**	**GC/MS XX**	**06/26/09**	**06/28/09 20:36**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	51	1.02		c-1,3-Dichloropropene	ND	1.0	1.02	
Benzene	ND	1.0	1.02		t-1,3-Dichloropropene	ND	2.0	1.02	
Bromobenzene	ND	1.0	1.02		Ethylbenzene	ND	1.0	1.02	
Bromochloromethane	ND	2.0	1.02		2-Hexanone	ND	20	1.02	
Bromodichloromethane	ND	1.0	1.02		Isopropylbenzene	ND	1.0	1.02	
Bromoform	ND	5.1	1.02		p-Isopropyltoluene	ND	1.0	1.02	
Bromomethane	ND	20	1.02		Methylene Chloride	ND	10	1.02	
2-Butanone	ND	20	1.02		4-Methyl-2-Pentanone	ND	20	1.02	
n-Butylbenzene	ND	1.0	1.02		Naphthalene	ND	10	1.02	
sec-Butylbenzene	ND	1.0	1.02		n-Propylbenzene	ND	2.0	1.02	
tert-Butylbenzene	ND	1.0	1.02		Styrene	ND	1.0	1.02	
Carbon Disulfide	ND	10	1.02		1,1,1,2-Tetrachloroethane	ND	1.0	1.02	
Carbon Tetrachloride	ND	1.0	1.02		1,1,2,2-Tetrachloroethane	ND	2.0	1.02	
Chlorobenzene	ND	1.0	1.02		Tetrachloroethene	ND	1.0	1.02	
Chloroethane	ND	2.0	1.02		Toluene	ND	1.0	1.02	
Chloroform	ND	1.0	1.02		1,2,3-Trichlorobenzene	ND	2.0	1.02	
Chloromethane	ND	20	1.02		1,2,4-Trichlorobenzene	ND	2.0	1.02	
2-Chlorotoluene	ND	1.0	1.02		1,1,1-Trichloroethane	ND	1.0	1.02	
4-Chlorotoluene	ND	1.0	1.02		1,1,2-Trichloroethane	ND	1.0	1.02	
Dibromochloromethane	ND	2.0	1.02		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1.02	
1,2-Dibromo-3-Chloropropane	ND	5.1	1.02		Trichloroethene	ND	2.0	1.02	
1,2-Dibromoethane	ND	1.0	1.02		Trichlorofluoromethane	ND	10	1.02	
Dibromomethane	ND	1.0	1.02		1,2,3-Trichloropropane	ND	2.0	1.02	
1,2-Dichlorobenzene	ND	1.0	1.02		1,2,4-Trimethylbenzene	ND	2.0	1.02	
1,3-Dichlorobenzene	ND	1.0	1.02		1,3,5-Trimethylbenzene	ND	2.0	1.02	
1,4-Dichlorobenzene	ND	1.0	1.02		Vinyl Acetate	ND	10	1.02	
Dichlorodifluoromethane	ND	2.0	1.02		Vinyl Chloride	ND	1.0	1.02	
1,1-Dichloroethane	ND	1.0	1.02		p/m-Xylene	ND	2.0	1.02	
1,2-Dichloroethane	ND	1.0	1.02		o-Xylene	ND	1.0	1.02	
1,1-Dichloroethene	ND	1.0	1.02		Methyl-t-Butyl Ether (MTBE)	ND	2.0	1.02	
c-1,2-Dichloroethene	ND	1.0	1.02		Tert-Butyl Alcohol (TBA)	ND	20	1.02	
t-1,2-Dichloroethene	ND	1.0	1.02		Diisopropyl Ether (DIPE)	ND	1.0	1.02	
1,2-Dichloropropane	ND	1.0	1.02		Ethyl-t-Butyl Ether (ETBE)	ND	1.0	1.02	
1,3-Dichloropropane	ND	1.0	1.02		Tert-Amyl-Methyl Ether (TAME)	ND	1.0	1.02	
2,2-Dichloropropane	ND	5.1	1.02		Ethanol	ND	510	1.02	
1,1-Dichloropropene	ND	2.0	1.02						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	122	71-137		1,2-Dichloroethane-d4	136	58-160	
1,4-Bromofluorobenzene	96	66-126		Toluene-d8	103	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**095-01-025-17,952**	**N/A**	**Solid**	**GC/MS XX**	**06/28/09**	**06/28/09 11:12**	**090628L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	50	1		c-1,3-Dichloropropene	ND	1.0	1	
Benzene	ND	1.0	1		t-1,3-Dichloropropene	ND	2.0	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	2.0	1		2-Hexanone	ND	20	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	5.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	20	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	20	1		4-Methyl-2-Pentanone	ND	20	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	2.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	2.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	2.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	2.0	1	
Chloromethane	ND	20	1		1,2,4-Trichlorobenzene	ND	2.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
Dibromochloromethane	ND	2.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	2.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	2.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	2.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	2.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	2.0	1		Vinyl Chloride	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	2.0	1	
1,2-Dichloroethane	ND	1.0	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	2.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	20	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	1.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	1.0	1	
2,2-Dichloropropane	ND	5.0	1		Ethanol	ND	500	1	
1,1-Dichloropropene	ND	2.0	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	113	71-137		1,2-Dichloroethane-d4	118	58-160	
1,4-Bromofluorobenzene	90	66-126		Toluene-d8	101	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**095-01-025-17,953**	**N/A**	**Solid**	**GC/MS XX**	**06/29/09**	**06/29/09 15:02**	**090629L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	50	1		c-1,3-Dichloropropene	ND	1.0	1	
Benzene	ND	1.0	1		t-1,3-Dichloropropene	ND	2.0	1	
Bromobenzene	ND	1.0	1		Ethylbenzene	ND	1.0	1	
Bromochloromethane	ND	2.0	1		2-Hexanone	ND	20	1	
Bromodichloromethane	ND	1.0	1		Isopropylbenzene	ND	1.0	1	
Bromoform	ND	5.0	1		p-Isopropyltoluene	ND	1.0	1	
Bromomethane	ND	20	1		Methylene Chloride	ND	10	1	
2-Butanone	ND	20	1		4-Methyl-2-Pentanone	ND	20	1	
n-Butylbenzene	ND	1.0	1		Naphthalene	ND	10	1	
sec-Butylbenzene	ND	1.0	1		n-Propylbenzene	ND	2.0	1	
tert-Butylbenzene	ND	1.0	1		Styrene	ND	1.0	1	
Carbon Disulfide	ND	10	1		1,1,1,2-Tetrachloroethane	ND	1.0	1	
Carbon Tetrachloride	ND	1.0	1		1,1,2,2-Tetrachloroethane	ND	2.0	1	
Chlorobenzene	ND	1.0	1		Tetrachloroethene	ND	1.0	1	
Chloroethane	ND	2.0	1		Toluene	ND	1.0	1	
Chloroform	ND	1.0	1		1,2,3-Trichlorobenzene	ND	2.0	1	
Chloromethane	ND	20	1		1,2,4-Trichlorobenzene	ND	2.0	1	
2-Chlorotoluene	ND	1.0	1		1,1,1-Trichloroethane	ND	1.0	1	
4-Chlorotoluene	ND	1.0	1		1,1,2-Trichloroethane	ND	1.0	1	
Dibromochloromethane	ND	2.0	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	10	1	
1,2-Dibromo-3-Chloropropane	ND	5.0	1		Trichloroethene	ND	2.0	1	
1,2-Dibromoethane	ND	1.0	1		Trichlorofluoromethane	ND	10	1	
Dibromomethane	ND	1.0	1		1,2,3-Trichloropropane	ND	2.0	1	
1,2-Dichlorobenzene	ND	1.0	1		1,2,4-Trimethylbenzene	ND	2.0	1	
1,3-Dichlorobenzene	ND	1.0	1		1,3,5-Trimethylbenzene	ND	2.0	1	
1,4-Dichlorobenzene	ND	1.0	1		Vinyl Acetate	ND	10	1	
Dichlorodifluoromethane	ND	2.0	1		Vinyl Chloride	ND	1.0	1	
1,1-Dichloroethane	ND	1.0	1		p/m-Xylene	ND	2.0	1	
1,2-Dichloroethane	ND	1.0	1		o-Xylene	ND	1.0	1	
1,1-Dichloroethene	ND	1.0	1		Methyl-t-Butyl Ether (MTBE)	ND	2.0	1	
c-1,2-Dichloroethene	ND	1.0	1		Tert-Butyl Alcohol (TBA)	ND	20	1	
t-1,2-Dichloroethene	ND	1.0	1		Diisopropyl Ether (DIPE)	ND	1.0	1	
1,2-Dichloropropane	ND	1.0	1		Ethyl-t-Butyl Ether (ETBE)	ND	1.0	1	
1,3-Dichloropropane	ND	1.0	1		Tert-Amyl-Methyl Ether (TAME)	ND	1.0	1	
2,2-Dichloropropane	ND	5.0	1		Ethanol	ND	500	1	
1,1-Dichloropropene	ND	2.0	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	115	71-137		1,2-Dichloroethane-d4	124	58-160	
1,4-Bromofluorobenzene	95	66-126		Toluene-d8	103	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

E2 ManageTech, Inc.	Date Received:	06/26/09
5000 East Spring Street, Suite 720	Work Order No:	09-06-2333
Long Beach, CA 90815-1270	Preparation:	EPA 5035
	Method:	EPA 8260B
	Units:	ug/kg

Project: AES AST Closure / 09-020-002

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**095-01-025-17,957**	**N/A**	**Solid**	**GC/MS XX**	**06/29/09**	**06/29/09 14:35**	**090629L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Acetone	ND	5000	100		c-1,3-Dichloropropene	ND	100	100	
Benzene	ND	100	100		t-1,3-Dichloropropene	ND	200	100	
Bromobenzene	ND	100	100		Ethylbenzene	ND	100	100	
Bromochloromethane	ND	200	100		2-Hexanone	ND	2000	100	
Bromodichloromethane	ND	100	100		Isopropylbenzene	ND	100	100	
Bromoform	ND	500	100		p-Isopropyltoluene	ND	100	100	
Bromomethane	ND	2000	100		Methylene Chloride	ND	1000	100	
2-Butanone	ND	2000	100		4-Methyl-2-Pentanone	ND	2000	100	
n-Butylbenzene	ND	100	100		Naphthalene	ND	1000	100	
sec-Butylbenzene	ND	100	100		n-Propylbenzene	ND	200	100	
tert-Butylbenzene	ND	100	100		Styrene	ND	100	100	
Carbon Disulfide	ND	1000	100		1,1,1,2-Tetrachloroethane	ND	100	100	
Carbon Tetrachloride	ND	100	100		1,1,2,2-Tetrachloroethane	ND	200	100	
Chlorobenzene	ND	100	100		Tetrachloroethene	ND	100	100	
Chloroethane	ND	200	100		Toluene	ND	100	100	
Chloroform	ND	100	100		1,2,3-Trichlorobenzene	ND	200	100	
Chloromethane	ND	2000	100		1,2,4-Trichlorobenzene	ND	200	100	
2-Chlorotoluene	ND	100	100		1,1,1-Trichloroethane	ND	100	100	
4-Chlorotoluene	ND	100	100		1,1,2-Trichloroethane	ND	100	100	
Dibromochloromethane	ND	200	100		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	1000	100	
1,2-Dibromo-3-Chloropropane	ND	500	100		Trichloroethene	ND	200	100	
1,2-Dibromoethane	ND	100	100		Trichlorofluoromethane	ND	1000	100	
Dibromomethane	ND	100	100		1,2,3-Trichloropropane	ND	200	100	
1,2-Dichlorobenzene	ND	100	100		1,2,4-Trimethylbenzene	ND	200	100	
1,3-Dichlorobenzene	ND	100	100		1,3,5-Trimethylbenzene	ND	200	100	
1,4-Dichlorobenzene	ND	100	100		Vinyl Acetate	ND	1000	100	
Dichlorodifluoromethane	ND	200	100		Vinyl Chloride	ND	100	100	
1,1-Dichloroethane	ND	100	100		p/m-Xylene	ND	200	100	
1,2-Dichloroethane	ND	100	100		o-Xylene	ND	100	100	
1,1-Dichloroethene	ND	100	100		Methyl-t-Butyl Ether (MTBE)	ND	200	100	
c-1,2-Dichloroethene	ND	100	100		Tert-Butyl Alcohol (TBA)	ND	2000	100	
t-1,2-Dichloroethene	ND	100	100		Diisopropyl Ether (DIPE)	ND	100	100	
1,2-Dichloropropane	ND	100	100		Ethyl-t-Butyl Ether (ETBE)	ND	100	100	
1,3-Dichloropropane	ND	100	100		Tert-Amyl-Methyl Ether (TAME)	ND	100	100	
2,2-Dichloropropane	ND	500	100		Ethanol	ND	50000	100	
1,1-Dichloropropene	ND	200	100						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
Dibromofluoromethane	113	71-137		1,2-Dichloroethane-d4	117	58-160	
1,4-Bromofluorobenzene	94	66-126		Toluene-d8	103	87-111	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

E2 ManageTech, Inc.
5000 East Spring Street, Suite 720
Long Beach, CA 90815-1270

Date Received: 06/26/09
Work Order No: 09-06-2333
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project AES AST Closure / 09-020-002

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-06-2536-1	**Solid**	**GC 46**	**06/30/09**	**07/01/09**	**090630S11**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel	101	97	64-130	4	0-15	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

E2 ManageTech, Inc.
5000 East Spring Street, Suite 720
Long Beach, CA 90815-1270

Date Received: N/A
Work Order No: 09-06-2333
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: AES AST Closure / 09-020-002

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-275-2,811	**Solid**	**GC 46**	**06/30/09**	**07/01/09**	**090630B11**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel	95	96	75-123	1	0-12	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

E2 ManageTech, Inc.
5000 East Spring Street, Suite 720
Long Beach, CA 90815-1270

Date Received: N/A
Work Order No: 09-06-2333
Preparation: EPA 5035
Method: EPA 8260B

Project: AES AST Closure / 09-020-002

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-025-17,952	**Solid**	**GC/MS XX**	**06/28/09**	**06/28/09**	**090628L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Benzene	100	105	85-115	80-120	5	0-11	
Carbon Tetrachloride	110	112	68-134	57-145	2	0-14	
Chlorobenzene	93	95	83-119	77-125	2	0-9	
1,2-Dibromoethane	90	93	80-120	73-127	3	0-20	
1,2-Dichlorobenzene	91	92	57-135	44-148	1	0-10	
1,1-Dichloroethene	101	103	72-120	64-128	2	0-10	
Ethylbenzene	99	103	80-120	73-127	3	0-20	
Toluene	102	106	67-127	57-137	4	0-10	
Trichloroethene	99	105	88-112	84-116	5	0-9	
Vinyl Chloride	85	92	57-129	45-141	8	0-16	
Methyl-t-Butyl Ether (MTBE)	91	96	76-124	68-132	5	0-12	
Tert-Butyl Alcohol (TBA)	92	97	31-145	12-164	5	0-23	
Diisopropyl Ether (DIPE)	76	81	74-128	65-137	5	0-10	
Ethyl-t-Butyl Ether (ETBE)	81	84	77-125	69-133	4	0-9	
Tert-Amyl-Methyl Ether (TAME)	102	106	81-123	74-130	4	0-10	
Ethanol	96	105	44-152	26-170	9	0-24	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

E2 ManageTech, Inc.
5000 East Spring Street, Suite 720
Long Beach, CA 90815-1270

Date Received: N/A
Work Order No: 09-06-2333
Preparation: EPA 5035
Method: EPA 8260B

Project: AES AST Closure / 09-020-002

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-025-17,953	**Solid**	**GC/MS XX**	**06/29/09**	**06/29/09**	**090629L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Benzene	98	97	85-115	80-120	0	0-11	
Carbon Tetrachloride	104	103	68-134	57-145	1	0-14	
Chlorobenzene	89	89	83-119	77-125	1	0-9	
1,2-Dibromoethane	86	90	80-120	73-127	4	0-20	
1,2-Dichlorobenzene	88	91	57-135	44-148	3	0-10	
1,1-Dichloroethene	89	95	72-120	64-128	7	0-10	
Ethylbenzene	96	96	80-120	73-127	0	0-20	
Toluene	95	101	67-127	57-137	7	0-10	
Trichloroethene	96	98	88-112	84-116	2	0-9	
Vinyl Chloride	74	75	57-129	45-141	1	0-16	
Methyl-t-Butyl Ether (MTBE)	88	97	76-124	68-132	10	0-12	
Tert-Butyl Alcohol (TBA)	93	94	31-145	12-164	1	0-23	
Diisopropyl Ether (DIPE)	79	82	74-128	65-137	4	0-10	
Ethyl-t-Butyl Ether (ETBE)	84	83	77-125	69-133	1	0-9	
Tert-Amyl-Methyl Ether (TAME)	104	105	81-123	74-130	1	0-10	
Ethanol	92	99	44-152	26-170	8	0-24	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

E2 ManageTech, Inc.
5000 East Spring Street, Suite 720
Long Beach, CA 90815-1270

Date Received: N/A
Work Order No: 09-06-2333
Preparation: EPA 5035
Method: EPA 8260B

Project: AES AST Closure / 09-020-002

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-025-17,957	**Solid**	**GC/MS XX**	**06/29/09**	**06/29/09**	**090629L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Benzene	98	97	85-115	80-120	0	0-11	
Carbon Tetrachloride	104	103	68-134	57-145	1	0-14	
Chlorobenzene	89	89	83-119	77-125	1	0-9	
1,2-Dibromoethane	86	90	80-120	73-127	4	0-20	
1,2-Dichlorobenzene	88	91	57-135	44-148	3	0-10	
1,1-Dichloroethene	89	95	72-120	64-128	7	0-10	
Ethylbenzene	96	96	80-120	73-127	0	0-20	
Toluene	95	101	67-127	57-137	7	0-10	
Trichloroethene	96	98	88-112	84-116	2	0-9	
Vinyl Chloride	74	75	57-129	45-141	1	0-16	
Methyl-t-Butyl Ether (MTBE)	88	97	76-124	68-132	10	0-12	
Tert-Butyl Alcohol (TBA)	93	94	31-145	12-164	1	0-23	
Diisopropyl Ether (DIPE)	79	82	74-128	65-137	4	0-10	
Ethyl-t-Butyl Ether (ETBE)	84	83	77-125	69-133	1	0-9	
Tert-Amyl-Methyl Ether (TAME)	104	105	81-123	74-130	1	0-10	
Ethanol	92	99	44-152	26-170	8	0-24	

Total number of LCS compounds : 16
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 09-06-2333

Qualifier	Definition
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.

Calscience Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Date 6/26/2009

Page 1 of 2

☒ SoCal Laboratory
7440 Lincoln Way
Garden Grove, CA 92841-1427
(714) 895-5494

☐ NorCal Service Center
5063 Commercial Circle, Suite H
Concord, CA 94520-8577
(925) 689-9022

LABORATORY CLIENT: ESSENTIA

ADDRESS: 5000 E. SPRING ST, SUITE 720

CITY: LONG BEACH STATE: CA ZIP: 90815

TEL: 562 740 1661 E-MAIL: jpackwood@elmt.com

TURNAROUND TIME:
☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ STANDARD

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING FORMS ☐ COELT EDF ☐ _____

SPECIAL INSTRUCTIONS:

CLIENT PROJECT NAME / NUMBER: 69-020-002 AES AST CLOSURE

PROJECT CONTACT: JACK PACKWOOD

SAMPLER(S): (PRINT) JP, RKB

COELT LOG CODE: ☐☐☐☐

P.O. NO.:

LAB USE ONLY: 0 6 - 2 3 3 3

COOLER RECEIPT TEMP= _____ °C

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	FIELD POINT NAME (FOR COELT EDF)	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH (g)	TPH (d) or (C6-C36) or (C6-C44)	TPH ( )	BTEX / MTBE (8260B) or ( )	VOCs (8260B)	Oxygenates (8260B)	Encore Prep (5035)	SVOCs (8270C)	Pesticides (8081A)	PCBs (8082)	PNAs (8310) or (8270C)	T22 Metals (6010B/747X)	Cr(VI) [7196A or 7199 or 218.6]	VOCs (TO-14A) or (TO-15)	TPH (g) [TO-3]+			
1	T2-1		6/26/09	1200	SOIL	5		X			X													
2	T2-2			1215																				
3	T2-3			1230																				
4	T2-4			1245																				
5	T3-1			0740																				
6	T3-2			0750																				
7	T3-3			0816																				
8	T3-4			0825																				
9	T4-1			0850																				
10	T4-2			0905				X			X													

Relinquished by: (Signature)	Received by: (Signature/Affiliation) WDoak CEL	Date: 6/26/2009	Time: 1456
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

DISTRIBUTION: White with final report, Green and Yellow to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

05/01/07 Revision

Calscience Environmental Laboratories, Inc.

☒ SoCal Laboratory
7440 Lincoln Way
Garden Grove, CA 92841-1427
(714) 895-5494

☐ NorCal Service Center
5063 Commercial Circle, Suite H
Concord, CA 94520-8577
(925) 689-9022

CHAIN OF CUSTODY RECORD

Date 6/26/2009

Page 2 of 2

LABORATORY CLIENT: Essentia	CLIENT PROJECT NAME / NUMBER: 69-QQ002 AES AST Closure
ADDRESS: 5000 E. Spring St. Suite 720	PROJECT CONTACT: Jack Packwood
CITY: Long Beach STATE: CA ZIP: 90815	SAMPLER(S): (PRINT) JP, RKB
TEL: 866-609-3374 E-MAIL: jpackwood@e2mt.com	COELT LOG CODE: ☐☐☐☐
TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ STANDARD	P.O. NO.:
SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY) ☐ RWQCB REPORTING FORMS ☐ COELT EDF ☐	LAB USE ONLY: 0 6 - 2 3 3 3
SPECIAL INSTRUCTIONS:	COOLER RECEIPT TEMP= °C

REQUESTED ANALYSES

LAB USE ONLY	SAMPLE ID	FIELD POINT NAME (FOR COELT EDF)	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH (g)	TPH (d) or (C6-C36) or (C6-C44)	TPH ( )	BTEX / MTBE (8260B) or ( )	VOCs (8260B)	Oxygenates (8260B)	Encore Prep (5035)	SVOCs (8270C)	Pesticides (8081A)	PCBs (8082)	PNAs (8310) or (8270C)	T22 Metals (6010B/747X)	Cr(VI) [7196A or 7199 or 218.6]	VOCs (TO-14A) or (TO-15)	TPH (g) [TO-3]+			
11	T4-3		6/26/09	0915	Soil	5		X			X													
12	T4-4			0930	Soil																			
13	T5-1			1000	Soil																			
14	T5-2			1030																				
15	T5-3			1100																				
16	T5-4			1130																				
17	Dup 1			--																				
18	Dup 2			--				X			X													

Relinquished by: (Signature)	Received by: (Signature/Affiliation) Wdeath CET	Date: 6/26/2009	Time: 1456
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:

DISTRIBUTION: White with final report, Green and Yellow to Client.
Please note that pages 1 and 2 of 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

05/01/07 Revision

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 09-06- 2 3 3 3

SAMPLE RECEIPT FORM

Cooler 1 of 2

CLIENT: ESSENTIA DATE: 6/26/09

TEMPERATURE: (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 3.9 °C - 0.2 °C (CF) = 3.7 °C ☐ Blank ☑ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter ☐ Metals Only ☐ PCBs Only **Initial:** WB

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A **Initial:** WB

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present **Initial:** DR

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ COC not relinquished. ☐ No date relinquished. ☐ No time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑ BF 6/26/09	☑	☐
Sample container(s) intact and good condition	☑	☐	☐
Correct containers and volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
Proper preservation noted on COC or sample container	☑	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☐

CONTAINER TYPE:

Solid: ☐4ozCGJ ☑8ozCGJ ☐16ozCGJ ☐Sleeve ☐EnCores® ☑TerraCores® ☑ 125mL PJ

Water: ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s** ☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐500PB ☐500PB**na** ☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PB ☐100PB**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® ☐_____ **Other:** ☐_____ **Checked/Labeled by:** BF

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar (Wide-mouth) **B:** Bottle (Narrow-mouth) **Reviewed by:** SO

Preservative: **h:** HCL **n:** HNO3 **na$_2$:** $Na_2S_2O_3$ **Na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **znna:** $ZnAc_2$+NaOH **f:** Field-filtered **Scanned by:** BF

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 09-06- 2 B B B

SAMPLE RECEIPT FORM

Cooler 2 **of** 2

CLIENT: ESSENTIA **DATE:** 6/26/09

TEMPERATURE: (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 3.6 °C - 0.2 °C (CF) = 3.4 °C ☐ **Blank** ☑ **Sample**

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter ☐ Metals Only ☐ PCBs Only **Initial:** WB

CUSTODY SEALS INTACT:

☐ Cooler ☐_____ ☐ No (Not Intact) ☑ Not Present ☐ N/A **Initial:** WB

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present **Initial:** BF

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ COC not relinquished. ☐ No date relinquished. ☐ No time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☑	☐	☐
Sample container(s) intact and good condition	☑	☐	☐
Correct containers and volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
Proper preservation noted on COC or sample container	☑	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☑8ozCGJ ☐16ozCGJ ☐Sleeve ☐EnCores® ☑TerraCores® 3 ☑ 125mL PJ

Water: ☐VOA ☐VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s** ☐500AGB ☐500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐500PB ☐500PB**na** ☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® ☐_____ **Other:** ☐_____ **Checked/Labeled by:** BF

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar (Wide-mouth) **B:** Bottle (Narrow-mouth) **Reviewed by:** _____

Preservative: **h:** HCL **n:** HNO3 **na$_2$:** $Na_2S_2O_3$ **Na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **znna:** $ZnAc_2$+NaOH **f:** Field-filtered **Scanned by:** _____

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 09-06- 2 3 3 3

SAMPLE ANOMALY FORM

SAMPLES - CONTAINERS & LABELS:

- ☐ **Samples NOT RECEIVED but listed on COC**
- ☐ **Samples received but NOT LISTED on COC**
- ☐ **Holding time expired** – list sample ID(s) and test
- ☐ **Insufficient quantities for analysis** – list test
- ☐ **Improper container(s)/preservative used** – list test
- ☐ **No preservative noted on COC or label** – list test & notify lab
- ☐ **Sample labels illegible** – note test/container type
- ☑ **Sample labels do not match COC** – Note in comments
  - ☐ **Sample ID**
  - ☑ **Date and/or Time Collected**
  - ☐ **Project Information**
  - ☐ **# of containers**
- ☐ **Sample containers compromised** – Note in comments
  - ☐ **Leaking**
  - ☐ **Broken**
  - ☐ **Without Labels**
- ☐ **Air sample containers compromised** – Note in comments
  - ☐ **Flat**
  - ☐ **Very low in volume**
  - ☐ **Leaking (transferred into Calscience Tedlar® Bag*)**
  - ☐ **Leaking (transferred into Client's Tedlar® Bag*)**
- ☐ **Other:** _____

Comments:

(-7) 1x Vial labelled as time and date collected as 7:40 & 6/26/09

HEADSPACE – Containers with Bubble > 6mm or ¼ inch:

Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of RSK or CO_2 or DO Received

Comments: _____

*Transferred at Client's request.

Initial / Date BF 6/26/09

APPENDIX D

HUNTINGTON BEACH FIRE DEPARTMENT SOIL CLEAN-UP STANDARD, CITY SPECIFICATION NO. 431-92

City Specification No. 431-92

Huntington Beach Fire Department

Soil Clean-Up Standard

INTRODUCTION

In an attempt to restore hydrocarbon contaminated soil to a clean condition and to protect the health and safety of the community, the City of Huntington Beach maintains standards for soil clean-up.

The establishment of this standard was based on review of all applicable Federal, State and County statutes, which pertain to the regulation of petroleum contaminated soils.

In conclusion, the proposed standards, made a part of this Executive Summary, represent a recommendation to relax the existing City of Huntington Beach standards in respect to Total Petroleum Hydrocarbon (TPH) concentration while enhancing their scientific merit through the establishment of new criteria, which relate to specific chemical species. The Huntington Beach standard is in line with neighboring Southern California oil field communities and protects the health, safety and welfare of the residents and their environment while minimizing the hardship on the development interests of the City and its property owners.

1ST CLEAN-UP CRITERIA

Soils sampled during site assessments that fail California Assessment Manual (CAM) criteria for hazardous waste will be excavated and disposed of at a proper disposal site. Laboratory tests used in this determination are pH (EPA-9045), CAM Metals (total), and Volatile Chlorinated and Aromatic Hydrocarbons (EPA-8240) as described on Page 4 - Site Assessment and Laboratory Specifications.

2ND CLEAN-UP CRITERIA

Comparison of the Total Petroleum Hydrocarbon (TPH) concentration in soils sampled during the site assessment shall be made with the screening criteria in Table 1. If the sample results meet the Table 1 criteria, no further testing or remediation work shall be required.

If the TPH exceeds the screening criteria, the laboratory will perform the additional analyses specified (EPA-8020, EPA-8270).

Further delineation of the contaminated soil through use of additional borings, additional trenches or by excavation and stockpiling must be performed to determine the lateral and vertical extent of soil exceeding Table 1 criteria. Samples obtained during this delineation will be analyzed for screening criteria listed in Table 1 (EPA-418.1 and EPA-8015). If sample results exceed the screening criteria in Table 1, the laboratory shall be instructed to run the

analyses specified in Table 2 (EPA-8020, EPA-8270) unless the applicant chooses to excavate the contaminated soil to meet criteria in Table 1 without proceeding to further analyses specified in Table 2. Soils which contain less than the screening levels specified in Table 2 shall not be required to undergo soil remediation provided that EPA 418.1 and EPA 8015M Total Petroleum Hydrocarbon concentrations are less than 100% excess of Table 1 screening criteria levels.

Table 1
Screening Level for Hydrocarbon Clean-up

Land Use	TPH (418.1)	TPH (8015M)
Residential and Recreational	<500 ppm	<500 ppm
Commercial and Industrial	<1,000 ppm	<1,000 ppm
Roadway		
• 0' – 4' Below Road Surface	N/A	<1,000 ppm Total; <100 ppm of the <C14 component
• Below Road Surface	<1,000 ppm	<1,000 ppm

Table 2 Screening Level for Hydrocarbon Clean-up		
Land Use	**BTX & E (8021)**	**PNA (8270)[1]**
Residential and Recreational	B< 1.0 PPM T, X & E < 10.0 ppm individually	Each CAPNA <0.5 ppm Total CAPNA's <3.0 ppm
Commercial and Industrial	B< 1.0 PPM T, X & E < 10.0 ppm individually	Each CAPNA <1.0 ppm Total CAPNA's <6.0 ppm
Roadway		
• 0' – 4' Below Road Surface	B<1.0 ppm T, X & E <10.0 ppm individually	Each CAPNA <1.0 ppm Total CAPNA's <6.0 ppm
• >4' Below Road Surface	B<1.0 ppm T, X & E <10.0 ppm individually	Each CAPNA <1.0 ppm Total CAPNA's <6.0 ppm

[1] Based on CAPNA's found in Proposition 65 list in addition to benzo(g,h,i)perylene.

DEPTH OF CONTAMINATED SOIL REMOVAL

Soil contamination in excess of the Tables 1 and 2 criteria extending deeper than 20 feet below ultimate finished grade or within five (5) feet of the groundwater table, whichever is shallower, and not exhibiting characteristics of material considered hazardous for disposal purposes, may be considered for non-remediation. Approval for non-remediation shall be by certification of the Fire Department and shall be issued with appropriate findings. The lateral and vertical extent of this contaminated material left in place shall be determined using Table 1 criteria. This extent shall be reported to the City and disclosed to subsequent property owners in a format approved by the Fire Department.

Surface structures within 100 feet of the lateral extent of the contaminated soil shall be built with vapor barriers in accordance with applicable City Specifications.

DISPOSITION OF STOCKPILED SOIL

Soil that is stockpiled on-site as a result of criteria applied above can be evaluated for reuse on-site. The reuse options may include, but are not limited to, on-site remediation and re-sampling to meet the criteria in Table 1 and/or 2, or reuse of the soil as road subgrade where applicable. Specifications for reuse of crude oil contaminated soil as road subgrade are identified on Page 5.

Soil that is planned for reuse on-site should be sampled at a frequency sufficient to adequately characterize the degree and composition of the contamination. A sampling plan shall be submitted to the Fire Department for approval prior to reuse.

ON-SITE REMEDIATION

Soil can be remediated on-site as long as it does not exhibit any characteristics of material considered hazardous for disposal purposes. On-site remediation must comply with all applicable State, County, Federal and City regulations. Remediation activities shall be performed within a designated area. A remediation plan shall be approved by the Fire Department.

After soil is remediated and reused, the surface of the designated remediation area shall be tested in accordance with provisions identified herein above. A testing plan shall be submitted to the Fire Department for approval as well as a final report, which shall summarize the remediation efforts and post remediation test results.

SITE ASSESSMENT AND LABORATORY SPECIFICATIONS

Analyses performed during site assessments of oil fields (other industrial or agricultural uses may require additional analysis) should include pH (EPA-9045), CAM Metals (total only, soluble if total exceeds 10 times STLC), Volatile Hydrocarbons (EPA-8240), Total Recoverable Hydrocarbons (EPA-418.1), Total Fuel Hydrocarbons (EPA-8015), Semi-Volatile Organics (EPA-8270) and Polychlorinated Biphenyls (EPA-8080).

Vertical limits of hydrocarbon contamination shall be assessed. Sampling shall extend to a depth sufficient to identify at least five (5) feet of uncontaminated soil or to a depth not greater than five (5) feet above the water table in cases where regional groundwater will be impacted by sampling operations.

If the landowner chooses to clean-up the site using screening criteria specified in Table 2, the laboratory analytical work may specify the re-analyses of samples exceeding screening criteria specified in Table 1. The shelf life for the samples must not be exceeded when the re-analyses are run.

The laboratory contract shall specify use of EPA Method 3630 as a clean-up procedure prior to soil analysis for CAPNA's using EPA-8270 if the 418.1 results show greater than 1,000 ppm.

Samples representative of a specific site should be obtained consistent with a Phase I historical review of the site. The sampling frequency will vary depending on potential for on-site contamination. Sampling should be targeted at identified or suspected contaminated locations on the site.

Sampling of areas not suspected to be contaminated shall be done on a random basis according to a Sampling Plan, which shall be approved by the Fire Department.

The Sampling Protocol, both in terms of site-specific targets and other random sampling, should be formulated in cooperation with the Fire Department. The burden of demonstrating soil clean-up to established limits of contamination shall be the responsibility of the land owner. The Fire Department's approval of a Sampling Protocol shall be required.

A Site Auditor, as identified on Page 6, shall be a requirement placed on all significantly large oil field properties and on smaller properties where a reasonable large number of contamination sources are deemed to remain unsampled following completion of the approved Sampling Protocol. The requirement for a Site Auditor shall be at the discretion of the Fire Department.

Soil sampling shall be carried out using protocols approved by the California Leaking Underground Fuel Tank Manual and/or the Orange County Health Department.

Analytical results, which may be inconsistent or anomalous when compared to other sample data taken as part of the site assessment shall be made a part of the record although the landowner shall have the option of providing additional samples to clarify inconsistencies. The number and location of these samples shall be determined by the landowner.

SPECIFICATIONS FOR REUSE OF CRUDE OIL CONTAMINATED SOILS AS ROAD SUBGRADE

Soils must meet criteria listed in Table 1 and 2.

Reused soils must meet compaction requirements.

Reused soils shall be placed directly beneath the asphalt cap and underlying aggregate to a maximum depth of four (4) feet below the road surface. Fills deeper than four (4) feet must be approved by the Fire Department based on sufficient findings.

Potable drinking water lines must be surrounded by clean sand or gravel and approved and inspected by the appropriate City departments before burial in the roadway.

A detailed set of drawings must be submitted to the City showing the plan view of reused soils, a cross section of the road base, locations of utility lines and thickness of clean sand and gravel pack placed around these lines. Soil analysis data for the road fill must also be submitted which shall verify compliance with the standards listed in Table 1 and/or Table 2.

SCOPE OF CONTRACT SPECIFICATIONS FOR ON-SITE AUDITING DURING GRADING ACTIVITIES

The Auditor shall be an independent environmental or geotechnical consulting company with adequate training to identify petroleum contaminated soils with field instruments and techniques described below. The Auditor shall be licensed by the State of California as a Registered Environmental Assessor.

Auditors will monitor grading activities for indicators that petroleum hydrocarbons may have contaminated the soils and shall be aware of the situations and procedures:

1. Soft spongy soils that become evident as heavy equipment travels over it.

2. Hydrocarbon odors emanating from the soil.

3. A reading of greater than 20 ppm on a hand-held organic vapor monitor (OVM) held three (3) inches from suspected contaminated soils. The meter shall be calibrated at least twice per day.

4. A small vial of solvent can be used to extract a small amount of soil. If the solvent becomes discolored, petroleum may be present.

If any of the indicators above are found, the Auditor shall devise a sampling program capable of ascertaining whether or not the waste is classified as hazardous. All sampling procedures shall be in accordance with the protocols established by LUFT and/or the Orange County Health Department. The contamination citing shall be made a part of the record and the Fire Department shall be immediately notified.

Sufficient samples shall be analyzed to characterize the vertical and horizontal extent of the potential contaminant. If samples exceed the screening criteria in Table 1, the soil must either be removed or reanalyzed and compared to criteria in Table 2. If the soil is determined to meet the Table 2 criteria, the soil can be incorporated into the fill. If it does not, the soil can be stockpiled for remediation and reuse or removed from the site.

A report documenting the observations made and samples obtained during grading shall be prepared. This report shall document compliance with the appropriate sections of Table 1 and/or Table 2 as applicable.

GLOSSARY AND EXPLANATION OF TERMS

Aromatic Hydrocarbons – Hydrocarbons that contain one or more Benzene ring. The name comes from the fact that many of them (e.g., Pentane, Hexane, Heptane, Octane, Toluene, Styrene, and Decane, etc.) have strong, pungent aromas. All of these products are part of the Hydrocarbon family.

BTX & E – **B**enzene, **T**oluene, **X**ylene, and **E**thylbenzene. All are members of the hydrocarbon family. The "8021" heading in Table 2 refers to the EPA test number used to determine the screening levels.

CAM – **C**alifornia **A**ssessment **M**anual. CAM is a manual or list that is used to identify heavy metals that are found in soil or ground water samples. These types of heavy metals are the result of end-stage hydrocarbon production. The CAM manual that is recognized in the petroleum chemical field lists 17 different metals:

1. Ag- Silver
2. As- Arsenic
3. Ba- Barium
4. Be- Beryillium
5. Cd- Cadmium
6. Cr- Chromium
7. Co- Cobalt
8. Cu- Copper
9. Mo- Molybdenum
10. Ni- Nickel
11. Pd- Palladium
12. Sb- Antimony
13. Se- Selenium
14. Ti- Thallium
15. V- Vanadium
16. Zn- Zinc
17. Hg- Mercury

CAPNA's – **CA** is in reference to the regulations by the State of California, and PNA refers to **P**oly**N**uclear **A**romatic Hydrocarbons. Polynuclear Aromatic Hydrocarbons are associated with the process of oil production and could potentially be found in the soil or ground water of oil production areas.

DTSC – **D**epartment of **T**oxic **S**ubstance **C**ontrol.

EPA – **E**nvironmental **P**rotection **A**gency.

Laboratory Tests – The City Specification refers to the types of laboratory tests that are conducted to determine the pH level, CAM Metals (total), and the Volatile Chlorinated and Aromatic Hydrocarbons in any given soil sample. The acronyms listed (EPA-9045 and EPA-8240) are the recognized tests used by the Environmental Protection Agency (EPA) to find the levels of the specified agent (e.g., pH, CAM Metals, and various types of hydrocarbons). Several areas of this City Specification refer to these various types of EPA recognized tests. Each test carries a numerical reference number.

Soil Clean-Up Standard

LUFT – **L**eaking **U**nderground **F**uel **T**ank Field Manual. This provides guidance on procedures to address environmental concerns for water quality protection from gasoline or diesel leaks. The LUFT Manual was intended to approximate many complex phenomena that occur during the transport of all type of hydrocarbons.

OVM – **O**rganic **V**apor **M**onitor (OVM). This is a hand-held monitor that provides the capability of monitoring hydrocarbon families, as well as organic matter.

PH – Refers to the relative level of acidity or alkalinity of a solution.

PPM – **P**arts **P**er **M**illion. Refers to the relative concentration of a chemical contained within the sample.

REA – **R**egistered **E**nvironmental **A**ssessor. REA's are registered by the Department of Toxic Substance Control Registered Environmental Assessor Program (DTSC) to conduct and direct site mitigation and investigation activities at hazardous waste and hazardous substance release sites.

STLC – **S**oluble **T**hreshold **L**imits **C**oncentrations. This is a method of extracting elements from soil or ground water samples looking for Metals and Trichloroethene.

TPH – **T**otal **P**etroleum **H**ydrocarbon. Refers to the full range of total petroleum hydrocarbons including benzene, toluene, ethylbenzene, xylenes and the full suite of volatile organic compounds that can be found in any soil or ground water sample.

VCH – **V**olatile **C**hlorinated **H**ydrocarbons. Substances that readily evaporate at normal temperatures and pressures (e.g. benzene, toluene, ethylbenzene, and xylene) are also referred to as VCH.

APPROVED: _____ DATE: _____
Duane S. Olson, Fire Chief

APPENDIX E

SOUTHERN CALIFORNIA EDISON DOCUMENT, EL SEGUNDO GENERATING STATION, AUGUST 27, 1968: OIL SEALING OF FUEL OIL TANKS

29.56.6

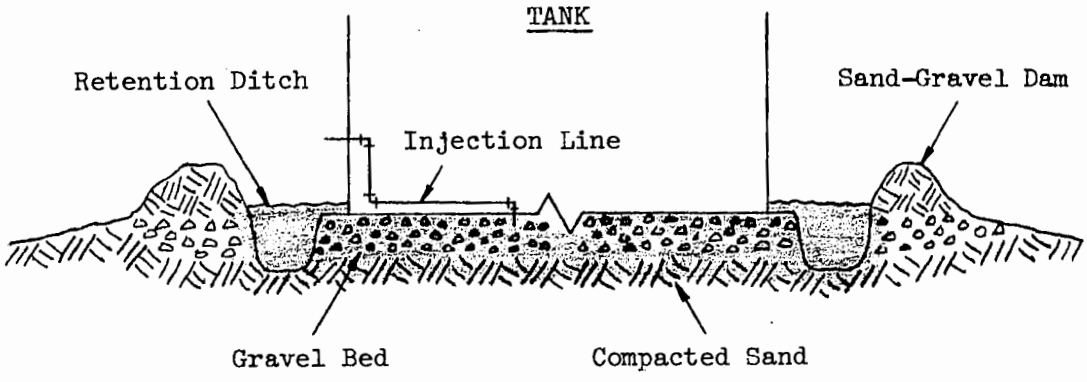
El Segundo Generating Station
August 27, 1968

SUBJECT: Oil Sealing of Fuel Oil Tanks

PURPOSE

Replacement of the tank bottom on the north and south fuel oil tanks was required after only three years of service. The failure of the tank bottoms was due to ineffective methods of protection from corrosion.

In order to protect the new tank bottoms from corrosion an oil seal was proposed. The seal was created by injecting oil under the tank bottom. The oil was to eliminate any air or moisture pockets under the tank and prevent any admission of air or moisture from the outside. By excluding these elements the possibility of corrosion is kept at a minimum. Below is a sketch diagraming the oil seal.



* Shaded portion indicates area saturated with seal oil.

The oil seal was suggested because of the long life experienced by tanks set in an oil base at Long Beach Generating Station. Additionally, the oil sealing procedure was incorporated with the method used to oil test tank bottoms. (See attached Appendix No. 1.)

RECOMMENDATIONS

Suggestions for future applications are as follows:

1. Build a dam which is more durable to the wear placed on it by the sealing process, i.e., hoses dragging over it, workmen walking on it. Possible materials for new dams are steel plate formed to make a large ring or a concrete block wall. These would be much stronger than a compacted earth dam.

2. Dig the ditch at a distance of 1-2 feet away from the tank perimeter.

3. Have a welder available while the injection lines are checked for leaks.

4. Have material and labor available if any leaks occur in the dam so repairs may be made immediately. This labor and material would be dependent on the type of dam used.

5. Keep injection of oil in continuous operation from start to finish.

METHOD

Installation of the injection lines was accomplished, by the contractor, immediately following the replacement of the tank bottom. (For details of the piping arrangement see Appendix, Drawings No. 1-4.) These lines entered the tank through the tank bottom at the indicated points on the drawings.

A ditch, 12 inches wide and 12 inches deep, was dug around the circumference, as close as possible to the tank periphery. Outside this ditch a dam was erected using a sand-gravel mixture. This dam was constructed 12 inches to 15 inches above the base of the tank. (See Appendix, Drawing No. 5.)

After completion of the dam the injection lines were tested for leaks by pumping diesel oil through them. A visual inspection of the lines was made and any leaks which appeared in the lines were welded shut. In total, nine leaks were repaired in the injection lines. These leaks occurred in the welded pipe joints and were a result of poor welding.

When all the lines were repaired the injection process was started. Oil was trucked in at a rate of approximately 160 Bbls. every three hours. (The delivery rate would be dependent on the size of the

injection pump which the contractor could supply.) The oil was transferred from the delivery truck to a rented 320 Bbl. storage tank and maintained at a temperature of approximately 190°F; it was then pumped through the injection lines, one at a time, starting on the inner radius. (See Appendix, Drawing No. 1.) The seal oil was injected continuously until a good saturation was obtained. Approximately one truck load of oil was pumped through each injection line, numbering a total of thirteen truck loads. When the specified amount of oil was pumped through each of the injection lines on the inner radius the process was started on the outer radius of injection lines. Each injection line was capped shut using a pipe cap after it was used. When all radial lines had been filled and capped it was attempted to pull a vacuum on the line going to the center of the tank. The attempt was unsuccessful so a truck load of oil was pumped through the line. The oil level in the retention ditch around the tank was brought to a height approximately 2 inches to 3 inches above the floor of the tank to assure complete sealing of the tank bottom.

During the entire injection process a continuous check was kept on the inside of the fuel oil tank for leaks in the tank floor. These leaks, when discovered, were marked with yellow marking chalk and welded shut after completion of the injection. Approximately twenty-five leaks were found in the welded lap-joints on the floor plates. All were due to poor welding.

After the sealing operation was finished, 1/4" tell-tale holes were drilled, using an air drill, in positions as shown on the attached Drawing No. 6. These holes were drilled to obtain an indication of the amount of coverage received from the sealing process. The tell-tales indicated very good coverage under the entire tank bottom. One small pocket of air was located but its effect is minimal. When the inspection was completed the holes were plugged with self-tapping boiler screws and seal welded.

Immediately following completion of the sealing process the interior of the fuel oil tank was inspected and the tank was prepared for refilling. Approximately 150,000 Bbls. of oil were transferred to the north tank from the south tank following the inspection.

The oil retention ditch around the tank was filled in with crushed rock to make access to the tank easier and safer.

DISCUSSION AND CONCLUSIONS

The entire job of preparing the ditch, the dam, testing the injection lines, injecting the seal oil and filling the ditch with crushed rock was done by one contractor. All necessary pumps, tools, manpower,

etc., were supplied by this contractor. By organizing the project this way it was easier to set work up, communications were better and problems solved readily.

The injection piping was installed by the firm which replaced the tank bottoms. All work involved on these lines was done according to state code.

During the injection process it was possible to obtain an indication of flow patterns from the injection lines by feeling the tank floor. The hot oil would heat the metal plate and a marked difference was observed between tank floor temperature where the oil was present or absent.

Coverage, indicated by the tell-tale holes drilled, was very complete. As was mentioned previously, only one small air pocket was encountered. Corrosion effects from this area may be considered negligible due to the fact that any oxygen or moisture entrapped will quickly be consumed. After this consumption an inert void will be present creating a seal similar to the oil.

Problems were encountered with leakage of the dam. Repairs of this compacted sand-gravel dike were made but more work is still needed to be done. The dam should be made to withstand normal wear from rain, wind and being traveled on.

The aforementioned work done to the north fuel oil tank is expected to produce a minimum amount of maintenance and a long equipment life.

APPENDIX

OIL TESTING TANK BOTTOMS

1. This appendix outlines the work to be done when oil testing tank bottoms.

2. Erect an earth dam 10" to 12" high around the circumference of the tank and around the outside of the water draw catch basin. Be sure the dam is made with wet earth and is well tamped. The dam may be formed against the shell provided small catch basins are provided to indicate the oil height around the tank. The catch basins shall be made at not over 30-foot intervals and no less than three shall be used.

3. Weld 2" pipe couplings to the bottom as shown on drawing SE-27419-0 and connect to the oil piping. Install a valve at each coupling so the flow of oil can be controlled.

4. Plug the drainage outlet in the water draw basin so no oil will leak into the drainage system.

5. Be sure the water draw valve is closed or the ell blinded.

6. Pump hot (approximately 150°F) fuel oil (150 to 160 vis at 220°F) under the bottom in the following manner:

   6.1 With all the valves on the test connections open, inject oil under the bottom until a 6" oil level has been established all around the outside of the tank. During the time the oil is being injected under the bottom, mechanics and equipment should be available at the tank to repair any leaks that might appear. This will minimize the amount of oil that has to be cleaned up in the event of a leak. The tank bottom must be clean and dry at the completion of the test.

   NOTE: If trouble is experienced in getting the oil to penetrate over the entire bottom, close the valve on all bottom connections except the one nearest the sector where oil has not appeared and continue pumping until uniform coverage is obtained. In particularly difficult cases, or when the bottom has been doubled and new sheets welded to the old inside the tank bottom angle, a series of 1/2 inch diameter tapped tell-tale holes drilled at intervals around the bottom periphery will indicate uniformity of test.

   6.2 When the oil level has been established all around the tank it shall be maintained for at least 8 hours for old bottoms and at least 4 hours for new bottoms.

7. When the oil level has been established, notify the Head Equipment Inspector who will assign an inspector to follow the test.

OIL TESTING TANK BOTTOMS

8. Dismantle and remove the oil piping when the test has been completed.

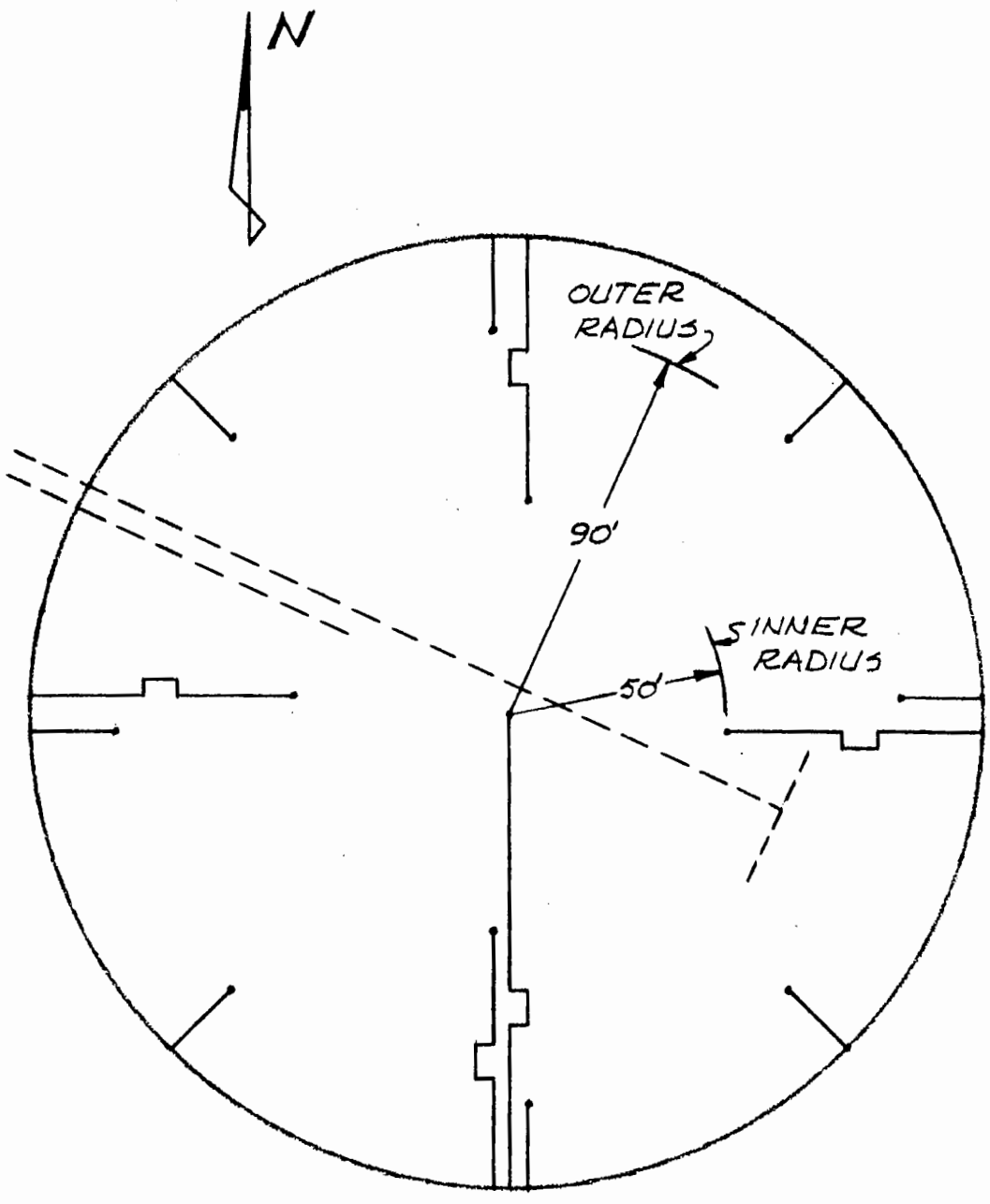
9. Install bull plugs in the test couplings welded to the bottom.

10. Pump the oil out of water draw basin and remove the drain plug.

11. Remove the earth dam from around the tank. Be sure surface drainage is re-established away from the tank shell and that the bottom angle is exposed all around.

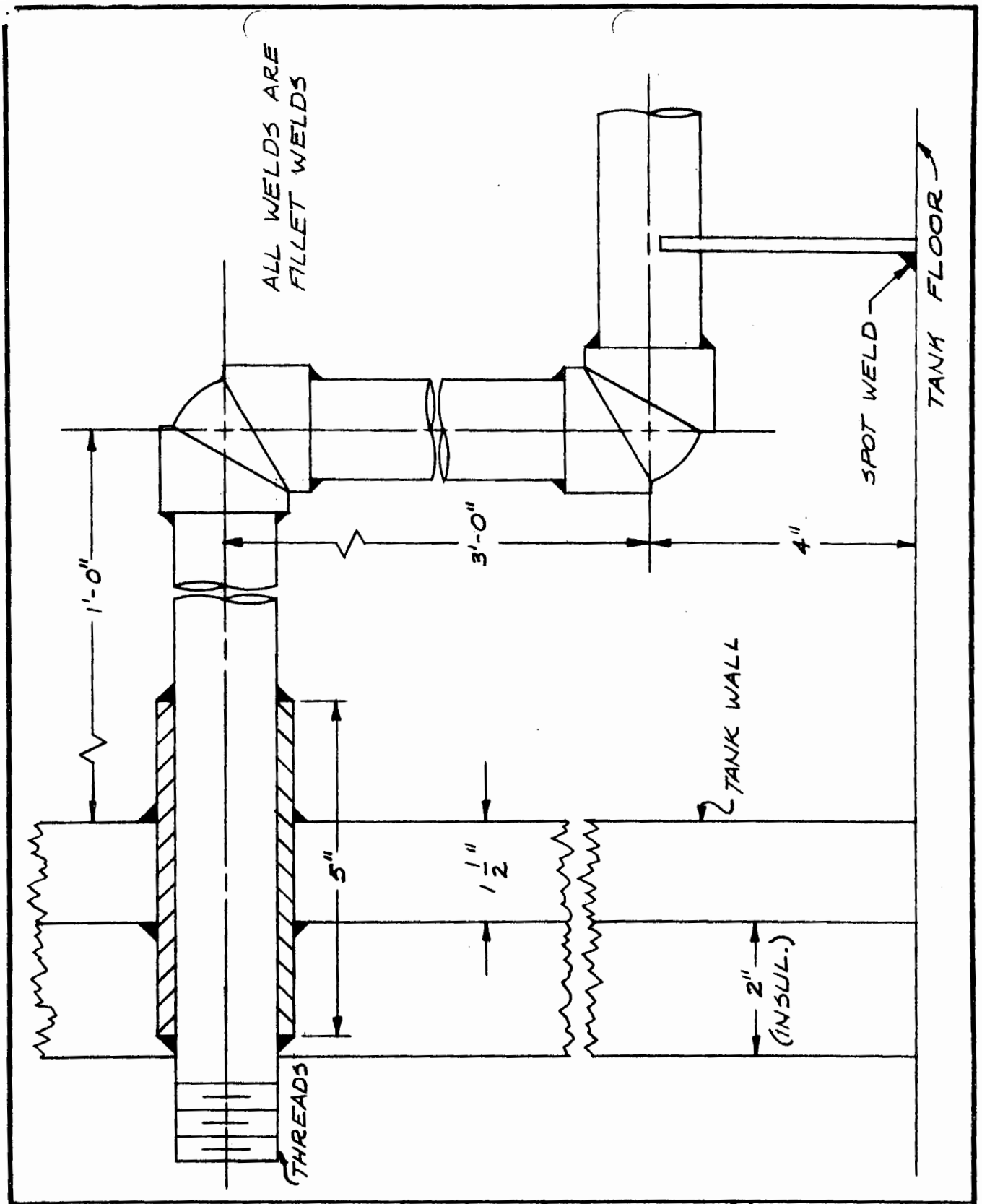
12. Clean up any oil spills around the tank and any oil spilled in the tank when removing the piping.

Revised 8/8/61



							Location EL SEGUNDO G. S.
							TANK BOTTOM OIL SEALING PIPING LAYOUT
No.	Revisions						
				EEG		8/1/68	
Approved	O.K.	O.K.	Ck'd.	Made	J.O. No.	Date	Southern California Edison SCE

FORM OD 934 PRINTED ON FREDERICK POST 177H



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							INJECTION LINE FOR OIL SEALING FUEL OIL TANK BOTTOM
No.	Revisions						
				EEG		7/25/62	
Approved	O.K.	O.K.	Ck'd.	Made	J.O. No.	Date	Southern California Edison SCE

Approved	O.K.	O.K.	Ck'd.	Made	J.O. No.	Date
				EEG		8/1/66

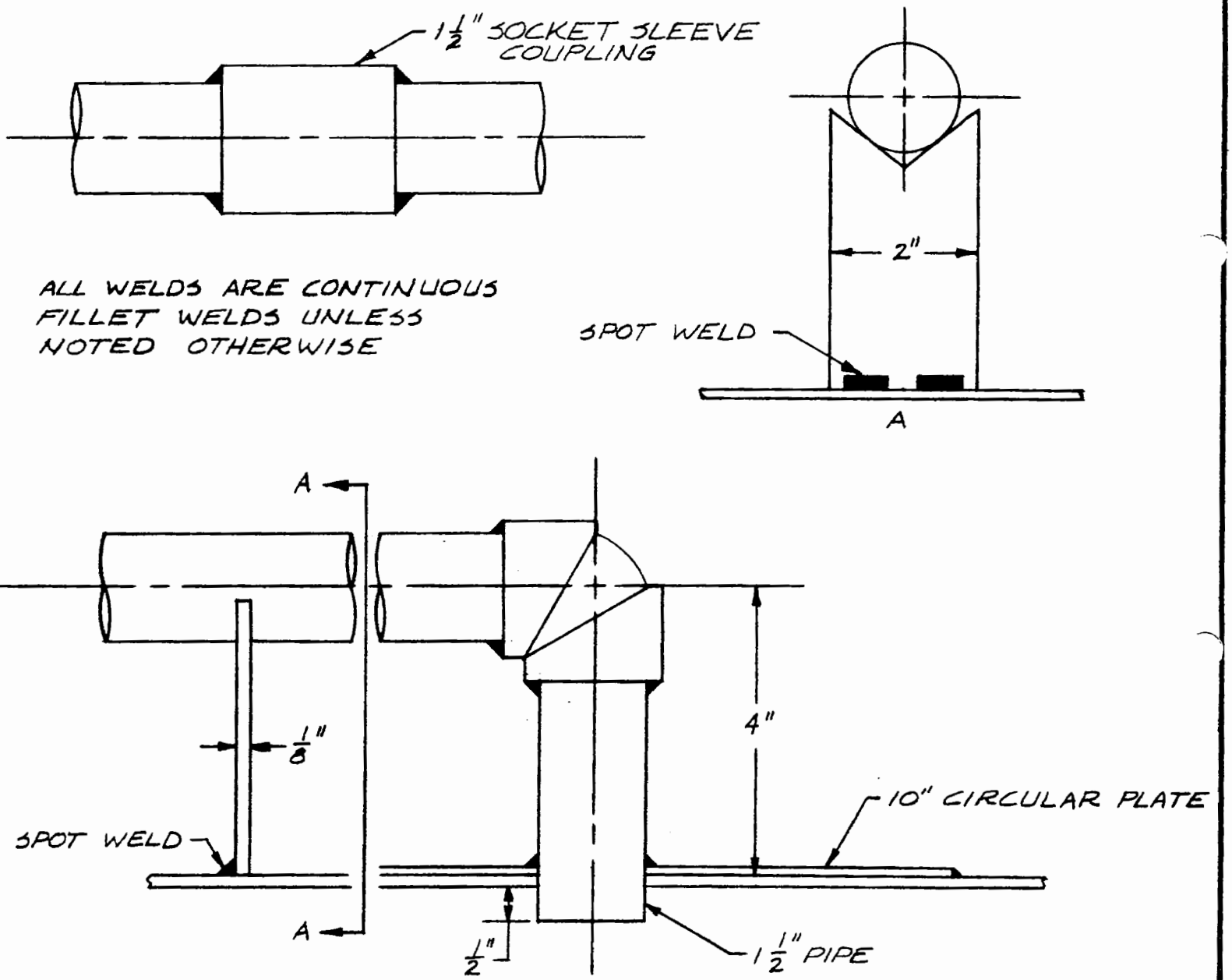
Revisions

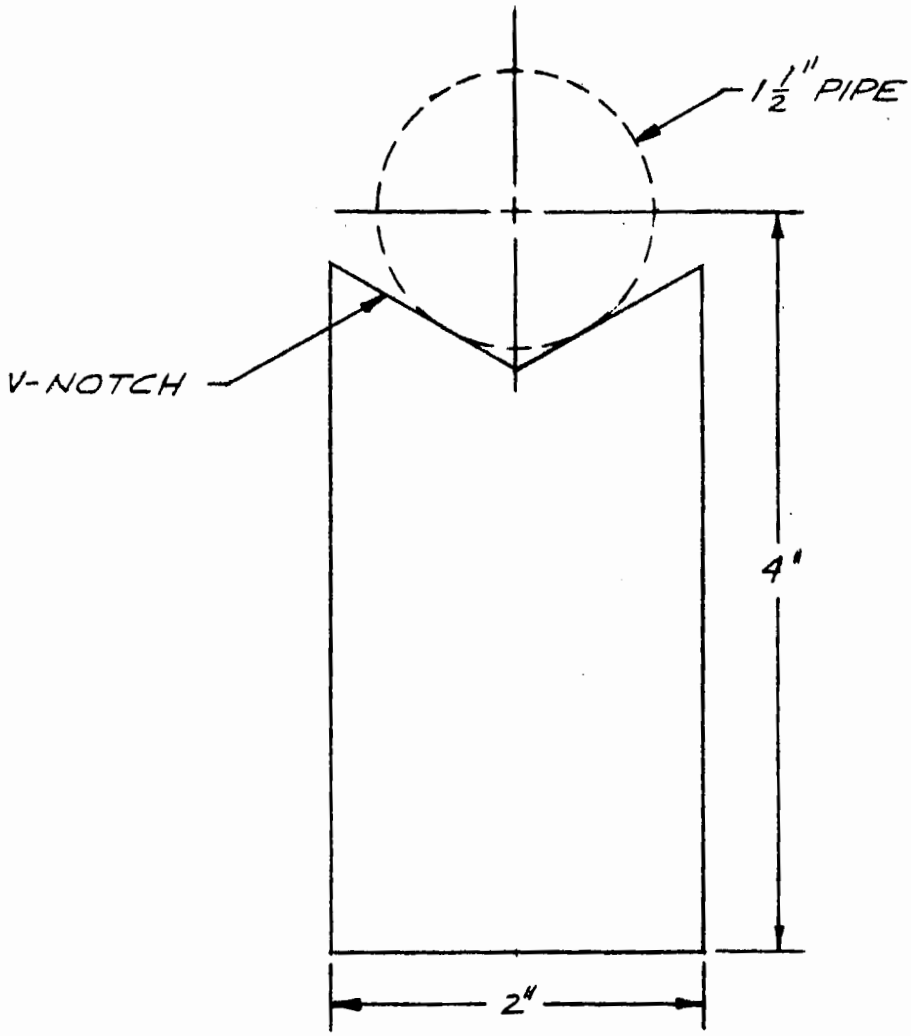
No.

Location EL SEGUNDO G. S.

INJECTION LINE FOR OIL SEALING FUEL OIL TANK BOTTOM

Southern California Edison SCE

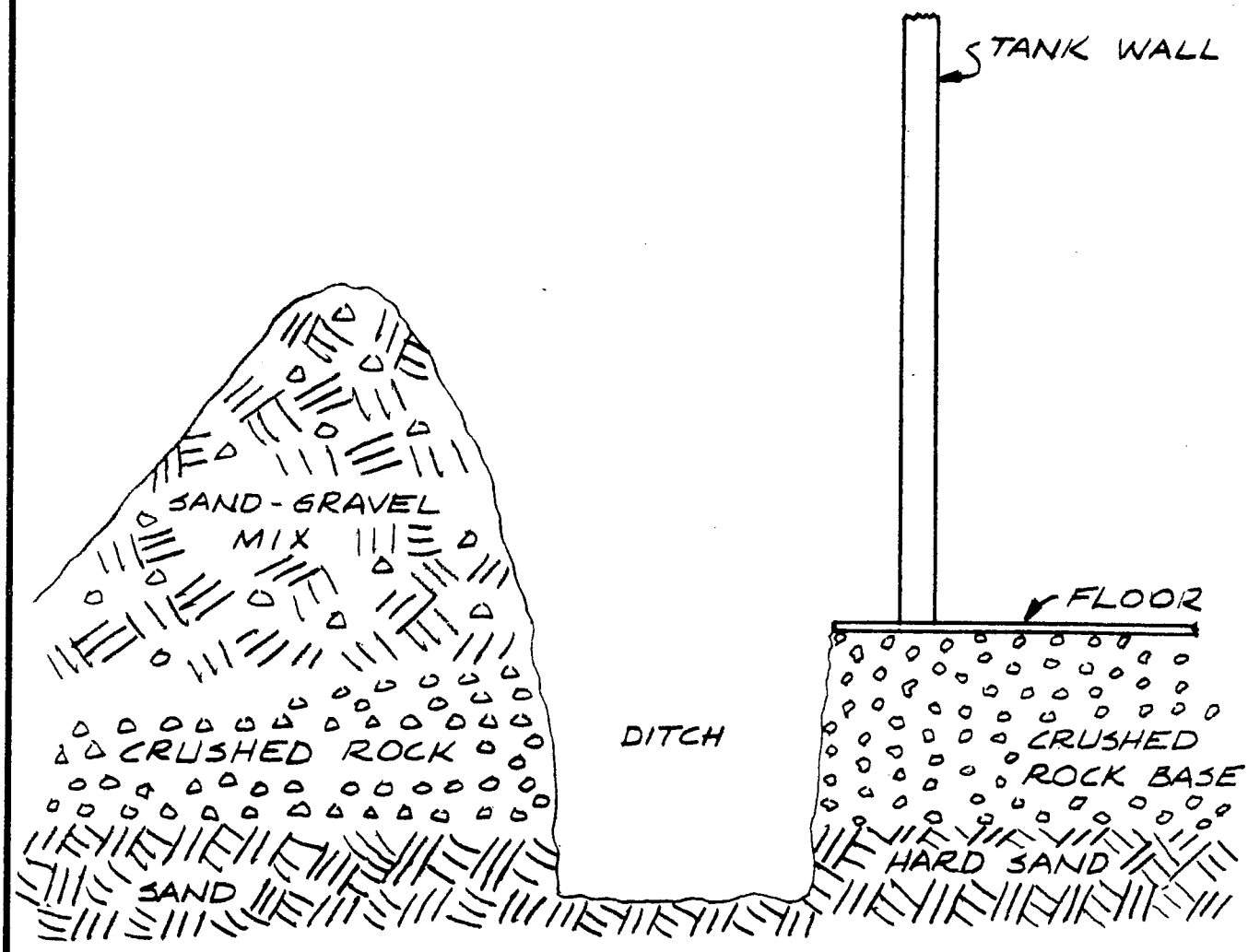




PART FABRICATED FROM $\frac{1}{8}$" PLATE

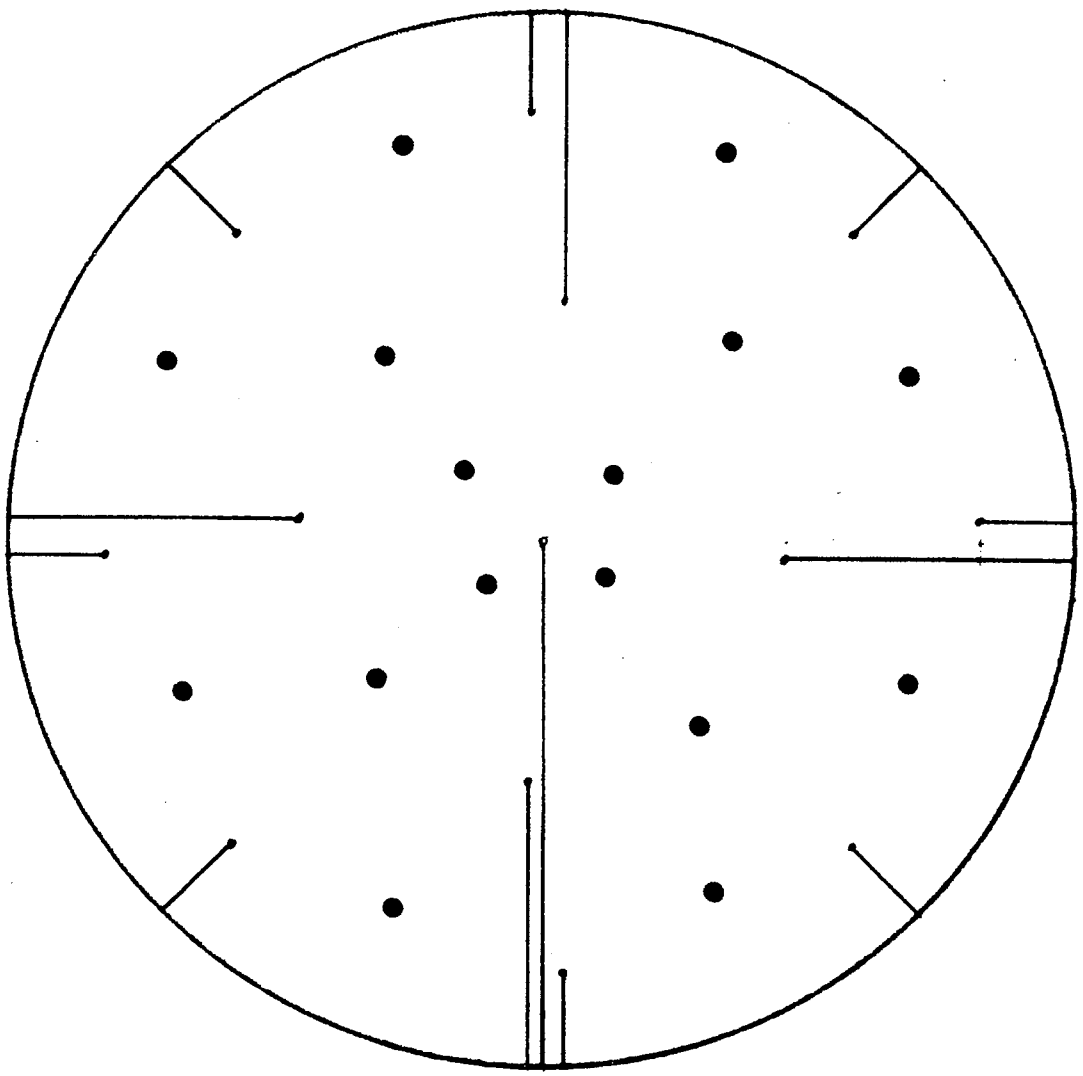
								Location EL SEGUNDO G. S.
								SUPPORT BRACKET FOR INJECTION LINES
No.	Revisions							
					EEG		8/1/68	
Approved		O.K.	O.K.	Ck'd.	Made	J.O. No.	Date	Southern California Edison SCE

FORM OD 884 PRINTED ON FREDERICK POST 177H



							Location EL SEGUNDO G.S.
							SECTION OF DITCH AND DAM
No.	Revisions						
				EEG		8/1/68	
Approved	O.K.	O.K.	Ck'd.	Made	J.O. No.	Date	Southern California Edison SCE

FORM OD 934 PRINTED ON FREDERICK POST 177H



No.	Revisions					
				EEG		8/1/68
Approved	O.K.	O.K.	Ck'd.	Made	J.O. No.	Date

Location EL SEGUNDO G. S.

LOCATION OF TELL-TALE HOLES DRILLED IN NORTH TANK

Southern California Edison SCE

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