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April 18, 2013

California Energy Commission
DOCKETED
12-AFC-02
TN # 70403
APR. 19 2013

**VIA HAND DELIVERY**

Ms. Felicia Miller, Siting Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

**Re: Huntington Beach Energy Project (12-AFC-02)**
**Geologic Resources: Final Site Investigation Report for Soil and Groundwater for the Huntington Beach Generating Station, dated May 1998**

Dear Ms. Miller:

On behalf of Applicant AES Southland Development, LLC and in response to Staff's March 14, 2013 informal request, enclosed herewith please find five (5) disks containing the "Final Site Investigation Report for Soil and Groundwater" dated May 1998 for docketing in the Huntington Beach Energy Project matter. Due to the size of the document, Applicant is serving the parties to this proceeding with a copy on disk only. A paper copy of the report will be provided to any party of this proceeding upon written request to the Applicant.

Respectfully submitted,

Kimberly J. Hellwig
Energy & Environmental Policy Specialist

KJH:jmw
Enclosure
cc: Proof of Service



Alaska California Idaho
Minnesota Oregon Utah Washington

**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA**
**1516 NINTH STREET, SACRAMENTO, CA 95814**
**1-800-822-6228 – WWW.ENERGY.CA.GOV**

***APPLICATION FOR CERTIFICATION FOR THE HUNTINGTON BEACH ENERGY PROJECT***

**Docket No. 12-AFC-02**

**PROOF OF SERVICE**
**(Revised 03/26/2013)**

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## DECLARATION OF SERVICE

I, Judith M. Warmuth, declare that on April 19, 2013, I served and filed copies of the attached Final Site Investigation Report for Soil and Groundwater dated May 1998. This document is accompanied by the most recent Proof of Service, which I copied from the web page for this project at: http://www.energy.ca.gov/sitingcases/huntington_beach_energy/index.html.

The document has been sent to the other parties on the Service List above in the following manner:

**(*Check one*)**

**For service to all other parties and filing with the Docket Unit at the Energy Commission:**

☒ I e-mailed the letter (only) to all e-mail addresses on the Service List above, and I personally deposited the disk in the First Class U.S. mail with first class postage to all Service List parties; **OR**

☐ Instead of e-mailing the document, I personally delivered it or deposited it in the US mail with first class postage to all of the persons on the Service List for whom a mailing address is given.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: April 19, 2013

Judith M. Warmuth

Judith M. Warmuth

**FINAL REPORT**

PRIVILEGED AND CONFIDENTIAL
ATTORNEY WORK PRODUCT

# SITE INVESTIGATION REPORT FOR SOIL AND GROUNDWATER HUNTINGTON BEACH GENERATING STATION HUNTINGTON BEACH, CALIFORNIA

*Prepared for*
Morrison & Foerster
555 West Fifth Street
Los Angeles, California 90013-1024

May 1998

Woodward-Clyde

Woodward-Clyde
2020 East First Street, Suite 400
Santa Ana, California 92705
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**URS**
**Santa Barbara Office**

# LETTER OF TRANSMITTAL

| | | | |
|---|---|---|---|
| **TO:** | AES Huntington Beach<br>21730 Newland Street<br>Huntington Beach, CA 92646 | **DATE** | May 7, 2001 |
| | | **SUBJECT:** | May 1998 – Site Investigation Report – Huntington Beach Generating Station – Woodward Clyde Consultants |
| **ATTN.:** | Terry Kunz | **PROJECT #** | 66-00000080.00 |

WE ARE TRANSMITTING ✓ **HEREWITH** ❑ **UNDER SEPARATE COVER** THE FOLLOWING:

Enclosed is one copy of the Final Site Investigation Report for Soil and Groundwater – Huntington Beach Generating Station, Huntington Beach, California. The report was issued in final in May 1998.

With regards to your question about the 1997 CH2M Hill Phase II Environmental Site Assessment, there is a Volume 2, however we have checked our files and do not have a copy of it. Essentially, Volume 2 is Appendix C, which contains the original laboratory analytical data, chain of custody forms, and data validation reports. All of the data is presented in the tables, which are included in Volume 1. So there is essentially no new information contained in Volume 2. However, it would be best to have a complete copy if the report were ever to be submitted to an agency for regulatory approval or closure. If you have any questions, feel free to call Jeremy Rowland or myself at the number below.

Regards,

Blake T. Clancy
Environmental Engineer

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**FINAL REPORT**

**PRIVILEGED AND CONFIDENTIAL**
**ATTORNEY WORK PRODUCT**

# SITE INVESTIGATION REPORT FOR SOIL AND GROUNDWATER HUNTINGTON BEACH GENERATING STATION HUNTINGTON BEACH, CALIFORNIA

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Morrison & Foerster
555 West Fifth Street
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May 1998

Woodward-Clyde

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Santa Ana, California 92705
97SB044

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## 1.1 SCOPE AND SITE DESCRIPTION

This Site Investigation Report for Soil and Groundwater (Report) specific to the Huntington Beach Generating Station (HBGS) has been prepared by Woodward-Clyde International-Americas (WCIA) for AES Enterprises, Inc. (AES). This Report will be presented to Southern California Edison Company (SCE) pursuant to the Asset Sale Agreement. SCE is the current owner of the HBGS, and sale to AES is pending. This Report is based substantially on the Workplan (January 1998) presented to AES and SCE (Woodward-Clyde, 1997a).

Phase I and II Environmental Site Assessments (ESAs) were conducted 1997 to evaluate soil and groundwater conditions at site features identified as recognized environmental conditions (RECs) or areas of potential concern (AOPCs) (CH2M HILL, 1997a). Woodward-Clyde was contracted by AES to investigate AOPCs that were not previously sampled or that previous subsurface investigations did not adequately address.

The primary objective of implementing the activities as described in this Report is to confirm the presence of "Existing Soils Contamination" as defined in the Asset Sale Agreement governing the AES purchase of the HBGS. Secondary objectives include obtaining additional data for establishing levels of contamination in soil and groundwater at the site at the time of the transfer of property ownership from SCE to AES, and conducting additional sampling for areas and/or media where sampling was not previously conducted, or to supplement existing data.

The HBGS is located at 21770 Newland Avenue, Huntington Beach, California, as shown on Figure 1-1. A site plan of the facility is shown on Plate 1 in Appendix A. The facility is located along the southern boundary of the City of Huntington Beach adjacent to the Pacific Ocean. The site is bordered by light industrial property and the ASCON Landfill to the north of the facility, residential and personal storage property to the west, SCE-retained wetlands and the Edison Pipeline and Terminal Company (EPTC) to the east, and the Huntington Beach State Park and Pacific Ocean to the south.

For purposes of this Report, the site is defined as the portion of the property being purchased by AES. AES property is highlighted in yellow on Plate 1 in Appendix A and the portions of the property that are being retained by SCE are highlighted in red.

The HBGS has been operated by SCE as an electric generating station since June 1958. The facility is comprised of five dual-fuel-fired electric power generating units. The predominant structures located on the property include steel aboveground storage tanks (ASTs) for petroleum products; process units that include boilers, tanks, and various mechanical equipment and vessels; retention basins; office buildings; warehouses; and maintenance shops. The powerblocks contain various structures, such as battery rooms, lube oil rooms, elevators, various sumps, and control rooms and equipment, such as boilers, pumps, pre-heaters, blowers, and turbines (CH2M HILL, 1997a).

The site of the HBGS was previously a low lying area used for the Huntington Beach Airport and a wetlands area. This area was graded during the mid-1950s and expanded through the 1960s to provide the current operating configuration. The area occupied by the light industrial area to the north and the northern portion of the generating station have been reported to be part of a former operating oil field. Operating oil wells are reported to the southwest of the facility, and have been in that location since the mid-1920s. Residential and storage properties to the west of the HBGS have existed since the late 1950s and early 1960s. The ASCON Landfill includes a small area of oil field development and appears to have been present since at least the mid-1960s (CH2M HILL, 1997a).

## 2.1 INTRODUCTION

The following section is a summary of the Phase I and Phase II ESA findings (CH2M HILL) for each AOPC and REC identified at HBGS. Table 2-1 lists each AOPC and REC, the Phase I and Phase II investigation work performed, and the Phase II conclusions by CH2M HILL. Sample locations from previous investigations are shown on Plate 1 in Appendix A.

## 2.2 PREVIOUS SITE AREA INVESTIGATIONS

### 2.2.1 ASCON Landfill

The ASCON Landfill is a state Superfund site located to the north of the HBGS. Records indicate that groundwater contamination exists at the site and there is the potential for contaminated groundwater to have migrated toward HBGS. CH2M HILL reported that the groundwater flow is away from HBGS.

CH2M HILL advanced two soil borings and analyzed groundwater for volatile organic compounds (VOCs) and Total Petroleum Hydrocarbons-diesel range (TPH-d) in one sample. Neither VOCs nor TPH-d were detected above detection limits. CH2M HILL concluded that there is no evidence that groundwater near HBGS has been impacted by TPH-d or VOCs from the ASCON Landfill. No further action was recommended.

### 2.2.2 Wetlands Area

The historical aerial photograph review performed by CH2M HILL revealed activity in the wetlands area south of the HBGS during the 1970s. SCE was and is unaware of the cause of this activity.

CH2M HILL collected four surface samples along the fence line in areas of surface water runoff to the wetlands. Samples were analyzed for TPH-d only. TPH-d was detected up to 131 grams per kilogram (g/kg).

### 2.2.3 Retention Basins

Subsurface investigation of surface impoundments, including retention basins, is currently being conducted by SCE in response to a corporate-wide negotiated order from the Department of

Toxic Substance Control (DTSC). According to CH2M HILL in the Phase I ESA, past use of the retention basins warranted the ongoing investigation. Because of the ongoing soil and groundwater sampling at these locations, additional investigation or assessment was deemed outside the scope of the Phase II ESA.

In March 1998, SCE provided results of its ongoing investigation of the retention basins and Boiler Cleaning Basin at HBGS. The annual groundwater monitoring report, dated February 4, 1998, is presented in Appendix A. The report concluded that based on the results of four quarters of sampling and testing, that there is good indication that the retention basin has experienced some leakage, while there is a weak indication that the BCCB has allowed leakage.

### 2.2.4 Aboveground Storage Tanks

In the Phase I ESA, CH2M HILL indicated that SCE concluded that contamination exists at all aboveground storage tank (AST) locations at the HBGS. There are two tank areas at HBGS; the SCE and EPTC area located to the northeast of the main facility and the fuel and distillate storage tanks located on the northern section of the site. In the Phase I ESA, CH2M HILL states that the presence of the oil in the subsurface soil at the AST areas is considered a recognized environmental condition.

#### *2.2.4.1 SCE and EPTC Tanks*

The EPTC tank farm consists of three 500,000 barrel storage tanks. SCE completed a baseline tank study of the EPTC tanks and the displacement oil tanks at HBGS in February 1996. SCE concluded that the TPH by U.S. Environmental Protection Agency (EPA) Method 418.1 (ranging from nondetect to 7,500 milligrams per kilogram [mg/kg]) was from oil being sprayed on the soil for corrosion protection.

CH2M HILL recommended no further action at this time and that agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

Woodward-Clyde did not review SCE's baseline assessment (SCE, 1996) of the EPTC tanks. The Phase II ESA analysis did not include SVOCs and only four samples were analyzed for VOCs, metals, PCBs, and benzene, toluene, ethylbenzene, and xylenes (BTEX).

#### 2.2.4.2 HBGS ASTs

As part of the Phase II ESA, CH2M HILL sampled at 19 locations around the north, south, east, west, and distillate tanks. All soil samples were analyzed for TPH-d and one soil sample was analyzed for VOCs. TPH was detected up to 65,000 mg/kg in soil near the west tank. TPH was in groundwater up to 2.6 milligrams per liter (mg/L). VOCs were detected in soil. CH2M HILL recommended no further action at this time and that agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

### 2.2.5 Concrete Degreasing Pit

The Phase I ESA (CH2M HILL, 1997a) indicated that there were two former concrete degreasing pits at HBGS. One pit was located in the area of the retention basin and another at the machine shop area near the existing underground storage tanks (USTs). The two concrete pits were reported to have been filled with an inert material and abandoned in place. Because there was no regulatory oversight or sampling during abandonment activities, the concrete degreasing pits are identified as AOPCs.

Neither degreasing pit was investigated as part of the Phase II ESA, because they were included in the SCE investigation of the retention basins.

### 2.2.6 Switchyard Perimeters

Two switchyard areas, the 66 kilovolt (kV) and 220 kV switchyards located at the HBGS were investigated as part of the Phase II ESA. Two shallow borings were drilled at each switchyard and soils were sampled near the ground surface and at about 3 feet below ground surface (bgs) for TPH-d and PCBs. PCBs were not detected in the samples and TPH-d was detected at concentrations up to 32 mg/kg. CH2M HILL recommended no further action at this time and that agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

There was a reported spill of transformer oil near the 220 kV transformers from the rupture of the Number 4 Auxiliary transformer in 1984.

### 2.2.7 Primary Fuel Pumping Area

The Phase I ESA documented that oil spills have occurred at the primary fuel pumping area and distillate fuel pumping area. These spills were reported to have been investigated and cleaned up. However, residual contamination reportedly exists in the subsurface at both locations (CH2M HILL, 1997a).

For the Phase II ESA, two borings were installed and soils were sampled and analyzed for TPH-d and one groundwater sample was analyzed for TPH-d. TPH-d was detected in soil (34 mg/kg) and in groundwater (2.5 mg/L). CH2M HILL recommended no further action at this time and that agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

### 2.2.8 Peaker Unit Pumping Area

The peaker unit pumping area was investigated by SCE in 1992. Five soil borings were advanced in the area. Soil samples were analyzed for TPH and BTEX. TPH and BTEX were detected in soil samples reportedly at low concentrations. Two groundwater samples were collected and analyzed for TPH and BTEX. Benzene, toluene, and xylene were detected in groundwater.

For the Phase II ESA, two soil borings were advanced near the peaker unit. Soil samples were analyzed for TPH-d and select samples for VOCs. TPH-d was detected in soil at low concentrations (34 mg/kg) and in groundwater the total TPH-d was 2.5 mg/L. VOCs were not analyzed for in groundwater during the Phase II ESA. CH2M HILL recommended no further action at this time and that agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

### 2.2.9 Power Block Perimeters

During the Phase I ESA, oil staining was observed on the floors of the powerblocks around oil containing equipment such as lube oil pumps and tanks.

Two powerblock areas were investigated as part of the Phase II ESA. Four soil borings for each powerblock area and a total of three groundwater samples were collected and analyzed for TPH-d. Select samples were analyzed for metals and VOCs. Five metals exceeded Maximum Contamination Levels (MCLs) in groundwater and TPH-d in groundwater was 1.4 mg/L. CH2M

HILL recommended no further action at this time and that agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

### 2.2.10 Peaker Unit

The Peaker Unit was previously investigated by SCE in 1992 along with the Peaker Unit Pumping Area (2.2.8). Five borings were advanced and soil samples were analyzed for TPH and BTEX. TPH was not detected above the reporting limits in any of the five samples and low concentrations of benzene, toluene, and xylene were detected in groundwater.

Two soil borings were advanced in the area for the Phase II ESA. Soil samples were analyzed for TPH-d, VOCs, and metals. "De minimis" conditions were reported; total TPH-d was reported at 63 mg/kg and 0.67 mg/L for soil and groundwater, respectively. VOCs and elevated metals were detected in soil samples. VOCs were not detected in groundwater but elevated metals were reported. CH2M HILL recommended no further action for the Peaker Unit.

### 2.2.11 Transformers

The Phase I ESA documented that the transformers contain less than 50 parts per million (ppm) PCBs. No records of releases of oil were discovered in the Phase I ESA.

Five transformer areas were investigated as part of the Phase II ESA. Wipe samples, two soil samples, and a groundwater sample were collected. PCBs were nondetect in the wipe and soil samples. "De minimis" conditions were reported for soil and groundwater. Total TPH-d in soil was reported up to 2,127 mg/kg. CH2M HILL recommended no further action.

### 2.2.12 Pipelines

According to the Phase I ESA (CH2M HILL, 1997a) subsurface and aboveground pipelines have been used to convey fuel oil from the tanks to the powerblocks. SCE indicated that the pipelines have not been leak tested since installation. Therefore, soil around the pipelines at the HBGS was identified as an AOPC.

No samples were collected for the Phase II ESA because there was no visual evidence that the pipelines had leaked. CH2M HILL recommended no further action for the pipelines.

### 2.2.13 Hazardous Waste Storage Area

The Hazardous Waste Storage Area is located at the northern end of the site and was identified as an area where potential releases may have resulted in subsurface contamination. Two soil samples and two groundwater samples were analyzed for TPH-d, VOCs, PCBs, and metals. Low concentrations of TPH-d were reported in soil and groundwater. Four CAM metals were detected above MCLs in groundwater. CH2M HILL recommended no further action at this time and that agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

### 2.2.14 Oil/Water Sump

The oil/water sump was investigated during the Phase II ESA due to the potential for leaks to the subsurface. One boring was advanced and soil samples were collected at 9 feet bgs and 10.5 feet bgs and analyzed for TPH-d. "De minimis" levels (total TPH-d at 109 mg/kg) were reported. CH2M HILL recommended no further action at this time and that agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

### 2.2.15 Secondary Fuel Pumping Area

The secondary fuel pumping area was investigated during the Phase II ESA due to the possibility of leaks resulting in subsurface contamination. Two soil borings were advanced near the secondary fuel pumping area and samples were analyzed for TPH-d and one sample was analyzed for VOCs. One groundwater sample was analyzed for TPH-d. Low levels of TPH-d was detected in soil and 0.62 mg/L was detected in groundwater. VOCs were not detected. CH2M HILL recommended no further action for the secondary fuel pumping area.

### 2.2.16 Former Concrete Sump Near Retention Basin

The former concrete sump near the retention basin is considered "closed-in-place" by SCE, based on a phone conversation between SCE's representative and Orange County Health Department. SCE pumped out the sump and filled it with concrete slurry.

One soil boring was advanced near the former sump and soil samples were collected at 1 foot bgs and 8 feet bgs. Samples were analyzed for TPH-d, metals, and VOCs. Total TPH-d was 167 mg/kg and three metals in groundwater exceeded MCLs. CH2M HILL recommended a

screening evaluation to demonstrate the safety of the site for industrial use and/or obtain a letter from a regulatory agency that confirms no risk management or remediation is needed for continued industrial use.

### 2.2.17 Peaker Unit Sump

The peaker unit sump was investigated during the Phase II ESA due to the possibility of potential leaks from the sump. One soil boring was advanced and soil samples were analyzed for TPH-d, VOCs, and metals. TPH-d was detected up to 139 mg/kg. and elevated concentrations of metals were reported. VOCs were not detected. CH2M HILL recommended no further action at this time and that agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

### 2.2.18 Historic Oil Reservoir at Units 3 and 4

The historic oil reservoir at Units 3 and 4 was investigated during the Phase II ESA due to the possibility of potential leaks. Three soil borings were advanced and analyzed for TPH, metals, and VOCs. TPH-d was detected up to 12,000 mg/kg. VOCs were detected in soil and groundwater. CH2M HILL recommended a screening evaluation to demonstrate the safety of the site for industrial use and/or obtain a letter from a regulatory agency that confirms no risk management or remediation is needed for continued industrial use.

### 2.2.19 Oil/Water Separator and Sump at Units 1 and 2

The oil/water separator and sump at Units 1 and 2 were investigated during the Phase II ESA due to the possibility of potential releases. One soil boring was advanced and analyzed for TPH-d, metals, and VOCs. TPH-d and VOCs were not detected in soil samples. Groundwater was not collected at this location. "De minimis" concentrations in soil were reported. The investigation was limited due to access restrictions. CH2M HILL recommended no additional sampling or remediation at this time and that agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

### 2.2.20 Oil/Water Separator and Sump at Units 3 and 4

The oil/water separator and sump at Units 3 and 4 were investigated during the Phase II ESA due to the possibility of potential releases. Two soil borings were advanced and analyzed for TPH-d,

metals, and VOCs. TPH-d were reported and some elevated metals were detected. VOCs were not detected in soil samples. "De minimis" concentrations in soil were reported; however, TPH-d was reported up to 12,000 mg/kg. Groundwater samples were not collected at this site. CH2M HILL recommended no additional sampling or remediation at this time and that agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning.

### 2.2.21 Existing and Former Underground Storage Tank Location

There is one UST area that was investigated as part of the Phase II ESA. Two soil borings were advanced and analyzed for TPH-d, TPH-g, and BTEX. Soil samples were collected from 3.5 feet bgs and 6.5 feet bgs. TPH-g and BTEX were not detected in the soil sample, however, TPH-d were reported. One groundwater sample was collected and analyzed for TPH-d, TPH-g, and BTEX. Low concentrations of TPH-d were detected. TPH-g and BTEX were not detected in the groundwater sample. "De minimis" concentrations of TPH-d were reported in soil; however, TPH-g was reported at 0.88 mg/L in groundwater. CH2M HILL recommended no further action.

## 3.1 GEOLOGY

### 3.1.1 Regional Geology

The HBGS is located in the southern section of the central block of the Los Angeles Structural Basin, which forms a transition between the northern portion of California's Peninsular Ranges Geologic Province and the southern portion of the Transverse Ranges Geologic Province (Yerkes et al., 1965). The Peninsular Ranges Province is characterized by northwest-trending mountains and valleys formed largely by a system of active right-lateral, strike-slip faults with a similar trend. The Transverse Range Province is characterized by east-west trending mountains and intervening valleys that were formed by a series of east-west trending fold belts and active left-lateral reverse and thrust faults. Over geologic time, the region has been influenced by fluvial, marine, and littoral depositional processes as sea levels have risen and fallen and as tectonic forces have changed the regional landscape.

The predominant structural feature of the central block is the northwest-trending, doubly plunging synclinal trough underlying its central part. Basement rocks of the deepest portion of the basin are as much as 31,000 feet sub-sea level (Yerkes et al., 1965). The southwest flank of the trough rises steeply in the area of the Newport-Inglewood Structural Zone (NISZ) to a basement rock depth of 14,000 feet sub-sea level. The NISZ is characterized by a series of northwest-trending folded sedimentary units and off-set predominantly right lateral strike slip faults (and associated normal and reverse faults) passing on-shore at Newport Beach and continuing to the vicinity of Santa Monica (Barrows, 1974).

The NISZ is expressed at the surface by a series of low hills and mesas and in the subsurface by the development of corresponding oil fields (Barrows, 1974). The HBGS is situated over the southern end of the Huntington Beach Oil Field. The structural zone is seismically active and is associated with the 1933 Long Beach earthquake. Subsurface investigations at the ASCON Landfill just to the northeast of the HBGS indicate that the subsurface trace of one element of this structural zone passes near the northeast corner of the SCE tank farm. Due to the proximity of the NISZ and other known seismically active faults in the Los Angeles area, the nature of the sediments below the site, and the high water table, the ground at HBGS would be prone to liquefy under conditions of long duration strong seismic shaking.

### 3.1.2 Local Geology

The HBGS is situated between the Huntington Beach and Newport Mesas in a generally flat lowland area referred to as the Santa Ana Gap (the Gap), a portion of the Orange County Coastal Plain. USGS topographic maps indicate that the HBGS is between 6 and 10 feet above mean sea level (msl). The creation of the Gap began in the late Pleistocene and continued until the last glacial period. The combination of the lowered sea level and accelerated fluvial erosion produced a valley about 200 feet deep. At the end of the glacial period, the sea level began to rise and the river backfilled the eroded channel. Recent deposition in the Gap has occurred on an influenced floodplain on which alluvial deposits interfinger with lagoonal marsh and beach deposits (CH2M HILL, 1997b). The HBGS is underlain by Recent near-coastal alluvium deposited by the Santa Ana River and underlying units of the Pleistocene age.

Beneath the Recent deposits, the site is underlain by a thick, interbedded sequence of Quaternary clays, silts, sands, and gravels (Yerkes et al., 1965; Poland et al., 1956). These Quaternary deposits are underlain by Tertiary sedimentary rocks, including claystones, siltstones, and sandstones. Schist and gneissic basement rocks lie beneath the sedimentary units. The youngest and uppermost deposits within the Quaternary sequence consist of late Pleistocene sands that form the water bearing zones beneath the site. A sequence of Tertiary marine and continental formations, which were originally deposited in the subsiding Los Angeles Basin and which have been folded and locally faulted, lie beneath the Pleistocene deposits. This complex structure present in the Tertiary rocks resulted in the formation of traps for the extensive oil reserves underlying many parts of the Los Angeles Basin.

## 3.2 HYDROGEOLOGY

The DTSC has jurisdiction over remediation activities at the HBGS. With regard to groundwater issues, HBGS is situated on the seaward side of an Orange County Water District (OCWD) hydraulic barrier project called the Talbert Barrier Project. In November 1982, the OCWD published a hydrogeologic report detailing various aspects of regional and local hydrogeology associated with the Talbert Barrier Project. The report, entitled "Talbert Barrier Status Report, 1979-1981," was prepared by Mr. James Fairchild, OCWD Geologist, and Mr. James Reily, OCWD Assistant Engineer. Relevant report information has been summarized below and is presented as a regional and local hydrogeologic profile of the site.

### 3.2.1 Regional Hydrogeology

The HBGS is located on the southwest section of the Orange County coastal plain within the Gap. The Orange County coastal plain is the southeastern portion of a rather large, low-land plain that extends from near Irvine at the southeast to near Beverly Hills at the northwest. In Orange County, the coastal plain is bordered on the east by foothills of the Santa Ana Mountains, on the south by the San Joaquin Hills, and on the west by the Pacific Ocean.

The Talbert Barrier Project maintains a seaward hydraulic gradient in underlying aquifers by the injection of potable water under pressure. The purpose of the project is to prevent sea water intrusion into the potable water supplies of the Los Angeles Basin. Although the NISZ is reported to act as a barrier to groundwater movement in deeper aquifers, it is believed that the structural zone is not water tight across the upper most aquifers. The barrier project generally consists of a water supply system and a series of closely spaced injection wells, extraction wells, and numerous monitoring wells.

In order to maintain a seaward gradient of the groundwater surface, a pressure ridge is created by injecting a combination of treated municipal wastewater and demineralized water or groundwater into a line of closely spaced wells that are perforated in aquifers subject to seawater intrusion. There are 23 injection wells placed across the Gap along Ellis Avenue, spaced approximately 600 feet apart. Preliminary geologic studies indicated that a variability in the hydraulic characteristics of the aquifers would require different injection pressures in the various aquifers. In order to accomplish this, each well was especially designed to pump to specific aquifers at various rates of flow.

The results of pump tests performed in the past indicated that the average permeability of the Talbert aquifers is approximately 1,000 gallons per day per square foot. With an assumed porosity of 30 percent and an injection rate sufficient to maintain a gradient of 5 feet per 1,000 feet, it is estimated that it would take water approximately 7.5 months to travel 500 feet along the Talbert aquifer.

Preliminary hydrologic studies indicated that at times of severe overdraft on the basin, it would be easier to maintain a seaward piezometric gradient if there was a hydraulic trough located seaward of the line of injection wells. In order to create a hydraulic trough, seven extraction wells were advanced into and screened in the Talbert aquifer. The wells can be pumped at rates

up to 1,000 gallons per minute and the brackish water produced is discharged into flood control channels for disposal to the sea.

Approximately 30 observation wells (M and SA-Wells) are utilized to monitor groundwater conditions in the Gap and to measure the effects of barrier operations. Some wells are single casing installations perforated only in the Talbert aquifer. Fifteen of the observation wells are multi-casing, similar in construction to the injection wells, except that the casings are 4-inch-diameter polyvinyl chloride (PVC) plastic.

As a channel to the larger interior groundwater basin, the Gap is very responsive to groundwater fluctuations in the basin interior. Groundwater levels in the basin interior are normally lower in the summer months of August and September and higher during March and April. The interior basin responds quite rapidly to changes in overall pumping demand and recharge, as most of the basin is an artesian system.

### 3.2.2 Local Hydrogeology

Previous investigations indicate marine sands and gravel of the Talbert water-bearing zone extend from about 15 to 180 feet bgs below HBGS (CH2M HILL, 1997b). Scattered clay lenses up to 10 feet thick occur within the fluvial and marine deposits. Groundwater measurements collected during the Phase II ESA investigation ranged between 5.8 and 9.0 feet bgs. These measurements were shallower than those measured during Woodward-Clyde's investigation, which were between about 8 and 15 feet bgs. The groundwater gradient within the Talbert Aquifer below the site is variable and a function of several factors: tidal fluctuations along the coast and adjacent wetlands area, recharge to the groundwater from the Huntington Beach Channel adjacent to the north end of the site, and variability of lithologic units in the near surface sediments. The regional groundwater gradient is to the southwest (CH2M HILL, 1997b).

## 4.1 INTRODUCTION

The Phase I and Phase II ESAs, and the Woodward-Clyde Workplan identified a total of 21 AOPCs. Based on the discussion/rationale presented in the Woodward-Clyde Workplan, the following areas were not considered for additional sampling under this scope of work:

| Area | Description |
|---|---|
| 1 | ASCON Landfill |
| 2 | Wetlands Area |
| 4a | SCE / EPTC Above Ground Storage Tanks |
| 4b | SCE Above Ground Storage Tanks |
| 7 | Primary Fuel Pumping Area |
| 11 | Transformers |
| 12 | Pipelines |
| 13 | Hazardous Waste Storage Area |
| 14 | Oil/Water Sump Near the Displacement Tanks |
| 15 | Secondary Fuel Pumping Area |
| 17 | Peaker Unit Sump |
| 21 | Existing and Former UST Location |

One other site area (Site 3, Retention Basins) has also been deferred from further investigation until additional documents can be obtained from SCE and reviewed. Due to the compressed timeframe for production of this report, documentation requested from SCE was either received too late for sampling to occur or has not been received as of the date of this report. Further due diligence of this site may be recommended based on a review of the additional data.

The remaining sites where additional field investigations have been performed include the following:

| Area | Description |
|---|---|
| 5 | Concrete Degreasing Pit |
| 6 | Switchyard Perimeter |
| 8 | Peaker Unit Pumping Area |
| 9 | Power Block Perimeters |
| 10 | Peaker Unit |
| 16 | Former Concrete Sump |
| 18 | Historic Oil Reservoir Units 3 and 4 |
| 19 | Oil / Water Separator and Sump Units 1 and 2 |
| 20 | Oil / Water Separator and Sump Units 3 and 4 |

## 4.2 SAMPLING AND ANALYSIS PLAN

Woodward-Clyde implemented sampling and analysis for collection of additional soil and groundwater data at nine site areas. Table 4-1 summarizes the sampling and analysis rationale, sample locations, numbers of samples, and laboratory analysis types and sampling rationale for soil in each site area that was investigated. Table 4-2 provides further information on the sampling depths for each medium and dates sampled. Soil and Groundwater sampling locations are shown on Figure 4-1.

In areas that were previously sampled, proposed sampling locations for the RECs and AOPCs were selected based on the following rationale: (1) if significant contamination in soil and/or groundwater was found during the Phase II investigation; (2) if analysis was incomplete (i.e., no metals, VOCs, SVOCs, etc.), and (3) if the sampling location was not adequate (i.e., sample location was not adjacent or downgradient to REC or AOPC and/or sampling depth was too shallow for adequate characterization).

## 4.3 FIELD INVESTIGATION METHODS AND PROCEDURES

### 4.3.1 Pre-Investigation Activities

Prior to conducting the field investigation, Woodward-Clyde prepared a site-specific Health and Safety Plan (HSP) that was issued on March 2, 1998 for use by Woodward-Clyde field personnel and its subcontractors. The HSP was prepared in accordance with the applicable sections of 29 Code of Federal Regulations (CFR) 1910.120.

During the 3rd week of February 1998, Woodward-Clyde marked proposed soil sample locations with white paint and contacted Underground Service Alert (USA). USA is an information center that notifies members who operate some of the underground utilities at the HBGS of the proposed drilling program. Woodward-Clyde personnel met with the USA members to review sample locations and the locations of nearby public utilities. As an additional precaution, each proposed soil sampling location was cleared of underground utilities utilizing a geophysics subcontractor (Sub Surface Surveys) prior to beginning intrusive activities (refer to Appendix B, Field Procedures, Section B-3).

On March 16, 1998, a tailgate meeting was conducted by Woodward-Clyde, along with SCE personnel, to review health and safety issues, emergency response procedures, communication procedures, and underground utility locations. The meeting was attended by Woodward-Clyde field personnel and subcontractors (Sub Surface Surveys and Vironex) to familiarize on-site personnel with the HSP and the relevant HBGS health and safety procedures prior to initiating drilling and soil sampling.

### 4.3.2 Geoprobe and Hydropunch Direct Push Sampling

On March 19 and 20, 1998, direct push sample locations were advanced at the 10 locations shown on Figure 1-2 using a Geoprobe rig operated by Vironex. This subsurface intrusive method employs direct-push technology that minimizes drill cuttings and allows for relatively undisturbed soil sample collection. In addition, this direct push method has been modified such that an outer casing is driven ahead of the sampler barrel and well casing, thereby minimizing the potential for cross-contamination from the overlying strata.

Soil samples were collected generally at two levels: one sample close to the surface (e.g., 1 to 3 feet bgs) and one above the water table (e.g., 9 to 11 feet bgs). The water table was observed to

range between 8 feet bgs to greater than 20 feet bgs at HBGS. Soil samples were used to provide (1) stratigraphic descriptions (were sufficient sample recovery allowed), (2) assessment of the vertical distribution of the chemicals of concern (TPH, VOCs [i.e., benzene and chlorinated hydrocarbons], SVOCs, PCBs, and metals), and (3) the assessment of petroleum hydrocarbon concentrations within the potential "smear" zone (i.e., the zone likely influenced by tidal fluctuations) (if sufficient sample recovery allowed). A total of 20 soil samples were collected from ten locations.

The Geoprobe borings were advanced to depths ranging from 8 to 25 feet bgs, using a 1-1/2-inch outer diameter (OD), stainless steel drive casing. Sample cores were collected in 1-inch stainless steel tubes over 2-foot intervals at sampling intervals indicated in Table 4-2. Hydropunch samples were generally advanced first to determine the depth to groundwater. Based on anticipated groundwater depths, the sampling depths of soil samples were determined as shown in Table 4-2. The ends of selected sample cores were covered with a Teflon sheet and capped. The samples were labeled and placed in an insulated cooler with ice and transported under chain-of-custody procedures to the analytical laboratory.

Prior to drilling each boring, all non-disposable equipment that entered the borehole was steam-cleaned or washed in a non-phosphate solution, followed by three tap water rinses. The soil borings were logged by Woodward-Clyde personnel working under the direction of a California Registered Geologist. Boring logs are provided in Appendix C.

The geoprobe/hydropunch borings were backfilled with bentonite chips (hydrated during placement) to approximately 3 feet bgs and capped with asphalt or concrete, as appropriate, in paved areas.

Soil samples were field screened for organic vapors using a flame-ionization detector (FID) and the borings were also logged by Woodward-Clyde field personnel according to the United States Classification System (USCS). Where recovery permitted at each sampling depth, soil from one of the stainless steel tubes of soil was placed in a resealable plastic bag and allowed to volatilize for approximately 15 minutes. The headspace was then measured by inserting an organic vapor analyzer (OVA) probe into the plastic bag. Results of the organic vapor monitoring were recorded on boring logs (Appendix C).

### 4.3.3 Hydropunch Sampling

Groundwater samples were collected from the Geoprobe borings using a Hydropunch in situ sampling device. The Hydropunch consisted of a 4-foot-long, stainless steel screen concealed within a steel rod. Upon reaching the desired sampling depth, the push rods were retracted 2 to 3 feet to open the device. Groundwater entered the device through a screen and water was collected for analysis. When the Hydropunch sampler was not used, direct push soil borings were converted to monitoring wells by installing 1-inch-diameter PVC casings, screened over the lower 10 to 20 feet.

The groundwater samples were promptly sealed, labeled, and packed with ice in an insulated cooler that was transported under chain-of-custody procedures to Quanterra, Incorporated in Santa Ana, California for analysis.

The Hydropunch sampling device and other reusable equipment were decontaminated following use by washing in a non-phosphate detergent solution followed by rinsing twice with distilled water.

## 4.4 LABORATORY METHODS

### 4.4.1 Soil Analysis

Soil chemical analyses were performed by Quanterra Incorporated, a state-certified laboratory. Soil samples were analyzed for TPH - carbon chain distribution in the diesel and motor oil range, VOCs, SVOCs, California Code of Regulations (CCR) Title 22 metals, and PCBs. The following laboratory methods were used to analyze the selected soil samples:

- TPH-carbon chain distribution modified EPA Method 8015 for diesel and motor oil range hydrocarbons
- VOCs by EPA Method 8260A
- SVOCs by EPA Method 8270B
- CCR, Title 22 Metals by EPA Method 6010A, with the exception of arsenic (EPA Method 7060A) and mercury (Method SW7471A)
- PCBs by EPA Method 8081

### 4.4.2 Groundwater Analysis

Groundwater chemical analyses were performed by Quanterra Incorporated, a state-certified laboratory. Groundwater samples were analyzed for TPH-carbon chain distribution in the diesel and motor oil range, VOCs, SVOCs, CCR Title 22 metals, and PCBs. The following laboratory methods were used:

- TPH-carbon chain distribution modified EPA Method 8015 for diesel and motor oil range hydrocarbons
- VOCs by EPA Method 8260A
- SVOCs by EPA Method 8270B
- CCR, Title 22 Metals by EPA Method 6010A, with the exception of mercury (Method SW7470A)
- PCBs by EPA Method 8081

The laboratory detection limits were below state and federal MCLs. Groundwater analytical results in Section 5.0 (Tables 5-3b through 5-3d) include a comparison of state and federal MCLs with the practical quantitation limits reported by Quanterra Incorporated.

### 4.4.3 Quality Assurance/Quality Control (QA/QC) Program

Field and laboratory QC samples were analyzed by the laboratory. A complete data review report, including assessment of the laboratory QC results, is provided as Appendix D. The QC samples originating in the field included equipment blanks, trip blanks, and duplicates of field samples. Descriptions of the field QC samples, the frequency of collection, and the criteria by which they were evaluated are presented below.

#### *Equipment Rinsate Blanks*

Equipment rinsate blanks were used to evaluate the effectiveness of decontamination procedures. At sampling locations where dedicated or disposable sampling equipment were used, the rinsate blanks were collected by pouring distilled or organic-free water directly into sampling bottles (bottle blanks).

The equipment blanks were collected and submitted for analysis to the laboratory under the same chain-of-custody documentation and procedures used for other water samples. Equipment blanks were collected at a rate of 10 percent of the total number of soil and groundwater samples.

### *Field Duplicates*

Field duplicate samples were collected sequentially from the same location using identical methods. The duplicate samples were intended to equally represent the medium being sampled and provide information on the variance of chemicals at a sample location and the consistency of field techniques. Field duplicates were collected for soil and groundwater samples.

Due to limited sample volume in the soil sampling sleeves, duplicate samples were sometimes collected from an adjacent location or the next sampling depth. Duplicate groundwater samples were collected by filling the bottles for each analytical group or analysis sequentially for both the original and duplicate sample. Field duplicate samples were collected at a rate of at least 10 percent of the total number of soil and groundwater samples.

### *Trip Blanks*

Trip blanks are samples of organic-free water prepared at the laboratory. They are shipped with the sample bottles from the laboratory, remain with the sample bottles during sampling, and returned to the laboratory on a daily basis. Trip blanks were analyzed for VOCs; the data were used to evaluate if contamination had occurred during shipment or storage. Trip blanks were shipped in coolers containing samples to be analyzed for VOCs.

# SECTIONFIVE Analytical Results

This section describes the results of analytical testing performed on soil and groundwater samples collected during Geoprobe/Hydropunch investigations conducted the week of March 16, 1998 at the HBGS facility.

As discussed in Section 2.0, of the 21 sites previously investigated at the HBGS by SCE for potential environmental issues, 10 were investigated further by Woodward-Clyde; however, as a result of insufficient data prior to field work, only nine were investigated. Tables 4-1 and 4-2 identify the sites investigated by Woodward-Clyde and provide information on sampling specifics at each location.

## 5.1 SOIL SAMPLE ANALYTICAL RESULTS FOR SITE AREAS

A summary of soil sample analytical results is provided herein by site area and chemical suite. Soil sample analytical results for TPH, VOCs, SVOCs, metals, and PCBs are provided in Tables 5-1a through 5-1e, respectively. Copies of laboratory data sheets and chain-of-custody forms are provided in Appendix C. Comparison of analytical results with potential soil screening levels is provided in Section 6.0.

Soil samples were collected to a depth of 12 feet bgs and analyzed to assess concentrations of chemical constituents in soils above the water table. The deepest sample collected at each location may have been collected within or just above the capillary fringe. The capillary fringe is estimated to be approximately 1.5 to 3 feet above the water table for the types of soils observed at HBGS during soil sampling activities (Fetter, 1994). The actual capillary fringe is transient under site conditions and the extent may be less or greater than estimated.

### 5.1.1 Concrete Degreasing Pit (Site Area No. 5)

Geoprobe samples were collected at intervals of 2 to 4 feet bgs and 9 to 11 feet bgs at the Concrete Degreasing Pit (Sample Location area No. 5 shown on P ate 1 in Appendix A). Both soil samples were analyzed for TPH (carbon chain distribution) by EPA modified Method 8015 for diesel. The 17 CCR, Title 22 Metals were analyzed by EPA Method 6010A; Method SW7470A was used for mercury; Method SW7060A for arsenic; EPA 8260A for VOCs; and EPA 8270B for SVOCs, (refer to Laboratory Methods, Section 4.4).

#### 5.1.1.1 Organics

*TPH*

TPH were not detected above laboratory method detection limits in the soil samples from either interval.

*VOCs*

VOCs were not detected above laboratory method detection limits in the soil samples from either interval.

*SVOCs*

SVOCs were not detected above laboratory method detection limits in the soil samples from either interval.

#### 5.1.1.2 Metals

Fourteen of the 17 CCR metals were detected in the 2- to 4-foot sample and 12 of 17 CCR metals were detected in the 9- to 11-foot sample of the Geoprobe location HG05. Metal concentrations tended to be a little higher in the 2- to 4-foot sample. None of the metal concentrations in the 2- to 4-foot sample or the 9- to 11-foot sample exceeded average metal concentrations for California soils (Kearney, 1996).

### 5.1.2 Switchyard Perimeters (Site Area No. 6)

Geoprobe samples were collected at two locations adjacent and south of the Switchyard at HBGS (Sample Locations 6a and 6b shown on Plate 1 in Appendix A). Soil samples were collected from each location at depths of 2 to 4 feet bgs and 6 to 8 feet bgs and analyzed for TPH by EPA modified Method 8015 carbon chain distribution for diesel. SVOCs were analyzed by EPA Method 8270A, and PCBs were analyzed by EPA Method 8081 (refer to Section 4.4, Laboratory Methods).

#### 5.1.2.1 Organics

*TPH*

TPH were not detected above laboratory method detection limits in the soil samples from either interval.

*SVOCs*

SVOCs were not detected above laboratory method detection limits in the soil samples from either interval.

*PCBs*

PCBs were not detected above laboratory method detection limits in the soil samples from either interval.

### 5.1.3 Peaker Unit Pumping Area (Site Area No. 8)

Geoprobe samples were collected at two locations adjacent to and south of the Peaker Unit Pumping Area at HBGS (Sample Location 8 shown on Plate 1 in Appendix A). Soil samples were collected at depths of 1 to 3 feet bgs and 6 to 8 feet bgs and analyzed for TPH by EPA modified Method 8015 carbon chain distribution for diesel. The 17 CCR Title 22 Metals were analyzed by EPA Method 6010A; Method SW7060A was used for arsenic; Method SW7470 was used for mercury; EPA Method 8260A was used for VOCs; and EPA Method 8270A was used for SVOCs (refer to Section 4.4, Laboratory Methods).

#### 5.2.3.1 Organics

*TPH*

TPH were not detected above laboratory method detection limits in the soil samples from either interval.

*VOCs*

VOCs were not detected above laboratory method detection limits in the soil samples from either interval.

*SVOCs*

One SVOC, bis(2-ethylhexyl)phthalate, was reported in the 1- to 3-foot duplicate sample collected from Geoprobe location HG08 at an estimated concentration of 330 µg/kg. No other SVOCs were detected above method detection limits reported by the laboratory at the Peaker Unit Pumping Area.

#### 5.1.3.2 Metals

Twelve of the 17 CCR metals were detected in two of the soil samples and 13 of the 17 CCR metals were detected in the other sample analyzed from Geoprobe location HG08 (Table 5-1d). The reported metal concentrations were not elevated above average concentration for metals in California soils (Kearney, 1996).

### 5.1.4 Power Block Perimeters (Site Area No. 9)

Geoprobe samples were collected at one location north of the Power Block at Unit 1 at HBGS (Sample Location 9 shown on Plate 1 in Appendix A). Soil samples were collected at depths of 2 to 4 feet bgs and 10 to 12 feet bgs and analyzed for TPH by EPA modified Method 8015 carbon chain distribution for diesel. The 17 CCR Title 22 Metals were analyzed by EPA Method 6010A; Method SW7060A was used for arsenic; Method SW7470 was used for mercury; EPA Method 8260A was used for VOCs; and EPA Method 8270A was used for SVOCs (refer to Section 4.4, Laboratory Methods).

#### 5.1.4.1 Organics

*TPH*

TPH were not detected above laboratory method detection limits in the soil samples from either interval.

*VOCs*

VOCs were not detected above laboratory method detection limits in the soil samples from either interval.

*SVOCs*

SVOCs were detected above method detection limits reported by the laboratory at the Peaker Unit Pumping Area.

#### 5.1.4.2 Metals

Nine of the 17 CCR metals from the 2- to 4-foot sample depth and 14 of the 17 CCR metals from the 10- to 12-foot sample depth were detected in soil samples analyzed from Geoprobe location HG09. The reported metal concentrations were not elevated above average concentrations for metals in California soils (Kearney, 1996) except for one sample that reported a concentration for molybdenum slightly above the average, but was within concentration ranges for California soils.

### 5.1.5 Peaker Unit (Site Area No. 10)

Geoprobe samples were collected at one location north of the Peaker Unit at HBGS (Sample Location 10 shown on Plate 1 in Appendix A). Soil samples were collected at depths of 2 to 4 feet bgs and 8 to 10 feet bgs and analyzed for TPH by EPA modified Method 8015 carbon chain distribution for diesel. The 17 CCR Title 22 Metals were analyzed by EPA Method 6010A; Method SW7060A was used for arsenic; Method SW7470 was used for mercury; EPA Method 8260A was used for VOCs, and EPA Method 8270A was used for SVOCs (refer to Section 4.4, Laboratory Methods).

#### 5.1.5.1 Organics

*TPH*

TPH were not detected above laboratory method detection limits in the soil samples from either interval.

*VOCs*

VOCs were not detected above laboratory method detection limits in the soil samples from either interval.

*SVOCs*

SVOCs were not detected above method detection limits reported by the laboratory at the Peaker Unit Area.

#### 5.1.5.2 Metals

Fourteen of the 17 CCR metals were detected in the samples analyzed from Geoprobe location HG10. Arsenic, antimony, cadmium, cobalt, and molybdenum were detected at concentrations elevated above the average metals concentrations for California soils, but were within the reported ranges for California soils (Kearney, 1996).

### 5.1.6 Former Concrete Sump (Site Area No. 16)

Geoprobe samples were collected at one location adjacent to the Concrete Sump at HBGS (Sample Location 16 shown on Plate 1 in Appendix A). Soil samples were collected at depths of 2 to 4 feet bgs, 4 to 5 feet bgs, and 5 to 6 feet bgs and analyzed for TPH by EPA modified Method 8015 carbon chain distribution for diesel. The 17 CCR Title 22 Metals were analyzed by EPA Method 6010A; Method SW7060A was used for arsenic; Method SW7470 was used for mercury; EPA Method 8260A was used for VOCs; and EPA Method 8270A was used for SVOCs (refer to Section 4.4, Laboratory Methods).

#### 5.1.6.1 Organics

*TPH*

TPH were not detected above laboratory method detection limits in the soil samples from all intervals.

*VOCs*

VOCs were not detected above laboratory method detection limits in the soil samples from all intervals.

*SVOCs*

Only bis(2-Ethylhexyl)-phthalate was detected above method detection limits reported by the laboratory at the Concrete Sump area at a concentration of 85 and 130 µg/kg in soil samples collected at 4 to 5 feet bgs and 5 to 6 feet bgs.

#### 5.1.6.2 Metals

Fourteen of the 17 CCR metals were detected in the soil samples analyzed from Geoprobe location HG16. Only arsenic in the 5- to 6-foot bgs sample and molybdenum from the 2-to 4-foot bgs sample exceeded metals concentrations above average concentrations in California soils, but were within concentration ranges for the same metals in California soils (Kearney, 1996).

### 5.1.7 Historic Oil Reservoir at Units 3 and 4 (Site Area No. 18)

Geoprobe samples were collected at one location adjacent to the Historic Oil Reservoir at Units 3 and 4 at HBGS (Sample Location 18 shown on Plate 1 in Appendix A). Soil samples were collected at depths of 2 to 4 feet bgs and 10 to 12 feet bgs and analyzed for TPH by EPA modified Method 8015 carbon chain distribution for diesel. The 17 CCR Title 22 Metals were analyzed by EPA Method 6010A; Method SW7060A was used for arsenic; Method SW7470 was used for mercury; EPA Method 8260A was used for VOCs; and EPA Method 8270A was used for SVOCs (refer to Section 4.4, Laboratory Methods).

#### 5.1.7.1 Organics

*TPH*

TPH were not detected above laboratory method detection limits in the soil samples collected from either interval.

*VOCs*

VOCs were not detected above laboratory method detection limits in the soil samples collected from either interval.

*SVOCs*

SVOCs were not detected above method detection limits reported by the laboratory for samples collected from either interval.

#### 5.1.7.2 Metals

Fourteen of the 17 CCR metals were detected in the sample collected at 2 to 4 feet bgs and 15 of 17 CCR metals were detected in the 10 to 12 feet bgs sample and analyzed from Geoprobe location HG18. Only molybdenum was detected above the reported average concentration in the 2 to 4 feet bgs sample, but were within the concentration range for California soils (Kearney, 1996).

### 5.1.8 Oil / Water Separator and Sump at Units 1 and 2 (Site Area No. 19)

Geoprobe samples were collected at one location adjacent to the Oil/Water Separator and Sump at Units 1 and 2 at HBGS (Sample Location 19 shown on Plate 1 in Appendix A). Soil samples were collected at depths of 3 to 4 feet bgs and 9 to 11 feet bgs and analyzed for TPH by EPA modified Method 8015 carbon chain distribution for diesel. The 17 CCR Title 22 Metals were analyzed by EPA Method 6010A; Method SW7060A was used for arsenic; Method SW7470 was used for mercury; EPA Method 8260A was used for VOCs; and EPA Method 8270A was used for SVOCs (refer to Section 4.4, Laboratory Methods)

#### 5.1.8.1 Organics

*TPH*

TPH were detected above the laboratory method detection limit in samples collected from both sample intervals. TPH compounds were detected at an estimated concentration of 6.6 mg/kg in the C15<C20 carbon chain range, 16 mg/kg in the C20<C25 carbon chain range, 33 mg/kg in the C25<C30 carbon chain range, 33 mg/kg in the C30<C35 carbon chain range, and 35 mg/kg in the C35<C40 carbon chain range in the 3- to 4-foot bgs sample. TPH compounds were detected at an estimated concentration of 8.4 mg/kg in the C30<C35 carbon chain range and 18 mg/kg in the C35<C40 carbon chain range in the 9- to 11-foot sample.

*VOCs*

VOCs were not detected above laboratory method detection limits in the soil samples collected from either interval.

*SVOCs*

The SVOCs benzo(a)anthracene (280 µg/kg), benzo(a)pyrene (310 µg/kg), benzo(b)fluoranthene (600 µg/kg), benzo(g,hi)perylene (240 µg/kg), bis(2-ethylhexyl)-phthalate (54 µg/kg), chrysene (420 µg/kg), flouranthene (640 µg/kg), indeno(1,2,3-c,d)pyrene (160 µg/kg), phenanthene (380 µg/kg), and pyrene (1,000 µg/kg) were detected above method detection limits in the 3- to 4-foot bgs sample. The SVOCs benzo(a)pyrene (84 µg/kg) and pyrene (100 µg/kg) were detected above the method detection limit in the 9- to 11-foot bgs sample. SVOCs were not reported by the laboratory for the 3- to 4-foot bgs duplicate sample.

#### 5.1.8.2 Metals

Fifteen of the 17 CCR metals were detected at the 3- to 4-foot bgs sample and 14 of the 17 CCR metals were detected at the 9- to 11-foot bgs sample at Geoprobe location HG19. Only molybdenum was detected above the reported average concentration in the 3- to 4-foot bgs sample (duplicate was nondetect), but the concentration was within the concentration range for California (Kearney, 1996).

### 5.1.9 Oil / Water Separator and Sump at Units 3 and 4 (Site Area No. 20)

Geoprobe samples were collected at one location adjacent to the Oil/Water Separator and Sump at Units 3 and 4 at HBGS (Sample Location 20 shown on Plate 1 in Appendix A). Soil samples were collected at depths of 3 to 4 feet bgs and 9 to 11 feet bgs and analyzed for TPH by EPA modified Method 8015 carbon chain distribution for diesel. The 17 CCR Title 22 Metals were analyzed by EPA Method 6010A; Method SW7060A was used for arsenic; Method SW7470 was used for mercury; EPA Method 8260A was used for VOCs, and EPA Method 8270A was used for SVOCs (refer to Section 4.4, Laboratory Methods).

#### 5.1.9.1 Organics

*TPH*

TPH were not detected above laboratory method detection limits in the soil samples collected from either interval.

*VOCs*

VOCs were not detected above laboratory method detection limits in the soil samples collected from either interval.

*SVOCs*

SVOCs were not detected above method detection limits reported by the laboratory for collected samples from either interval.

#### 5.1.9.2 Metals

Fourteen of the 17 CCR metals were detected in samples analyzed from Geoprobe location HG20 (Table 5-1d). Only arsenic and molybdenum were detected above the reported average concentration in the sample collected in the 3- to 4-foot bgs interval, but both were within the concentration range for California (Kearney, 1996).

## 5.2 GROUNDWATER ANALYTICAL RESULTS

The analytical results for groundwater samples collected from Hydropunch locations are described below by site and summarized in Tables 5-2a through 5-2e. Groundwater samples were analyzed for TPH by modified EPA Method 8015 carbon chain analyses. VOCs were analyzed by EPA Method 8260A; SVOCs were analyzed by EPA Method 8270B; CCR Title 22 metals were analyzed by EPA Method 6010 (except mercury by method SW7470); and PCBs were analyzed by EPA Method 8081. TPH carbon chain results are summarized in Table 5-2a for the Hydropunch samples. VOCs results are summarized in Table 5-2b. SVOCs results are summarized in Table 5-2c. CCR Title 22 metals results are summarized in Table 5-2d. Copies of laboratory data sheets and chain-of-custody forms are provided in Appendix C. Comparison of analytical results with potential groundwater screening levels is provided in Section 6.0. Groundwater samples were not collected for Hydropunch location HG10 due to the fine-grained nature of shallow soils at that site preventing adequate groundwater recharge for sampling.

### 5.2.1 Total Petroleum Hydrocarbons - Carbon Chain Distribution

TPH were detected above the laboratory method detection limits in groundwater samples collected from Hydropunch location HG19. TPH were detected at a concentration of 1.1 mg/L in the C15<C20 carbon chain range and 1.3 mg/L in the C20<C25 carbon chain range. Hydropunch Locations are shown on Plate 1 in Appendix A.

### 5.2.2 Volatile Organic Compounds

A total of 16 VOCs were detected in groundwater samples collected from each of the seven Hydropunch locations. VOCs detected include 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), 1,2,4-trimethylbenzene, 2-butanone, benzene, carbon disulfide, chloroform, chloromethane, cis-1,2-dichloroethene, m-xylene and p-xylene, naphthalene, o-xylene, toluene, trans-1,2-dichloroethene, TCE, and vinyl chloride. VOC concentrations (in µg/L) summarized by Hydropunch location are shown below. Hydropunch locations are shown on Plate 1 in Appendix A and specific discussions of individual VOCs are presented in the following paragraphs.

| VOCs | HG5 | HG8 | HG9 | HG16 | HG18 | HG19 | HG20 |
|---|---|---|---|---|---|---|---|
| 1,1-dichloroethane (1,1-DCA) | 8.1 | -- | 0.18 | 0.26 | -- | 0.54 | 0.65 |
| 1,1-dichloroethene (1,1-DCE) | 1.8 | -- | -- | -- | -- | -- | -- |
| 1,2,4-trimethylbenzene | -- | -- | 0.086 | -- | -- | -- | -- |
| 2-butanone | -- | -- | 7 | -- | -- | 9.2 | -- |
| benzene | -- | 0.11 | -- | -- | 0.17 | 0.35 | -- |
| carbon disulfide | -- | -- | -- | -- | 0.26 | 1.6 | 0.28 |
| chloroform | -- | -- | 0.29 | -- | -- | -- | -- |
| chloromethane | -- | -- | -- | -- | 0.13 | -- | -- |
| cis-1,2-dichloroethene | 40 | 0.32 | 0.19 | 0.56 | 5 | 1.4 | 1.2 |
| m-xylene, p-xylene | -- | -- | -- | -- | -- | 0.31 | -- |
| o-xylene | -- | -- | -- | -- | -- | 0.19 | -- |
| naphthalene | -- | 1 | -- | -- | -- | -- | -- |
| toluene | -- | 0.29 | 0.3 | 0.1 | 0.13 | 0.39 | 0.14 |
| trans-1,2-dichloroethene | 10 | -- | -- | -- | -- | 0.15 | -- |
| trichloroethene (TCE) | 2 | -- | -- | -- | -- | -- | -- |
| vinyl chloride | -- | -- | -- | -- | -- | 0.98 | -- |

1,1-DCA was detected in 7 of 10 groundwater samples (including three duplicates) at concentrations ranging from 0.18 µg/L (estimated HG9) to 8.1 µg/L (HG5b). This VOC was not detected in samples analyzed from Hydropunch locations HG8 and HG18.

1,1-dichloroethene (1,1-DCE) was detected in both groundwater samples (includes the duplicate) collected at the Hydropunch location HG5b at an estimated concentration between 1.6 µg/L and 1.8 µg/L.

1,2,4-trimethylbenzene was detected in only one groundwater sample collected from Hydropunch location HG9 at an estimated concentration of 0.086 µg/L.

2-butanone was detected in two groundwater samples collected from Hydropunch location HG9 and HG19 at estimated concentrations of 7 µg/L and 9.2 µg/L, respectively.

Acetone was detected in one groundwater sample collected from Hydropunch location HG9 at an estimated concentration of 13 µg/L.

Benzene was detected in three groundwater samples collected from Hydropunch locations HG8, HG18, and HG19 at respective estimated concentrations of 0.11 µg/L, 0.17 µg/L, and 0.35 µg/L.

Carbon disulfide was detected in four groundwater samples collected at Hydropunch locations HG18, HG19, and HG20 at respective concentrations of 0.26 µg/L, 1.6 µg/L, 0.3 µg/L, and 0.28 µg/L (duplicate of HG20).

Chloroform was detected in only one groundwater sample collected from Hydropunch location HG9 at an estimated concentration of 0.29 µg/L.

Chloromethane was detected in only one groundwater sample collected from Hydropunch location HG18 at an estimated concentration of 0.13 µg/L.

Cis-1,2-dichloroethene was detected in all of the groundwater samples collected at concentrations ranging from an estimated 0.19 µg/L (HG9) to 40 µg/L (HG5b).

Xylenes (m-, p-, and o-isomers) were detected in one groundwater sample collected from Hydropunch location HG19. M- and p-xylenes were detected at estimated concentrations of 0.31 µg/L and o-xylene was detected at an estimated concentration of 0.19 µg/L.

Naphthalene was detected in one groundwater sample collected from Hydropunch location HG8 at a concentration of 1 µg/L.

Toluene was detected in all groundwater samples collected at HBGS except those from Hydropunch location HG5. Estimated concentrations ranged from 0.1 µg/L (HG16) to 0.39 µg/L (HG19).

Trans-1,2-dichloroethene was detected in three groundwater samples collected from two Hydropunch locations HG5b (includes duplicate) and HG19 at concentrations of 10 µg/L and 0.15 µg/L, respectively.

TCE was detected in two groundwater samples collected from Hydropunch location HG5b at estimated concentrations of 1.9 µg/L and 2 µg/L.

Vinyl chloride was detected in one groundwater sample collected from Hydropunch location HG19 at an estimated concentration of 0.98 µg/L.

### 5.2.3 Semivolatile Organic Compounds

A total of six SVOCs were detected in groundwater samples collected from each of the eight Hydropunch locations. SVOCs detected included 4-chloro-3-methylphenol, bis(2-ethylhexyl)phthalate, di-n-buytl phthalate, diethyl phthalate, dimethyl phthalate, and naphthalene. SVOC concentrations (in µg/L) identified by Hydropunch location are shown below. Hydropunch locations are shown on Plate 1 in Appendix A and specific discussions of individual VOCs are presented in the following paragraphs. Other SVOCs were not present in groundwater at detectable concentrations in the shallow or deep wells.

| SVOCs | HG5 | HG8 | HG9 | HG16 | HG18 | HG19 | HG20 |
|---|---|---|---|---|---|---|---|
| 4-chloro-3-methylphenol | -- | -- | 2.5 | -- | -- | -- | -- |
| bis(2-ethylhexyl)phthalate | 2 | 1.1 | 1 | -- | 1.4 | 1.3 | -- |
| di-n-butyl phthalate | 1 | 1.2 | -- | -- | 1.4 | -- | -- |
| diethyl phthalate | 1.1 | -- | 3.2 | -- | -- | -- | -- |
| dimethyl phthalate | -- | -- | 1.2 | -- | -- | -- | -- |
| naphthalene | -- | 1.4 | 1.2 | -- | -- | -- | -- |

4-chloro-3-methylphenol was detected only in the groundwater sample collected from Hydropunch location HG9 at an estimated concentration of 2.5 µg/L.

Bis(2-ethylhexyl)phthalate was detected in the groundwater samples at five out of eight Hydropunch locations (HG5, HG6, HG8, HG18, and HG19). Estimated concentrations ranged from 1 µg/L (HG8) to 2 µg/L (HG5).

Di-n-buytl phthalate was detected in groundwater samples from three out of the eight Hydropunch locations (HG5, HG6, and HG18) at estimated concentrations of 1 µg/L, 1.2 µg/L, and 1.4 µg/L, respectively.

Diethyl phthalate was detected in groundwater samples from two out of the eight Hydropunch locations (HG5 and HG9) at estimated concentrations of 1.1 µg/L and 3.2 µg/L, respectively.

Dimethyl phthalate was detected only in the groundwater sample collected from Hydropunch location HG9 at an estimated concentration of 1.2 µg/L.

Naphthalene was detected in groundwater samples from two out of the eight Hydropunch locations (HG8 and HG9) at estimated concentrations of 1.4 µg/L and 1.1 µg/L, respectively.

### 5.2.4 PCBs

PCBs were analyzed for at only two Hydropunch locations (HG6a and HG6b). No PCBs were detected in laboratory samples above the detection limits at these locations.

### 5.2.5 Metals

Twelve of the 17 CCR Title 22 metals were detected in groundwater samples analyzed from six Hydropunch locations by Woodward-Clyde. Metal concentrations (in mg/L) identified by Hydropunch location are shown below. Hydropunch sample locations are depicted on Plate 1 in Appendix A and specific discussions of specific metals are presented in the following paragraphs. Other metals were not present in groundwater at detectable concentrations in the shallow or deep wells.

| CCR Metals | HG5 | HG9 | HG16 | HG18 | HG19 | HG20 |
|---|---|---|---|---|---|---|
| Arsenic | -- | 0.022 | -- | 0.058 | -- | 0.022 |
| Barium | 0.03 | 0.045 | 0.013 | 0.074 | 0.03 | 0.04 |
| Beryllium | -- | -- | -- | 0.0013 | -- | -- |
| Cadmium | -- | -- | -- | -- | -- | 0.0049 |
| Chromium | -- | -- | -- | 0.035 | -- | -- |
| Cobalt | -- | 0.0068 | -- | 0.0052 | -- | -- |
| Copper | -- | 0.0065 | -- | 0.017 | -- | -- |
| Molybdenum | 0.041 | 0.033 | 0.015 | 0.032 | 0.09 | 0.015 |
| Nickel | 0.0076 | -- | -- | 0.013 | -- | -- |
| Thallium | -- | 0.084 | -- | -- | -- | -- |
| Vanadium | -- | -- | 0.016 | 0.021 | -- | -- |
| Zinc | 0.01 | 0.0093 | -- | 0.058 | -- | -- |

Arsenic was detected in three samples collected from Hydropunch locations at concentrations ranging from 0.022 mg/L to 0.058 mg/L. Barium was detected in nine Hydropunch locations at concentrations ranging from 0.013 mg/L to 0.074 mg/L. Beryllium was detected in one Hydropunch location at a concentration of 0.0013 mg/L. Cadmium was detected in one water sample at a concentration of 0.0049 mg/L. Chromium was detected in two samples at concentrations of 0.035 mg/L and 0.013 mg/L. Cobalt was detected in two Hydropunch locations at concentrations of 0.0052 mg/L and 0.0068 mg/L. Copper was detected in three Hydropunch locations at concentrations ranging from 0.0065 mg/L to 0.017 mg/L. Molybdenum was detected in nine Hydropunch locations at concentrations ranging from 0.011 mg/L to 0.09 mg/L. Nickel was detected in four Hydropunch locations at concentrations ranging from 0.0053 mg/L to 0.013 mg/L. Thallium was detected in one Hydropunch location at a concentration of 0.084 mg/L. Vanadium was detected in three Hydropunch location at concentrations ranging between 0.016 mg/L and 0.021 mg/L. Zinc was detected in five Hydropunch locations at concentrations ranging from 0.0065 mg/L to 0.019 mg/L.

Soil and groundwater analytical results are compared to potential regulatory soil and groundwater screening levels in order to evaluate if the concentration levels evidence contamination which may require remediation under current environmental laws.

## 6.1 DISCUSSION OF SOIL RESULTS

### 6.1.1 Petroleum-Impacted Soil

Petroleum-impacted sites are specifically exempted from the provisions and requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). For petroleum-impacted sites, applicable regulatory requirements are found in the state and federal UST requirements, the California Water Code, California Health and Safety Code, and the applicable Regional Water Quality Control Board Water Quality Control Plan.

In May 1996, the Los Angeles Water Quality Control Board (LARWQCB) issued a guidance on an interim approach for using soil screening levels to evaluate the need for remediation of petroleum-impacted soils (LARWQCB, 1996). The approach was developed to evaluate whether a site may require remedial action and what level of remediation may be required for site closure. The LARWQCB allows for site-specific risk analysis to determine the effect on groundwater and the potential health impacts for residuals in soil and groundwater on human health. The soil screening levels were developed primarily to determine if soil contamination poses a risk to groundwater. However, they generally are protective of human health from direct contact pathways (i.e. dermal exposure and soil ingestion).

The LARWQCB has developed two sets of soil screening levels: one for soil above drinking water (beneficial) aquifers and one for soil above non-drinking water (non-beneficial) aquifers. All groundwater is considered a drinking water resource unless exempted by LARWQCB based upon one of the criteria defined under State Water Resources Control Board (SWRCB) resolution 88-63: (i) total dissolved solids (TDS) greater than 3,000 mg/L; (ii) deliverability less than 22 gallons per day; or (iii) existing contamination that cannot be reasonably treated. Reported concentrations of TDS ranged from 1,200 mg/L to 44,900 mg/L, seven out of nine monitoring wells sampled and analyzed were above the TDS exemption (SCE, 1997b). Due to the proximity of the wetlands to the HBGS and potential sensitive ecological receptors, determination of beneficial or non-beneficial use may not rely on exemption to Resolution 88-63. As a result, the potential LARWQCB petroleum-impacted soil screening levels for both

non-beneficial use aquifers and for beneficial aquifers with groundwater less than 20 feet bgs have been used in the following analysis and are summarized in Table 6-1.

The LARWQCB must make the determination on what would be the most appropriate soil screening levels for the site, based on the uses or potential uses of the groundwater underlying the site. In order for LARWQCB to make this determination, data would need to be supplied on existing salinity, deliverability, nearest water supply wells, etc.

For areas that may be under the jurisdiction of the DTSC, the DTSC considers potential impacts to human health by first following the Preliminary Endangerment Assessment (PEA) process. There are no published tables with PEA values for soil. However, calculated PEA values are usually very similar to EPA Region IX PRGs. DTSC PEA and EPA Region IX PRG values are calculated considering potential human exposures from soil ingestion, dermal contact, and inhalation of VOCs and particulates. The range of potential soil screening levels for organic compounds (EPA Region IX PRGs) for the site, if the site is under the jurisdiction of the DTSC, are shown in Table 6-2. Both residential use and industrial use scenarios are presented.

LARWQCB soil screening levels for non-beneficial and beneficial uses were not exceeded with respect to those samples obtained by Woodward-Clyde at HBGS.

The laboratory separation of carbon chain distribution used in this investigation and the LARWQCB soil screening level carbon chain distribution separation do not match exactly. For example, the LARWQCB soil screening category for light hydrocarbons is C4-C12, while the laboratory separated the carbon chain into C10-C15.

LARWQCB soil screening levels for TPH were exceeded in the Phase II ESA (CH2M HILL, 1997) at the following locations:

- At the powerblocks, TPH concentrations exceeded LARWQCB beneficial use criteria at soil sample HBH01 collected from 1 to 1.3 feet bgs and soil sample HBH08 collected from 10 to 10.5 feet bgs.
- At the distillate storage tank, TPH concentrations exceeded LARWQCB beneficial use criteria in soil sample HBH28 collected from 5 to 5.5 feet bgs.
- At the historic oil reservoir, TPH concentrations exceeded LARWQCB beneficial and nonbeneficial use criteria in soil sample HBH54 collected from 8 to 8.5 feet bgs.

- At the east fuel storage tank, TPH concentrations exceeded LARWQCB beneficial use criteria in soil sample HBH57 collected from 0.5 to 1 foot bgs.
- At the west fuel storage tank, TPH concentrations exceeded LARWQCB beneficial and nonbeneficial use criteria in soil sample HBH61 collected from 0.5 to 1 foot bgs.

LARWQCB soil screening levels for benzene, ethylbenzene, toluene, and xylenes were not exceeded at the site for either non-beneficial and beneficial uses with respect to those samples obtained by Woodward-Clyde. LARWQCB soil screening levels for benzene, ethylbenzene, toluene, and xylenes were not exceeded in the Phase II ESA (CH2M HILL, 1997).

LARWQCB petroleum soil screening levels for beneficial uses appears to have been exceeded in the soil samples obtained by CH2M HILL (1998) during the soil baseline study in the following areas:

- Concrete Degreasing Pit (area 5)
- Peaker Unit Pump Area (area 8)
- Power Block Perimeters (area 9)
- Peaker Unit (area 10)
- Former Concrete Sump (area 16)
- Oil/Water Separator and Sump Units 1 and 2 (area 19)
- Oil/Water Separator and Sump Units 3 and 4 (area 20)

EPA Region IX PRGs for soil for both industrial and residential use were exceeded for benzo(a)pyrene at the oil/water separator and sumps 1 and 2 (soil sample 19 at 3 to 4 feet bgs). At the 9- to 11-foot sample depth, the EPA Region IX PRG for residential use was exceeded. No other EPA Region IX PRGs for organics in soil were exceeded with respect to those samples obtained by Woodward-Clyde.

### 6.1.2 Metal-Impacted Soil

EPA Region IX PRGs for metals detected in soils are described in Appendix E. Because in certain instances background concentrations of metals in California may exceed the EPA Region IX PRGs, the DTSC requires metals detected in soils to be compared to a body of data representative of local conditions unaffected by site-related activities. Metals present at

concentrations elevated with respect to these local conditions become chemicals of potential concern and are carried forward into a health risk assessment (DTSC PEA Guidance, 1997).

Metal concentrations in soil were compared to background concentrations of metals and soils for California. Background metal concentrations have been determined in 50 benchmark soils selected from throughout the state by the Kearney Foundation of Soils Science (Kearney, 1996). The Kearny database was developed to help evaluate the severity of metal pollution problems in California soils, and has been accepted by DTSC as an appropriate database for establishing background metal concentrations. These average metal concentrations are shown in Table 6-3.

For this investigation, the following metals were elevated above the average metal concentrations in soil for California (Kearney, 1996) in one or more soil samples:

- The concentration of antimony was 0.73 mg/kg at boring 8 (oil/water separator and sumps 1 and 2) collected from 6 to 8 feet bgs. The average concentration of antimony in California soils is 0.6 mg/kg.
- The concentration of arsenic was 5 mg/kg, 3.8 mg/kg, and 3.6 mg/kg at the peaker unit, former concrete sump, and oil/water separator and sump units 3 and 4, respectively. The average concentration of arsenic in California soils is 3.5 mg/kg.
- The concentration of cadmium was 0.48 mg/kg and 0.5 mg/kg at the peaker unit and oil/water separator and sump units 3 and 4, respectively. The average concentration of cadmium in California soils is 0.36 mg/kg.
- The concentration of cobalt was 15.1 mg/kg at the peaker unit. The average concentration of cobalt in California soils is 14.9 mg/kg.
- The concentration of copper was 42.5 mg/kg at the peaker unit. The average concentration of copper in California soils is 28.7 mg/kg.
- The concentration of molybdenum was 1.8 mg/kg, 2.9 mg/kg , 1.6 mg/kg, 1.7 mg/kg, and 1.7 mg/kg at the peaker unit, former concrete sump, historic oil reservoir, oil water separator at units 1 and 2, and oil water separator at units 3 and 4, respectively. The average concentration of molybdenum concentration in California soils is 1.3 mg/kg.

In the Phase II ESA (CH2M HILL, 1997), the following metals were elevated above average metal concentrations in soil for California (Kearney, 1996):

- At the powerblocks, the antimony concentrations were detected up to 52.2 mg/kg in soil sample HBH01 collected from 1 to 1.3 feet bgs. The reported concentrations exceeded the range for antimony in California soils (0.15 mg/kg to 1.95 mg/kg).

- At the oil/water separator and sump Units 1 and 2, antimony concentrations were 19.4 mg/kg and 23.9 mg/kg in soil samples HBH40 collected from 1 to 1.5 feet bgs and 5 to 5.5 feet bgs, respectively. The average concentration of antimony in California soils is 0.6 mg/kg. The reported concentrations exceeded the range for antimony in California soils (0.15 mg/kg to 1.95 mg/kg).

- At the oil/water separator and sump Units 3 and 4, antimony concentrations were 34.3 mg/kg and 39.8 mg/kg in soil samples HBH41 collected from 1.5 to 1.8 feet bgs and 3 to 3.5 feet bgs, respectively. The average concentration of antimony in California soils is 0.6 mg/kg. The reported concentrations exceeded the range for antimony in California soils (0.15 mg/kg to 1.95 mg/kg).

- At the former concrete waste oil sump, antimony concentrations were 38.6 and 25.4 mg/kg in soil samples HBH42 collected from 1 to 1.5 feet and 8.5 to 9 feet bgs. The average concentration of antimony in California soils is 0.6 mg/kg. The reported concentrations exceeded the range for antimony in California soils (0.15 mg/kg to 1.95 mg/kg).

- At the historic oil reservoir, the antimony concentration was 49 mg/kg in soil sample HBH54 collected from 0.5 to 1 foot. The average concentration of antimony in California soils is 0.6 mg/kg. The reported concentration for antimony exceeded the range in California soils (0.15 mg/kg to 1.95 mg/kg).

- At the peaker unit sump, the antimony concentrations were 24.7 mg/kg and 34.1 µg/kg in soil sample HBH55. The average concentration of antimony in California soils is 0.6 mg/kg. The reported concentration for antimony exceeded the range in California soils (0.15 mg/kg to 1.95 mg/kg).

- At the hazardous materials storage area, the antimony concentration was 25.8 mg/kg in soil sample HBH56. The reported concentrations for antimony exceeded the range in California soils (0.15 mg/kg to 1.95 mg/kg).

- At the powerblocks, the arsenic concentration was 6.6 mg/kg in soil sample HBH02 collected from 1 to 1.2 feet bgs. The arsenic concentration was 5.9 mg/kg in soil sample HBH02 collected from 5.1 to 5.5 feet bgs. The arsenic concentration was 3.8 mg/kg in soil sample HBH03 collected from 5.3 to 5.6 feet bgs. The average arsenic concentration in California soils is 3.5 mg/kg. The reported concentrations for arsenic was within the range in California soils (0.6 mg/kg to 11 mg/kg).

- At the peaker unit, the arsenic concentration was 4.3 mg/kg in soil sample HBH10 collected from 1 to 1.3 feet bgs. The average arsenic concentration in California soils is 3.5 mg/kg. The reported concentration for arsenic was within the range in California soils.

- At the powerblocks, the cadmium concentration was 34.5 mg/kg at HBH04 collected from 1.5 to 2 feet bgs. The cadmium concentration was 34.9 mg/kg at HBH04 collected from 5 to 5.5 feet bgs. The average cadmium concentration in California soils is 0.36 mg/kg. The reported concentrations for cadmium exceeded the range in California soils (0.05 mg/kg to 1.7 mg/kg).

- At the powerblocks, the cobalt concentration was 18.9 mg/kg in soil sample HBH01 collected from 1 to 1.3 feet bgs. The cobalt concentration was 42.2 mg/kg in soil sample HBH02 collected from 1 to 1.4 feet bgs. The cobalt concentration was 20.4 mg/kg in soil sample HBH05 collected from 5 to 5.3 feet bgs. The average cobalt concentration in California soils is 14.9 mg/kg. The reported concentrations for cobalt were within the range in California soils.

- At the powerblocks, the copper concentration was 94.8 mg/kg at HBH04 collected from 1.5 to 2 feet bgs. The copper concentration was 37.7 mg/kg at HBH04 collected from 5 to 5.5 feet bgs. The average copper concentration in California soils is 28.7 mg/kg. The reported concentrations for copper were within the range in California soils (9.1 mg/kg to 96.4 mg/kg).

- At the former concrete waste oil sump, the copper concentration was 35.5 mg/kg at HBH42 collected from 1 to 1.5 feet bgs. The average copper concentration in California soils is 28.7 mg/kg. The reported concentration for copper was within the range in California soils (9.1 mg/kg to 96.4 mg/kg).

- At the hazardous materials storage area, the copper concentration was 43.6 mg/kg in soil sample HBH56. The average copper concentration in California soils is 28.7 mg/kg. The reported concentration for copper was within the range in California soils (9.1 mg/kg to 96.4 mg/kg).

- At the powerblocks, the lead concentration was 28.3 mg/kg at HBH04 collected from 1.5 to 2 feet bgs. The average lead concentration in California soils is 23.9 mg/kg. The reported concentration for lead was within the range in California soils (12.4 mg/kg to 97.1 mg/kg)

- At the former concrete waste oil sump, the lead concentration was 45.9 mg/kg at HBH42 collected from 1 to 1.5 feet bgs. The average lead concentration in California soils is 23.9 mg/kg. The reported concentration for lead was within the range in California soils (12.4 mg/kg to 97.1 mg/kg).

- At the powerblocks, the mercury concentration was detected up to 2 to 3 mg/kg at HBH05 collected from 5 to 5.3 feet bgs. The average mercury concentration in California soils is 0.26 mg/kg. Four out of five of the reported concentrations of mercury exceeded the range in California soils (0.1 mg/kg to 0.9 mg/kg).

- At the peaker unit, the mercury concentration was 0.95 mg/kg at HBH08 collected from 10 to 10.5 feet bgs. The average mercury concentration in California soils is 0.26 mg/kg. The reported concentration for mercury exceeded the range in California soils (0.1 mg/kg to 0.9 mg/kg).

- At the oil/water separator and sump 1 and 2, the mercury concentrations were 2.5 mg/kg and 0.38 mg/kg at HBH40 collected from 1 to 1.5 feet bgs, and 5 to 5.5 feet bgs, respectively. The average mercury concentration in California soils is 0.26 mg/kg. The reported mercury concentrations exceeded the range in California soils (0.1 mg/kg to 0.9 mg/kg).

- At the oil/water separator and sump 3 and 4, the mercury concentration was 0.42 mg/kg at HBH41 collected from 3 to 3.5 feet bgs. The average mercury concentration in California soils is 0.26 mg/kg. The reported concentration was within the range in California soils (0.1 mg/kg to 0.9 mg/kg).

- At the historic oil reservoir, the mercury concentration was 0.62 mg/kg at soil sample HBH54. The average mercury concentration in California soils is 0.26 mg/kg. The reported concentration was within the range in California soils (0.1 mg/kg to 0.9 mg/kg).

- At the hazardous materials storage area, the mercury concentration was 0.32 mg/kg at soil sample HBH56. The average mercury concentration in California soils is 0.26 mg/kg. The reported concentration was within the range in California soils (0.1 mg/kg to 0.9 mg/kg).

- At the powerblocks, the molybdenum concentration was up to 5.8 mg/kg in soil sample HBH01 collected from 1 to 1.3 feet bgs. The average molybdenum concentration in California soils is 1.3 mg/kg.

- At the oil/water separator and sumps 1 and 2, the molybdenum concentrations were 4.2 mg/kg and 3.7 mg/kg in soil sample HBH40 collected from 1 to 1.5 feet bgs and 5 to 5.5 feet bgs, respectively. The average molybdenum concentration in California soils is 1.3 mg/kg. The reported concentrations for molybdenum were within the range for California soils (0.1 mg/kg to 9.6 mg/kg).

- At the oil/water separator and sumps 3 and 4, the molybdenum concentrations were 6 mg/kg and 7.6 mg/kg in soil sample HBH41 collected from 1.5 to 1.8 feet bgs and 3 to 3.5 feet bgs, respectively. The average molybdenum concentration in California

soils is 1.3 mg/kg. The reported concentrations for molybdenum were within the range in California soils (0.1 mg/kg to 9.6 mg/kg).

- At the former concrete waste oil sump, the molybdenum concentrations were 8.4 and 3.8 mg/kg in soil samples HBH42. The average molybdenum concentration in California soils is 1.3 mg/kg. The reported concentrations for molybdenum were within the range in California soils (0.1 mg/kg to 9.6 mg/kg).

- At the historic oil reservoir, the molybdenum concentration was 8.9 mg/kg in soil sample HBH54. The average molybdenum concentration in California soils is 1.3 mg/kg. The reported concentrations for molybdenum was within the California soils (0.1 mg/kg to 9.6 mg/kg).

- At the peaker unit, the molybdenum concentration was 5.1 mg/kg in soil sample HBH55. The reported concentration for molybdenum was within the range in California soils (0.1 mg/kg to 9.6 mg/kg).

- At the powerblocks, the selenium concentration was 0.5 mg/kg in soil sample HBH01 collected from 1 to 1.3 feet bgs. The selenium concentrations were 0.8 mg/kg in both soil samples HBH05 from 5 to 5.3 feet bgs and HBH05 collected from 5.3 to 5.6 feet bgs. The average selenium concentration in California soils is 0.058 mg/kg. The reported concentrations for selenium exceeded the range in California soils (0.015 mg/kg to 0.43 mg/kg).

- At the oil water separator and sumps 1 and 2, the selenium concentration was 0.5 mg/kg in soil sample HBH40 collected from 5 to 5.5 feet bgs. The average selenium concentration in California soils is 0.058 mg/kg. The reported concentration for selenium exceeded the range in California soils (0.015 mg/kg to 0.43 mg/kg).

- At the oil water separator and sumps 3 and 4, the selenium concentration was 0.8 mg/kg in soil sample HBH41 collected from 1.5 to 1.8 feet bgs. The average selenium concentration in California soils is 0.058 mg/kg. The reported concentration for selenium exceeded the range in California soils (0.015 mg/kg to 0.43 mg/kg).

- At the powerblocks, the silver concentration was detected up to 29.6 mg/kg in soil sample HBH04 collected from 5 to 5.5 feet bgs. The average silver concentration in California soils is 0.8 mg/kg. Two of the reported concentrations for silver exceeded the range in California soils (0.1 mg/kg to 8.3 mg/kg).

- At the oil water separator and sumps 1 and 2, the silver concentrations were 3.7 mg/kg and 6.3 mg/kg in soil sample HBH40 collected from 1 to 1.5 feet bgs and 5 to 5.5 feet bgs, respectively. The average silver concentration in California soils is 0.8 mg/kg. The reported concentrations for silver were within the range in California soils (0.1 mg/kg to 8.3 mg/kg).

- At the oil water separator and sumps 3 and 4, the silver concentrations were 2.8 mg/kg and 3.5 mg/kg in soil sample HBH41 collected from 1.5 to 1.8 feet bgs and 3 to 3.5 feet bgs, respectively. The average silver concentration in California soils is 0.8 mg/kg. The reported concentrations for silver were within the range in California soils (0.1 mg/kg to 8.3 mg/kg).

- At the former concrete waste oil sump, the silver concentrations were 3.6 mg/kg and 2.6 mg/kg in soil samples HBH42. The average silver concentration in California soils is 0.8 mg/kg. The reported concentrations for silver were within the range in California soils (0.1 mg/kg to 8.3 mg/kg).

- At the historic oil reservoir, the silver concentration was 4.3 mg/kg in soil sample HBH54. The average silver concentration in California soils is 0.8 mg/kg. The reported concentrations for silver were within the range in California soils (0.1 mg/kg to 8.3 mg/kg).

- At the peaker unit, the silver concentrations were 2.8 and 2.1 mg/kg in soil sample HBH55. The reported concentrations for silver were within the range in California soils (0.1 mg/kg to 8.3 mg/kg).

- At the hazardous materials storage area, the silver concentration was 6.7 mg/kg in soil sample HBH56. The reported concentrations for silver were within the range in California soils (0.1 mg/kg to 8.3 mg/kg).

The following metals exceeded the range and average of metal concentrations for benchmark soils in California at HBGS:

- Antimony
- Cadmium
- Mercury
- Selenium
- Silver

The SCE Soil Boring Baseline Study (1997) of the retention basins detected the following metals in soil samples above the average concentration found in California soils (Kearney, 1996):

- Ten metals (aluminum, antimony, arsenic, cadmium, copper, iron, molybdenum, nickel, selenium, vanadium) were detected in the soil samples at concentrations in excess of the average concentration found in California soils.

- Five metals (antimony, arsenic, cadmium, lead, molybdenum) were detected in the soil samples at concentrations in excess of the average concentration found in California soils.

The SCE Well Construction Report (Hamilton, 1987) detected the following metals that were elevated above average metal concentrations in soil for California (Kearney, 1996):

- Soil samples from the Retention Basins indicate that one metal (selenium) was detected at concentrations in the soils above the average concentration found in California.

## 6.2 DISCUSSION OF GROUNDWATER RESULTS

The primary screening criteria available for groundwater at the site are state and EPA primary maximum contaminant levels (MCLs), secondary MCLs, and action levels. MCLs are part of the drinking water standards adopted by both the EPA under the Safe Drinking Water Act and the Department of Health Services (DHS). MCLs are enforceable on water supply systems and at the tap and are applicable to ground and surface water resources when they are specifically referenced as water quality objectives in the pertinent Regional Water Quality Control Plans. MCLs would apply to groundwater beneath the site based on the current Regional Water Quality Control Plan.

There are no MCLs for TPH, only for chemicals of concern that are constituents of petroleum hydrocarbons (i.e., benzene, toluene, ethylbenzene, and xylenes). State and EPA primary MCLs, secondary MCLs, action levels and DTSC Public Health Goals (PHGs) for the chemicals of concern detected in groundwater at the site are listed in Table 6-4.

The state and EPA levels may not be appropriate for the site if the groundwater is not being used for drinking water purposes or no other beneficial use is determined (e.g., ecological). The LARWQCB would have to make the determination of what the appropriate level would be for the site. For chemicals without state or EPA MCLs, state action levels, and Federal Health Advisory Levels are shown, when available.

### 6.2.1 VOC- and SVOC-Impacted Groundwater

Concentrations of VOCs detected in groundwater (Tables 5-2b) were compared to primary state MCLs, primary EPA MCLs, MCL goals, secondary state MCLs, secondary EPA MCLs, state

interim action levels, and federal health advisories (i.e., potential threshold concentrations) (Table 6-4). The following VOCs detected in the groundwater samples were elevated above one or more of the above-listed MCLs:

- The 1,1-DCA concentration was 8.1 µg/L in the groundwater sample collected near the concrete decreasing pit (site area No. 5). The state MCL for 1,1-DCA is 5 µg/L.
- Cis-1,2-dichloroethene was detected at a concentration of 40 µg/L in the groundwater sample collected near the concrete decreasing pit (site area No. 5). The state MCL is 6 µg/L.
- Trans-1,2-dichloroethene was detected at a concentration of 10 µg/L in the groundwater sample collected near the concrete decreasing pit (site area No. 5). The state MCL is 10 µg/L.
- Vinyl chloride in groundwater was detected a 0.98 µg/L at the oil/water separator and sump at units 1 and 2 (site area No. 20). The state MCL for vinyl chloride is 0.5 µg/L and the federal MCL is 2.0 µg/L.

In the Phase II ESA (CH2M HILL, 1997), the following VOCs detected in the groundwater samples were elevated above one or more of the above-listed MCLs:

- 1,1-DCE was detected at a concentration of 16 µg/L in groundwater at the historic oil reservoir. The state MCL is 5 µg/L.

The SCE Annual Groundwater Monitoring Report (Hamilton, 1998) detected the following VOCs in the groundwater samples were elevated above one or more of the MCLs:

- In the Retention Basins, one VOC (cis-1,2-dichloroethene) was detected in the groundwater at concentrations in excess of the state and federal MCLs. One VOC (1,1-dichloroethane) was detected above the state MCL and two VOCs (trichloroethene, vinyl chloride) were detected above the federal MCL goal but below state and federal MCLs.
- In the cross gradient wells, one VOC (cis-1,2-dichloroethene) was detected in the groundwater at concentrations in excess of the state and federal MCLs. Four VOCs (benzene, chloroform, methylene chloride and tetrachloroethene) were detected above the federal MCL goal but below the state and federal MCLs.

No SVOCs were detected above potential "threshold" concentrations in groundwater sampled at HBGS.

### 6.2.2 Metal-Impacted Groundwater

The following metals in groundwater were reported in samples obtained by Woodward-Clyde at concentrations elevated above threshold levels for groundwater:

- Arsenic was detected at a concentration of 58 µg/L in groundwater at the historic oil reservoir. The state and federal MCL is 50 µg/L.
- Thallium was detected at a concentration of 84 µg/L in groundwater at the power blocks. The state and federal MCL is 2 µg/L.

In the Phase II ESA (CH2M HILL, 1997), the following metals in groundwater were reported at concentrations elevated above one or more of the above-listed MCLs:

- Arsenic was detected at a concentration of 80 µg/L in groundwater at the historic oil reservoir. The state and federal MCL is 50 µg/L.
- Beryllium was detected at a concentration of 4.6 µg/L in groundwater at the powerblocks. The state and federal MCL is 4 µg/L.
- Cadmium was detected at a concentration of 7 µg/L in groundwater at the powerblocks. The state and federal MCL is 5 µg/L.
- Cadmium was detected at a concentration of 12 µg/L in groundwater at the historic oil reservoir. The state and federal MCL is 5 µg/L.
- Chromium was detected at a concentration of 210 µg/L in groundwater at the powerblocks. The state MCL is 50 µg/L and the federal MCL is 100 µg/L.
- Copper was detected at a concentration of 230 µg/L in groundwater at the powerblocks. The DTSC PHG is 170 µg/L.
- Lead was detected at concentration of 80.9 µg/L and 40.1 µg/L in groundwater at the powerblocks. The State Action Level for lead is 15 µg/L.
- Lead was detected at a concentration of 70 µg/L at the former concrete waste oil sump. The State and Federal Action Level for lead is 15 µg/L.
- Lead was detected at a concentration of 70 µg/L in groundwater at the historic oil reservoir. The State and Federal Action Level for lead is 15 µg/L.
- Mercury was detected at concentrations of 5 µg/L and 6 µg/L in groundwater at the powerblocks in samples RBH20 and RBH21, respectively. The state and federal MCL is 2 µg/L for mercury.

- Mercury was detected at a concentrations of 5 µg/L in groundwater at the former concrete waste oil sump. The state and federal MCL is 2 µg/L for mercury.
- Mercury was detected at concentration of 7 µg/L and 30 µg/L in groundwater at the hazardous materials storage area. The state and federal MCL is 2 µg/L for mercury.
- Nickel was detected at a concentration of 140 µg/L in groundwater at the former concrete waste oil sump. The state MCL is 100 µg/L for nickel.
- Silver was detected at a concentration of 220 µg/L in the hazardous materials storage area. The secondary federal MCL is 100 µg/L for silver.
- Silver was detected at a concentration of 160 µg/L in the historic oil reservoir. The secondary federal MCL is 100 µg/L for silver.

The SCE Annual Groundwater Monitoring Report (Hamilton, 1998) detected the following metals at concentrations elevated above one or more of the MCLs:

- In the Retention Basin, two metals (arsenic, and selenium) were detected at concentrations in groundwater above state and federal MCLs. One metal (fluoride) was detected at concentrations above the state MCL and two metals (iron and manganese) were detected at concentrations in groundwater above state and federal secondary MCLs.
- In the Boiler Chemical Cleaning Basin, one metal (iron) was detected at concentrations above state and federal secondary MCLs.
- In the cross gradient wells (HB2,HB3, HB4 and HB5), one metal (antimony) was detected above state and federal MCLs and one metal (aluminum, manganese and iron) were detected above state and federal secondary MCLs.

### 6.2.3 Other Groundwater Contaminants

The SCE Annual Groundwater Monitoring Report (Hamilton, 1998) detected the following contaminants at concentrations elevated above one or more of MCLs:

- In the Retention Basin, four contaminants (fluoride, chloride, sulfate and Total Dissolved Solids) were detected at concentrations in groundwater above the state and federal secondary MCLs. One parameter (E.C.) was detected at concentrations in groundwater above the state secondary MCL.

- In the Boiler Chemical Cleaning Basin, three contaminants (chloride, sulfate, and Total Dissolved Solids) were detected above state and federal secondary MCLs. One parameter (E.C.) was detected above the state secondary MCL.

- In the cross gradient wells, four contaminants (chloride, sulfate, fluoride and total dissolved solids) were detected above state and federal secondary MCLs. One parameter (EC) was detected above the state secondary MCL.

Table 6-5 summarizes the chemicals of concern in soil and groundwater identified in the Woodward-Clyde sampling effort that exceed the applicable criteria noted above.

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TABLE 2-1
Summary of Previous Phase II Investigations
Huntington Beach Generating Station

| Area | Site Located on Sale Property? | Basis of Issue | Phase I/II Investigation Work Performed | Phase I/II Investigation Conclusions |
|---|---|---|---|---|
| 1) ASCON Landfill | N | Potential groundwater contamination migrating from ASCON Landfill. | Two groundwater samples (HBH46 and HBH47) were collected and analyzed for VOCs in both samples and TPH-d in HBH46 only. VOCs and TPH-d were not above detection limits. Groundwater at ASCON site reportedly flows away from HBGS. | No further action. |
| 2) Wetlands Area | N | Potential surface contamination from HBGS surface water runoff. | Four surface samples (HBH48, HSS49-HSS51) were collected along the fence line in areas of surface water runoff to wetlands. | No further action. TPH-d at de minimis concentrations in soil. |
| 3) Retention Basins | Y | Potential leaks resulting in subsurface contamination. | Subsurface investigation of surface impoundments is currently being conducted by SCE in a order from DTSC. Soil and groundwater sampling is occurring in the area. | Not applicable. |
| 4a) Aboveground Storage Tanks (ASTs) SCE and Pipeline Terminal Company (EPTC) Tanks | N | Previous investigations indicate contamination exists at tank locations. | No add. sampling was conducted as part of the Phase II ESA. Existing data indicates contamination is present. SCE conducted limited sampling around the EPTC tanks 2/96 and concluded no impacts from TPH, BTEX & metals. | No further action at this time. Agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. |
| 4b) Aboveground Storage Tanks (ASTs) | N | Previous investigations indicate contamination exists at tank locations. | 19 locations sampled N, S, E, W and Distillate tanks. Soil was analyzed for TPH-d and 1 sample analyzed for VOCs. TPH was detected up to 65,000 mg/kg in soil at the West tank. Some VOCs detected. TPH in gw up to 2.6 mg/L. | No further action at this time. Agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. |
| 5) Concrete Degreasing Pit | Y | Potential for past leaks resulting in subsurface contamination. | Sampling was not conducted due to limited accessibility of the pit. | No further action at this time. Agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. |
| 6) Switchyard Perimeters | Y | Potential for past leaks or releases resulting in subsurface contamination. | Two shallow samples taken at each switchyard and analyzed for TPH-d and PCBs. TPH-d detected low levels (32 ppm). | No further action at this time. Agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. |
| 7) Primary Fuel Pumping Area | Y | Previous spills reportedly not completely cleaned up. | Two soil borings were completed and sampled for TPH-d (HBH32 and HBH33 soil/gw). ND in gw and up to 430 mg/kg in soil. | No additional sampling or remediation was recommended. Agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. |
| 8) Peaker Unit Pumping Area | Y | Previous spills reportedly not completely cleaned up. | Two soil borings were completed and sampled for TPH-d (HBH43 and HBH44soil/gw).TPH-d at 34 mg/kg in soil and 2.5 mg/l of total TPH-d in gw. | No additional sampling or remediation was recommended. Agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. |
| 9) Power Block Perimeters | Y | Potential leaks penetrating concrete floors or leaking drain lines resulting in subsurface contamination. | 4 soil borings for each powerblock and a total of 3 gw samples analyzed for TPH-d. Some samples analyzed for metals and VOCs. De minims conditions were reported for soil and groundwater. | No further action at this time. Agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. |
| 10) Peaker Unit | Y | Potential leaks penetrating concrete floors, or leaking drain lines resulting in subsurface contamination. | Two soil borings analyzed for TPH-d and metals. De minimis conditions (TPH-d total 63 mg/kg). TPH in gw at 0.67 mg/L. | No further action. |

TABLE 2-1
Summary of Previous Phase II Investigations
Huntington Beach Generating Station

| Area | Site Located on Sale Property? | Basis of Issue | Phase I/II Investigation Work Performed | Phase I/II Investigation Conclusions |
|---|---|---|---|---|
| 11) Transformers | Y | Potential for past leaks and spills resulting in subsurface contamination. | Two soil borings. De minimis conditions. | No additional sampling or remediation is recommended. |
| 12) Pipelines | Y | Potential leaks resulting in subsurface contamination. Phase I indicates pipelines have not been tested since installation. | Most pipelines are aboveground and no evidence or documentation of a release was observed or obtained during the Phase II ESA. A subsurface investigation was not performed and adjacent areas were sampled during the Phase II ESA. | No further action. |
| 13) Hazardous Waste Storage Area | N | Potential releases resulting in subsurface contamination. | Two samples HBH56 soil/gw and HBH65 soil/gw were analyzed for TPH-d, VOCs, PCBs and metals. De minimis conditions. | No additional sampling or remediation was recommended. Agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. |
| 14) Oil/Water Sump Near Displacement Oil Tank | Y | Potential leaks resulting in subsurface contamination. | One soil boring, 2 samples from 9' bgs and 10.5' bgs analyzed for TPH-d. Total TPH-d at 109 mg/kg. | No additional sampling or remediation was recommended. Agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. |
| 15) Secondary Fuel Pumping Area | Y | Potential leaks resulting in subsurface contamination. | Samples from 2 soil borings (HBH03 and HBH37) analyzed for TPH-d and 1 sample for metals. 1 gw sample analyzed for TPH-d. | No further action. |
| 16) Former Concrete Sump Near Retention Basin | Y | Potential leaks resulting in subsurface contamination. | Samples from 1 boring HBH42 soil/gw analyzed for TPH-d, metals and VOCs | Undertake a screening evaluation for demonstrating the safety of the site for industrial use and/or obtain a letter from regulatory agency which confirms no risk management or remediation is needed for continued industrial use. |
| 17) Peaker Unit Sump | Y | Potential leaks resulting in subsurface contamination. | Samples from 1 boring HBH55 analyzed for TPH-d and metals. | No additional sampling or remediation was recommended. Agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. |
| 18) Historic Oil Reservoir at Units 3 & 4 | Y | Potential leaks resulting in subsurface contamination. | 3 soil borings (HBH54, HBH69, and HBH70). TPH d at 29,000 mg/kg, some VOCs detected in soil and gw. | Undertake a screening evaluation for demonstrating the safety of the site for industrial use and/or obtain a letter from regulatory agency which confirms no risk management or remediation is needed for continued industrial use. |
| 19) Oil/Water Separator & Sump at Units 1 & 2 | Y | Potential releases resulting in subsurface contamination. | 1 soil boring (HBH40) analyzed for VOCs, metals and TPH-d. De minimis concentrations in soil, however, investigation was limited due to access restrictions. | No additional sampling or remediation was recommended. Agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. |
| 20) Oil/Water Separator & Sump at Units 3& 4 | Y | Potential releases resulting in subsurface contamination. | 3 soil borings (HBH41, HBH53, and HBH54) analyzed for TPH-d, VOCs and metals. De minimis concentrations in soil reported. TPH-d at 29,000 mg/kg and VOCs in soil. | No additional sampling or remediation was recommended. Agency negotiations, additional sampling, and/or remediation may be necessary or appropriate as part of decommissioning. |
| 21) Existing and Former UST Location | Y | Potential subsurface contamination. | 2 soil borings (HBH34 soil and HBH35 soil/gw) sampled for TPH-d and g, and BTEX. TPHg at 0.88 mg/L detected in gw. | No further action. |

# TABLE 4-1

## Summary of Samples Collected, Analyses, and Rationale

## Huntington Beach Generating Station

| Location No. | Location Name | No. of Samples | | Sample Numbers | Number and Type of Analyses | | | | | | Sampling Rationale |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Field | Dup. | | Metals | TPH-d | TPH-g | VOCs | SVOC | PCBs | |
| **Soil Samples** | | | | | | | | | | | |
| 5 | Concrete Degreasing Pit | 2 | - | HG05-01, HG05-02 | 2 | 2 | - | 2 | 2 | - | Not assessed during Phase I / II |
| 6 (a,b) | Switchyard Perimeters | 4 | - | HG06A-01, HG06A-02, HG06B-01, HG06B-02 | - | 4 | - | - | 4 | 4 | Confirmation of previous findings, include SVOCs. |
| 8 | Peaker Unit Pumping Area | 2 | 1 | HG08-01, HG08-02, HG08-03 (DUP) | 3 | 3 | - | 3 | 3 | - | Further assessment of latera spread of contamination, include SVOCs. |
| 9 | Power Block Perimeters | 2 | - | HG09-01, HG09-02 | 2 | 2 | - | 2 | 2 | - | Confirmation of previous findings, include SVOCs. |
| 10 | Peaker Unit | 2 | - | HG10-01, HG10-02 | 2 | 2 | - | 2 | 2 | - | Confirmation of previous findings and expand to include VOCs and SVOCs. |
| 16 | Former Concrete Sump | 2 | 1 | HG16-01, HG16-02, HG16-03 (DUP) | 3 | 3 | - | 3 | 3 | - | Collect down gradient samples for analyses, include SVOCs. |
| 18 | Historic Oil Reservoir @ Units 3 and 4 | 2 | - | HG18-01, HG18-02 | 2 | 2 | - | 2 | 2 | - | Further assessment of latera spread of contamination, include SVOCs. |
| 19 | O/WS & Sump @ Units 1 and 2 | 2 | 1 | HG19-01, HG19-02, HG19-03 (DUP) | 3 | 3 | - | 3 | 3 | - | Collect down gradient samples for analyses, include SVOCs. |
| 20 | O/WS & Sump @ Units 3 and 4 | 2 | - | HG20-01, HG20-02 | 2 | 2 | - | 2 | 2 | - | Further assessment of latera spread of contamination, include SVOCs. |
| | **Total** | **20** | **3** | | **19** | **23** | **0** | **19** | **23** | **4** | |
| **Groundwater Samples** | | | | | | | | | | | |
| 5 | Concrete Degreasing Pit | 1 | 1 | HG5B-10-W, HG5B-11-W | 2 | 2 | - | 2 | 2 | - | Not assessed during Phase I / II |
| 6 (a,b) | Switchyard Perimeters | 2 | - | HG06A-10-W, HG06B-10-W | - | 2 | - | - | 2 | 2 | Confirmation of previous findings, include SVOCs. |
| 8 | Peaker Unit Pumping Area | 1 | - | HG08-10-W, HG08-11-W | - | 2 | - | 1 | 1 | - | Further assessment of latera spread of contamination, include SVOCs. |
| 9 | Power Block Perimeters | 1 | - | HG09-10-W | 1 | 1 | - | 1 | 1 | - | Confirmation of previous findings, include SVOCs. |
| 10 | Peaker Unit | - | - | - | - | - | - | - | - | - | Confirmation of previous findings and expand to include VOCs and SVOCs. |
| 16 | Former Concrete Sump | 1 | - | HG16-10-W | 1 | 1 | - | 1 | 1 | - | Collect down gradient samples for analyses, include SVOCs. |
| 18 | Historic Oil Reservoir @ Units 3 and 4 | 1 | 1 | HG18-10-W, HG18-11-W (DUP) | 2 | 2 | - | 2 | 2 | - | Further assessment of latera spread of contamination, include SVOCs. |
| 19 | O/WS & Sump @ Units 1 and 2 | 1 | - | HG19-10-W | 1 | 1 | - | 1 | 1 | - | Collect down gradient samples for analyses, include SVOCs. |
| 20 | O/WS & Sump @ Units 3 and 4 | 1 | 1 | HG20-10-W, HG20-11-W | 2 | 2 | - | 2 | 2 | - | Further assessment of latera spread of contamination, include SVOCs. |
| | **Total** | **9** | **3** | | **9** | **13** | **0** | **10** | **12** | **2** | |

**TABLE 4-2**
**Sampling Summary**
**Huntington Beach Generating Station**

| Location | Name | No. of Samples | | Date | Sample | Sample |
|---|---|---|---|---|---|---|
| | | Field | Dup. | Sampled | Numbers | Depth Interval (ft.)* |
| **Soil Samples** | | | | | | |
| 5 | Concrete Degreasing Pit | 2 | - | 3/19/98 | HG05-01, HG05-02 | 2-4, 9-11 |
| 6a | Switchyard Perimeters | 2 | - | 3/19/98 | HG06A-01, HG06A-02 | 2-4, 6-8 |
| 6b | | 2 | | 3/19/98 | HG06B-01, HG06B-02 | 2-4, 6-8 |
| 8 | Peaker Unit Pumping Area | 2 | 1 | 3/19/98 | HG08-01, HG08-02, HG08-03 (DUP) | 1-3, 6-8, 1-3 |
| 9 | Power Block Perimeters | 2 | - | 3/20/98 | HG09-01, HG09-02 | 2-4, 10-12 |
| 10 | Peaker Unit | 2 | - | 3/19/98 | HG10-01, HG10-02 | 2-4, 8-10 |
| 16 | Former Concrete Sump | 2 | 1 | 3/19/98 | HG16-01, HG16-02, HG16-03 (DUP) | 2-4, 4-5, 5-6 |
| 18 | Historic Oil Reservoir @ Units 3 and 4 | 2 | - | 3/19/98 | HG18-01, HG18-02 | 2-4, 10-12 |
| 19 | O/WS & Sump @ Units 1 and 2 | 2 | 1 | 3/19/98 | HG19-01, HG19-02, HG19-03 (DUP) | 3-4, 9-11, 3-4 |
| 20 | O/WS & Sump @ Units 3 and 4 | 2 | - | 3/20/98 | HG20-01, HG20-02 | 3-4, 9-11 |
| **Groundwater Samples** | | | | | | |
| 5 | Concrete Degreasing Pit | 1 | 1 | 3/20/98 | HG5B-10-W, HG5B-11-W | 25 |
| 6a | Switchyard Perimeters | 1 | - | 3/19/98 | HG06A-10-W | 20 |
| 6b | | 1 | - | 3/19/98 | HG06B-10-W | 16 |
| 8 | Peaker Unit Pumping Area | 1 | 1 | 3/20/98 | HG08-10-W, HG08-11-W | 13 |
| 9 | Power Block Perimeters | 1 | - | 3/20/98 | HG09-10-W | 13 |
| 10 | Peaker Unit | - | - | - | - | - |
| 16 | Former Concrete Sump | 1 | - | 3/19/98 | HG16-10-W | 20 |
| 18 | Historic Oil Reservoir @ Units 3 and 4 | 1 | 1 | 3/19/98 | HG18-10-W, HG18-11-W (DUP) | 20 |
| 19 | O/WS & Sump @ Units 1 and 2 | 1 | - | 3/19/98 | HG19-10-W | 25 |
| 20 | O/WS & Sump @ Units 3 and 4 | 1 | 1 | 3/20/98 | HG20-10-W, HG20-11-W | 25 |

**Notes:**

* For groundwater samples, depth of sampling refers to the bottom depth of the temporary piezometer

# Table 5-1a
## Soil Analytical Results TPH Carbon Chain
## Huntington Beach Generating Station
## (Concentrations in mg/kg)

| Sample ID | Sample Location | Sample Date | Sample Depth (feet) | C10-<C15 | C15-<C20 | C20-<C25 | C25-<C30 | C30-<C35 | C35-C40 |
|---|---|---|---|---|---|---|---|---|---|
| HG05-01 | 5 | 3/19/98 | 2-4 | <12 | <12 | <12 | <12 | <12 | <12 |
| HG05-02 | 5 | 3/19/98 | 9-11 | <11 | <11 | <11 | <11 | <11 | <11 |
| HG06A-01 | 6a | 3/19/98 | 2-4 | <12 | <12 | <12 | <12 | <12 | <12 |
| HG06A-02 | 6a | 3/19/98 | 6-8 | <11 | <11 | <11 | <11 | <11 | <11 |
| HG06B-01 | 6b | 3/19/98 | 2-4 | <12 | <12 | <12 | <12 | <12 | <12 |
| HG06B-02 | 6b | 3/19/98 | 6-8 | <12 | <12 | <12 | <12 | <12 | <12 |
| HG08-01 | 8 | 3/19/98 | 1-3 | <12 | <12 | <12 | <12 | <12 | <12 |
| HG08-02 | 8 | 3/19/98 | 6-8 | <11 | <11 | <11 | <11 | <11 | <11 |
| HG08-03 | 8 | 3/19/98 | 1-3 | <12 | <12 | <12 | <12 | <12 | <12 |
| HG09-01 | 9 | 3/19/98 | 2-4 | <11 | <11 | <11 | <11 | <11 | <11 |
| HG09-02 | 9 | 3/19/98 | 10-12 | <12 | <12 | <12 | <12 | <12 | <12 |
| HG10-01 | 10 | 3/19/98 | 2-4 | <11 | <11 | <11 | <11 | <11 | <11 |
| HG10-02 | 10 | 3/19/98 | 8-10 | <14 | <14 | <14 | <14 | <14 | <14 |
| HG16-01 | 16 | 3/19/98 | 2-4 | <11 | <11 | <11 | <11 | <11 | <11 |
| HG16-02 | 16 | 3/19/98 | 4-5 | <12 | <12 | <12 | <12 | <12 | <12 |
| HG16-03 | 16 | 3/19/98 | 5-6 | <12 | <12 | <12 | <12 | <12 | <12 |
| HG18-01 | 18 | 3/19/98 | 2-4 | <11 | <11 | <11 | <11 | <11 | <11 |
| HG18-02 | 18 | 3/19/98 | 10-12 | <12 | <12 | <12 | <12 | <12 | <12 |
| HG19-01 | 19 | 3/20/98 | 3-4 | <11 | **6.6 J** | **16** | **33** | **33** | **35** |
| HG19-02 | 19 | 3/20/98 | 9-11 | <12 | <12 | <12 | <12 | **8.4 J** | **18** |
| HG19-03 | 19 | 3/20/98 | 3-4 | <11 | <11 | <11 | <11 | <11 | <11 |
| HG20-01 | 20 | 3/20/98 | 3-4 | <11 | <11 | <11 | <11 | <11 | <11 |
| HG20-02 | 20 | 3/20/98 | 9-11 | <12 | <12 | <12 | <12 | <12 | <12 |

**Notes:**

Samples analyzed for TPH distribution by modified EPA Method 8015. Laboratory Practical Quantitation Limits (PQL) were reported.

mg/kg - milligrams per kilogram

TPH - Total Petroleum Hydrocarbons

Numbers in bold indicate a reported concentration above the practical quantitation limit.

J - Estimated value. Concentration is between PQL and Method Detection Limit (MDL).

"<" - Compound was not detected above indicated PQL.

Table 5-1b
Soil Analytical Results VOCs
Huntington Beach Generating Station
(Concentrations in ug/kg)

| Sample ID | Sample Location | Sample Date | Sample Depth (feet) | 1,1,1,2-Tetrachloroethane | 1,1,1-Trichloroethane | 1,1,2,2-Tetrachloroethane | 1,1,2-Trichloroethane | 1,1-Dichloroethane | 1,1-Dichloroethene | 1,1-Dichloropropene | 1,2,3-Trichlorobenzene | 1,2,3-Trichloropropane | 1,2,4-Trichlorobenzene | 1,2,4-Trimethylbenzene | 1,2-Dibromo-3-chloropropane | 1,2-Dibromoethane (EDB) | 1,2-Dichlorobenzene | 1,2-Dichloroethane | 1,2-Dichloropropane | 1,3,5-Trimethylbenzene | 1,3-Dichlorobenzene | 1,3-Dichloropropane | 1,4-Dichlorobenzene | 2,2-Dichloropropane | 2-Butanone | 2-Chloroethyl vinyl ether | 2-Chlorotoluene | 2-Hexanone | 4-Chlorotoluene | 4-Methyl-2-pentanone | Acetone | Benzene | Bromobenzene | Bromodichloromethane | Bromoform | Bromomethane | Carbon disulfide | Carbon tetrachloride | Chlorobenzene | Chloroethane | Chloroform | Chloromethane | cis-1,2-Dichloroethene | cis-1,3-Dichloropropene | Dibromochloromethane | Dibromomethane | Dichlorodifluoromethane | Dichlorofluoromethane | Ethylbenzene | Hexachlorobutadiene | Isopropylbenzene | m-Xylene & p-Xylene | Methyl tert-butyl ether | Methylene chloride | n-Butylbenzene | n-Propylbenzene | Naphthalene | o-Xylene | p-Isopropyltoluene | sec-Butylbenzene | Styrene | tert-Butylbenzene | Tetrachloroethene | Toluene | trans-1,2-Dichloroethene | trans-1,3-Dichloropropene | Trichloroethene | Trichlorofluoromethane | Vinyl acetate | Vinyl chloride |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG05-01 | 5 | 3/19/98 | 2-4 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG05-02 | 5 | 3/19/98 | 9-11 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG08-01 | 8 | 3/19/98 | 1-3 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG08-02 | 8 | 3/19/98 | 6-8 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG08-03 | 8 | 3/19/98 | 1-3 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG09-01 | 9 | 3/19/98 | 2-4 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG09-02 | 9 | 3/19/98 | 10-12 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG10-01 | 10 | 3/19/98 | 2-4 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG10-02 | 10 | 3/19/98 | 8-10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 B | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG16-01 | 16 | 3/19/98 | 2-4 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG16-02 | 16 | 3/19/98 | 4-5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG16-03 | 16 | 3/19/98 | 5-6 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG18-01 | 18 | 3/19/98 | 2-4 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG18-02 | 18 | 3/19/98 | 10-12 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG19-01 | 19 | 3/20/98 | 3-4 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | **0.41 J** | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG19-02 | 19 | 3/20/98 | 9-11 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG19-03 | 19 | 3/20/98 | 3-4 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG20-01 | 20 | 3/20/98 | 3-4 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |
| HG20-02 | 20 | 3/20/98 | 9-11 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <5 | <20 | <10 | <5 | <10 | <5 | <10 | <20 | <5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <10 | <5 | <10 | <2.5 | <5 | <5 | <5 | <10 | <5 | <5 | <5 | <5 | <2. | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <5 | <5 | <5 | <5 | <2.5 | <5 | <5 | <10 | <10 | <10 |

Notes:

Samples analyzed for VOC distribution by EPA Method 8260A. Laboratory Practical Quantitation Limits (PQL) were reported.
ug/kg - micrograms per kilogram
VOC - Volatile Organic Compound
Numbers in bold indicate a reported concentration above the practical quantitation limit.
J - Estimated value. Concentration is between PQL and Method Detection Limit (MDL).
B - Data qualified as non detect following QA/QC review due to blank contamination.
"<" - Compound was not detected above indicated PQL.

# Table 5-1c
## Soil Analytical Results SVOCs
## Huntington Beach Generating Station
## (Concentrations in ug/kg)

| Sample ID | Sample Location | Sample Date | Sample Depth (feet) | 2,4,5-Trichlorophenol | 2,4,6-Trichlorophenol | 2,4-Dichlorophenol | 2,4-Dimethylphenol | 2,4-Dinitrophenol | 2,4-Dinitrotoluene | 2,6-Dinitrotoluene | 2-Chloronaphthalene | 2-Chlorophenol | 2-Methylnaphthalene | 2-Methylphenol | 2-Nitroaniline | 2-Nitrophenol | 3,3'-Dichlorobenzidine | 3-Nitroaniline | 4,6-Dinitro-2-methylphenol | 4-Bromophenyl phenyl ether | 4-Chloro-3-methylphenol | 4-Chloroaniline | 4-Chlorophenyl phenyl ether |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG05-01 | 5 | 3/19/98 | 2-4 | <1900 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <770 | <1900 | <1900 | <390 | <760 | <390 | <390 |
| HG05-02 | 5 | 3/19/98 | 9-11 | <1800 | <380 | <380 | <380 | <1800 | <380 | <380 | <380 | <380 | <380 | <380 | <1800 | <380 | <760 | <1800 | <1800 | <380 | <750 | <380 | <380 |
| HG06A-01 | 6a | 3/19/98 | 2-4 | <1900 | <400 | <400 | <400 | <1900 | <400 | <400 | <400 | <400 | <400 | <400 | <1900 | <400 | <800 | <1900 | <1900 | <400 | <780 | <400 | <400 |
| HG06A-02 | 6a | 3/19/98 | 6-8 | <1800 | <370 | <370 | <370 | <1800 | <370 | <370 | <370 | <370 | <370 | <370 | <1800 | <370 | <740 | <1800 | <1800 | <370 | <730 | <370 | <370 |
| HG06B-01 | 6b | 3/19/98 | 2-4 | <1900 | <400 | <400 | <400 | <1900 | <400 | <400 | <400 | <400 | <400 | <400 | <1900 | <400 | <800 | <1900 | <1900 | <400 | <790 | <400 | <400 |
| HG06B-02 | 6b | 3/19/98 | 6-8 | <1900 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <780 | <1900 | <1900 | <390 | <770 | <390 | <390 |
| HG08-01 | 8 | 3/19/98 | 1-3 | <1900 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <780 | <1900 | <1900 | <390 | <770 | <390 | <390 |
| HG08-02 | 8 | 3/19/98 | 6-8 | <1800 | <380 | <380 | <380 | <1800 | <380 | <380 | <380 | <380 | <380 | <380 | <1800 | <380 | <750 | <1800 | <1800 | <380 | <740 | <380 | <380 |
| HG08-03 | 8 | 3/19/98 | 1-3 | <1900 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <780 | <1900 | <1900 | <390 | <770 | <390 | <390 |
| HG09-01 | 9 | 3/19/98 | 2-4 | <1700 | <360 | <360 | <360 | <1700 | <360 | <360 | <360 | <360 | <360 | <360 | <1700 | <360 | <720 | <1700 | <1700 | <360 | <710 | <360 | <360 |
| HG09-02 | 9 | 3/19/98 | 10-12 | <1900 | <380 | <380 | <380 | <1900 | <380 | <380 | <380 | <380 | <380 | <380 | <1900 | <380 | <770 | <1900 | <1900 | <380 | <750 | <380 | <380 |
| HG10-01 | 10 | 3/19/98 | 2-4 | <1800 | <380 | <380 | <380 | <1800 | <380 | <380 | <380 | <380 | <380 | <380 | <1800 | <380 | <750 | <1800 | <1800 | <380 | <740 | <380 | <380 |
| HG10-02 | 10 | 3/19/98 | 8-10 | <2200 | <450 | <450 | <450 | <2200 | <450 | <450 | <450 | <450 | <450 | <450 | <2200 | <450 | <900 | <2200 | <2200 | <450 | <880 | <450 | <450 |
| HG16-01 | 16 | 3/19/98 | 2-4 | <1800 | <380 | <380 | <380 | <1800 | <380 | <380 | <380 | <380 | <380 | <380 | <1800 | <380 | <750 | <1800 | <1800 | <380 | <740 | <380 | <380 |
| HG16-02 | 16 | 3/19/98 | 4-5 | <1900 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <780 | <1900 | <1900 | <390 | <770 | <390 | <390 |
| HG16-03 | 16 | 3/19/98 | 5-6 | <1900 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <780 | <1900 | <1900 | <390 | <770 | <390 | <390 |
| HG18-01 | 18 | 3/19/98 | 2-4 | <1700 | <360 | <360 | <360 | <1700 | <360 | <360 | <360 | <360 | <360 | <360 | <1700 | <360 | <710 | <1700 | <1700 | <360 | <700 | <360 | <360 |
| HG18-02 | 18 | 3/19/98 | 10-12 | <1900 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <790 | <1900 | <1900 | <390 | <770 | <390 | <390 |
| HG19-01 | 19 | 3/20/98 | 3-4 | <3500 | <720 | <720 | <720 | <3500 | <720 | <720 | <720 | <720 | <720 | <720 | <3500 | <720 | <1400 | <3500 | <3500 | <720 | <1400 | <720 | <720 |
| [illegible] | 19 | 3/20/98 | 9-11 | <3800 | <780 | <780 | <780 | <3800 | <780 | <780 | <780 | <780 | <780 | <780 | <3800 | <780 | <1600 | <3800 | <3800 | <780 | <1500 | <780 | <780 |
| [illegible] | 19 | 3/20/98 | 3-4 | <1800 | <370 | <370 | <370 | <1800 | <370 | <370 | <370 | <370 | <370 | <370 | <1800 | <370 | <730 | <1800 | <1800 | <370 | <720 | <370 | <370 |
| HG20-01 | 20 | 3/20/98 | 3-4 | <1800 | <370 | <370 | <370 | <1800 | <370 | <370 | <370 | <370 | <370 | <370 | <1800 | <370 | <750 | <1800 | <1800 | <370 | <740 | <370 | <370 |
| HG20-02 | 20 | 3/20/98 | 9-11 | <1900 | <380 | <380 | <380 | <1900 | <380 | <380 | <380 | <380 | <380 | <380 | <1900 | <380 | <770 | <1900 | <1900 | <380 | <760 | <380 | <380 |

| Sample ID | 4-Methylphenol | 4-Nitroaniline | 4-Nitrophenol | Acenaphthene | Acenaphthylene | Anthracene | Benzo(a)anthracene | Benzo(a)pyrene | Benzo(b)fluoranthene | Benzo(g,h,i)perylene | Benzo(k)fluoranthene | bis(2-Chloroethoxy)-methane | bis(2-Chloroethyl) ether | bis(2-Ethylhexyl)-phthalate | Butyl benzyl phthalate | Carbazole | Chrysene | Di-n-butyl phthalate | Di-n-octyl phthalate | Dibenz(a,h)anthracene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG05-01 | <390 | <1900 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 |
| HG05-02 | <380 | <1800 | <1800 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 |
| HG06A-01 | <400 | <1900 | <1900 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 |
| HG06A-02 | <370 | <1800 | <1800 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 |
| HG06B-01 | <400 | <1900 | <1900 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <400 |
| HG06B-02 | <390 | <1900 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 |
| HG08-01 | <390 | <1900 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 |
| HG08-02 | <380 | <1800 | <1800 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 |
| HG08-03 | <390 | <1900 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | 330 J | <390 | <390 | <390 | <390 | <390 | <390 |
| HG09-01 | <360 | <1700 | <1700 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 |
| HG09-02 | <380 | <1900 | <1900 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 |
| HG10-01 | <380 | <1800 | <1800 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 |
| HG10-02 | <450 | <2200 | <2200 | <450 | <450 | <450 | <450 | <450 | <450 | <450 | <450 | <450 | <450 | <450 | <450 | <450 | <450 | <450 | <450 | <450 |
| HG16-01 | <380 | <1800 | <1800 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 |
| HG16-02 | <390 | <1900 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | 130 J | <390 | <390 | <390 | <390 | <390 | <390 |
| HG16-03 | <390 | <1900 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | 85 J | <390 | <390 | <390 | <390 | <390 | <390 |
| HG18-01 | <360 | <1700 | <1700 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <360 |
| HG18-02 | <390 | <1900 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <390 |
| HG19-01 | <720 | <3500 | <3500 | <720 | <720 | <720 | 280 J | 310 J | 600 J | 240 J | <720 | <720 | <720 | 64 J | <720 | <720 | 420 J | <720 | <720 | <720 |
| [illegible] | <780 | <3800 | <3800 | <780 | <780 | <780 | <780 | 84 J | <780 | <780 | <780 | <780 | <780 | <780 | <780 | <780 | 58 J | <780 | <780 | <780 |
| [illegible] | <370 | <1800 | <1800 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 |
| HG20-01 | <370 | <1800 | <1800 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <370 |
| HG20-02 | <380 | <1900 | <1900 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <380 |

| Sample ID | Dibenzofuran | Diethyl phthalate | Dimethyl phthalate | Fluoranthene | Fluorene | Hexachlorobenzene | Hexachlorobutadiene | Hexachlorocyclopentadiene | Hexachloroethane | Indeno(1,2,3-c,d)pyrene | Isophorone | N-Nitroso-di-n-propylamine | N-Nitrosodiphenylamine | Naphthalene | Nitrobenzene | Pentachlorophenol | Phenanthrene | Phenol | Pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG05-01 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 |
| HG05-02 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <1800 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <1800 | <380 | <380 | <380 |
| HG06A-01 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <1900 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <1900 | <400 | <400 | <400 |
| HG06A-02 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <1800 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <1800 | <370 | <370 | <370 |
| HG06B-01 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <1900 | <400 | <400 | <400 | <400 | <400 | <400 | <400 | <1900 | <400 | <400 | <400 |
| HG06B-02 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 |
| HG08-01 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 |
| HG08-02 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <1800 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <1800 | <380 | <380 | <380 |
| HG08-03 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 |
| HG09-01 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <1700 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <1700 | <360 | <360 | <360 |
| HG09-02 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <1900 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <1900 | <380 | <380 | <380 |
| HG10-01 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <1800 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <1800 | <380 | <380 | <380 |
| HG10-02 | <450 | <450 | <450 | <450 | <450 | <450 | <450 | <2200 | <450 | <450 | <450 | <450 | <450 | <450 | <450 | <2200 | <450 | <450 | <450 |
| HG16-01 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <1800 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <1800 | <380 | <380 | <380 |
| HG16-02 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 |
| HG16-03 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 |
| HG18-01 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <1700 | <360 | <360 | <360 | <360 | <360 | <360 | <360 | <1700 | <360 | <360 | <360 |
| HG18-02 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 | <390 | <390 | <390 | <390 | <1900 | <390 | <390 | <390 |
| HG19-01 | <720 | <720 | <720 | 640 J | <720 | <720 | <720 | <3500 | <720 | 160 J | <720 | <720 | <720 | <720 | <720 | <3500 | 380 J | <720 | 1000 |
| [illegible] | <780 | <780 | <780 | <780 | <780 | <780 | <780 | <3800 | <780 | <780 | <780 | <780 | <780 | <780 | <780 | <3800 | <780 | <780 | 100 J |
| [illegible] | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <1800 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <1800 | <370 | <370 | <370 |
| HG20-01 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <1800 | <370 | <370 | <370 | <370 | <370 | <370 | <370 | <1800 | <370 | <370 | <370 |
| HG20-02 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <1900 | <380 | <380 | <380 | <380 | <380 | <380 | <380 | <1900 | <380 | <380 | <380 |

Notes:

Samples analyzed for SVOC distribution by EPA Method 8270B. Laboratory Practical Quantitation Limits (PQL) were reported.
ug/kg - micrograms per kilogram
SVOC - Semi Volatile Organic Compound
Numbers in bold indicate a reported concentration above the practical quantitation limit.
J - Estimated value. Concentration is between PQL and Method Detection Limit (MDL).
"<" - Compound was not detected above indicated PQL.

# Table 5-1d
## Soil Analytical Results Metals
## Huntington Beach Generating Station
## (Concentrations in mg/kg)

| Sample ID | Sample Location | Sample Date | Sample Depth (feet) | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Copper | Lead | Mercury | Molybdenum | Nickel | Selenium | Silver | Thallium | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG05-01 | 5 | 3/19/98 | 2-4 | 0.4 J | 2.8 | 36.8 | 0.3 | 0.1 J | 19 | 4.1 J | 8.8 | 3.9 | <0.12 | 1.2 J | 11.1 | <0.58 | <0.58 | 0.77 J | 23.3 | 34.7 |
| HG05-02 | 5 | 3/19/98 | 9-11 | 0.4 J | 2.4 | 12.1 | 0.1 J | <0.57 | 34.4 | 1.6 J | 2.7 J | 0.89 | <0.11 | 1.2 J | 17.3 | <0.57 | <0.57 | <1.1 | 10.7 | 10.8 |
| HG08-01 | 8 | 3/19/98 | 1-3 | 0.4 J | 1.4 | 35.7 | 0.27 | 0.066 J | 21.8 | 3.7 J | 4.5 | 2.2 | <0.12 | 0.5 J | 12.2 | <0.59 | <0.59 | <1.2 | 20.6 | 21.1 |
| HG08-02 | 8 | 3/19/98 | 6-8 | 0.73 J | 3.4 | 90.7 | 0.45 | <1.1 | 22.7 | 8.4 J | 15.6 | 4.3 | <0.11 | 0.87 J | 14.8 | <1.1 | <1.1 | 1.4 J | 42.7 | 58.5 |
| HG08-03 | 8 | 3/19/98 | 1-3 | 0.42 J | 1.3 | 28.8 | 0.2 | <0.59 | 20 | 2.7 J | 3.8 | 1.3 | <0.12 | 0.52 J | 10.6 | <0.59 | <0.59 | <1.2 | 17.2 | 18.6 |
| HG09-01 | 9 | 3/19/98 | 2-4 | 0.51 J | 3.2 j | 56.4 | 0.44 | 0.23 J | 26.2 j | 6.3 | 14.8 j | 5.8 | <0.11 | 1.5 J | 16.4 j | <0.54 | <0.54 | 0.89 J | 35.4 | 48.5 j |
| HG09-02 | 9 | 3/19/98 | 10-12 | 0.47 J | 2.8 | 42 | 0.31 | 0.28 J | 19 | 4.7 J | 10.4 | 3.9 | <0.12 | 1 J | 12.1 | <0.58 | <0.58 | 0.99 J | 26.5 | 36 |
| HG10-01 | 10 | 3/19/98 | 2-4 | 0.38 J | 1.7 | 25.9 | 0.32 | 0.084 J | 15.4 | 4.1 J | 4.3 | 2.2 | <0.11 | 0.67 J | 8.6 | <0.57 | <0.57 | 0.61 J | 22.4 | 21.6 |
| HG10-02 | 10 | 3/19/98 | 8-10 | 1.3 J | 5 | 166 | 0.99 | 0.48 J | 40.7 | 15.1 | 42.5 | 13.5 | 0.037 J | 1.8 J | 27.5 | <1.4 | <1.4 | <2.7 | 78.7 | 108 |
| HG16-01 | 16 | 3/19/98 | 2-4 | 0.59 J | 3 | 55.1 | 0.49 | 0.2 J | 19.9 | 6.4 | 17.1 | 8.6 | <0.11 | 2.9 J | 13.3 | <0.57 | <0.57 | 1 J | 33.7 | 58.3 |
| HG16-02 | 16 | 3/19/98 | 4-5 | 0.44 J | 3.1 | 34.3 | 0.25 | 0.099 J | 14.9 | 4.1 J | 6.3 | 2.1 | <0.12 | 1.1 J | 9.1 | <0.59 | <0.59 | 0.74 J | 24.1 | 32.5 |
| HG16-03 | 16 | 3/19/98 | 5-6 | 0.45 J | 3.8 | 37.4 | 0.31 | 0.14 J | 18.1 | 4.7 J | 9.5 | 3.6 | <0.12 | 1.3 J | 13.9 | <0.59 | <0.59 | 1 J | 29.9 | 37.7 |
| HG18-01 | 18 | 3/19/98 | 2-4 | 0.47 J | 3.2 | 48.3 | 0.29 | 0.17 J | 17 | 6 | 18.2 | 6.6 | <0.11 | 1.6 J | 11.4 | <0.54 | <0.54 | 0.81 J | 24.9 | 35.5 |
| HG18-02 | 18 | 3/19/98 | 10-12 | 0.38 J | 2.5 | 32.8 | 0.22 | 0.071 J | 14.5 | 3.9 J | 5.7 | 1.9 | 0.037 J | 1.2 J | 8.4 | <0.6 | <0.6 | 0.95 J | 20.5 | 30.1 |
| HG19-01 | 19 | 3/20/98 | 3-4 | 0.5 J | 2.7 | 57.8 | 0.28 | 0.17 J | 18.5 | 4.8 J | 12.6 | 8.5 | 0.046 J | 1.7 J | 31.8 | <0.55 | <0.55 | 0.91 J | 60.4 | 40.8 |
| HG19-02 | 19 | 3/20/98 | 9-11 | 0.43 J | 1.2 | 44.3 | 0.18 | 0.081 J | 13.5 | 3.8 J | 9.9 | 5.2 | <0.12 | 0.86 J | 23.2 | <0.59 | <0.59 | 0.67 J | 44 | 30.4 |
| HG19-03 | 19 | 3/20/98 | 3-4 | 0.55 J | 2.8 | 73.8 | 0.31 | 0.17 J | 20.6 | 6 | 12.1 | 7.2 | 0.092 J | 0.87 J | 19.1 | <0.55 | <0.55 | <1.1 | 34.9 | 46.5 |
| HG20-01 | 20 | 3/20/98 | 3-4 | 0.42 J | 3.6 | 101 | 0.24 | 0.5 J | 20.2 | 3.2 J | 4.5 | 2.2 | <0.11 | 1.7 J | 12.3 | <0.57 | <0.57 | 0.6 J | 32.9 | 28.8 |
| HG20-02 | 20 | 3/20/98 | 9-11 | 0.48 J | 2.3 | 34.6 | 0.21 | 0.091 J | 14.6 | 3.7 J | 5.3 | 1.7 | <0.12 | 1 J | 8.9 | <0.58 | <0.58 | 0.65 J | 21.8 | 29.1 |

Notes:

Samples analyzed for CCR Title 22 in accordance with EPA Methods 6010A with the exception of arsenic (EPA Method 7060) and mercury (EPA Method 7471A).

mg/kg - milligrams per kilograms

Numbers in bold indicate a reported concentration above the PQL

J - Estimated value. Concentration is between PQL and Method Detection Limit (MDL).

j - Qualified as estimated value following QA/QC review.

"<" - Compound was not detected above indicated PQL.

## Table 5-1e
## Soil Analytical Results PCBs
## Huntington Beach Generating Station
## (Concentrations in ug/kg)

| Sample ID | Sample Location | Sample Date | Sample Depth (feet) | Aroclor 1016 | Aroclor 1221 | Aroclor 1232 | Aroclor 1242 | Aroclor 1248 | Aroclor 1254 | Aroclor 1260 |
|---|---|---|---|---|---|---|---|---|---|---|
| HG06A-01 | 6a | 35873 | 2-4 | <40 | <40 | <40 | <40 | <40 | <40 | <40 |
| HG06A-02 | 6a | 35873 | 6-8 | <37 | <37 | <37 | <37 | <37 | <37 | <37 |
| HG06B-01 | 6b | 35873 | 2-4 | <40 | <40 | <40 | <40 | <40 | <40 | <40 |
| HG06B-02 | 6b | 35873 | 6-8 | <39 | <39 | <39 | <39 | <39 | <39 | <39 |

**Notes:**

Samples analyzed for PCB distribution by EPA Method 8081. Laboratory Practical Quantitation Limits (PQL) were reported.
ug/kg - micrograms per kilogram
PCB - Polychlorinated Biphenyls
Numbers in bold indicate a reported concentration above the practical quantitation limit.
J - Estimated value. Concentration is between PQL and Method Detection Limit (MDL).
"<" - Compound was not detected above indicated PQL.

## TABLE 5-1f
## Soil Analytical Results TPH Carbon Chain
## CH2MHILL Collected Duplicate Samples
## Huntington Beach Generating Station
## (Concentrations in mg/kg)

| Sample ID | Sample Location | Sample Depth | C10-<C15 | C16-<C19 | C20-<C23 | C24-<C27 | C28-<C35 | C36-C39 | C40-C43 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| HG02 | 2 | 10.5-11.0 | ND | ND | ND | ND | 68 | 107 | 161 | 336 |
| HG05-01 | 5 | | 77 | 110 | 16 | ND | ND | 19 | 95 | 317 |
| HG05-02 | 5 | | 30 | ND | ND | ND | ND | ND | ND | 30 |
| HG06A-01 | 6a | | 35 | ND | ND | ND | ND | ND | ND | 35 |
| HG06A-02 | 6a | | ND | ND | 11 | 20 | ND | ND | ND | 31 |
| HG08-01 | 8 | | ND | ND | ND | ND | ND | ND | ND | |
| HG08-02 | 8 | | 23 | 81 | 118 | 268 | 1,320 | 10,780 | 940 | 13,530 |
| HG08-03 | 8 | | ND | ND | ND | 26 | 35 | 123 | 184 | 368 |
| HG09-01 | 9 | | 102 | 116 | 31 | ND | 13 | ND | ND | 262 |
| HG09-02 | 9 | | 109 | ND | 16 | 69 | ND | ND | ND | 194 |
| HG10-01 | 10 | 5.0-5.5 | 90 | 112 | 15 | 38 | 11 | 12 | 34 | 312 |
| HG16-01 | 16 | 3.0-3.5 | ND | 83 | 240 | 650 | 2,510 | 1,014 | 933 | 5,430 |
| HG16-03 | 16 | | 42 | 12 | ND | ND | ND | ND | ND | 54 |
| HG18-01 | 18 | 5.0-5.5 | 31 | 12 | 10 | ND | ND | 11 | ND | 64 |
| HG18-02 | 18 | 11.5-12.0 | 61 | 12 | 38 | ND | ND | ND | ND | 111 |
| HG19-01 | 19 | | 312 | 230 | 416 | 1,030 | 3,000 | 1,100 | 1,130 | 7,218 |
| HG19-02 | 19 | | 348 | 172 | 117 | 34 | 22 | 77 | 42 | 812 |
| HG20-02 | 20 | | 19 | 112 | ND | 17 | ND | 17 | 13 | 178 |

**Notes:**

Samples analyzed for TPH distribution by modified EPA Method 8015. Laboratory Practical Quantitation Limits (PQL) were reported.

mg/kg = milligrams per kilogram

TPH = Total Petroleum Hydrocarbons

Numbers in bold indicate a reported concentration above the PQL

J = Estimated value. Concentration is between PQL and Method Detection Limit (MDL).

"<" = Compound was not detected above indicated PQL.

## TABLE 5-2a
## Groundwater Analytical Results TPH Carbon Chain
## Huntington Beach Generating Station
## (Concentrations In mg/L)

| Sample ID | Sample Location | Sample Date | Sample Depth (feet) | C10-<C15 | C15-<C20 | C20-<C25 | C25-<C30 | C30-<C35 | C35-C40 |
|---|---|---|---|---|---|---|---|---|---|
| HG5B-10-W | 5b | 3/20/98 | 25 | <1 | <1 | <1 | <1 | <1 | <1 |
| HG5B-11-W | 5b | 3/20/98 | 25 | <1 | <1 | <1 | <1 | <1 | <1 |
| HG06A-10-W | 6a | 3/20/98 | 20 | <1 | <1 | <1 | <1 | <1 | <1 |
| HG06B-10-W | 6b | 3/19/98 | 16 | <1 | <1 | <1 | <1 | <1 | <1 |
| HG08-10-W | 8 | 3/20/98 | 13 | <1 | <1 | <1 | <1 | <1 | <1 |
| HG08-11-W | 8 | 3/20/98 | 13 | <1 | <1 | <1 | <1 | <1 | <1 |
| HG09-10-W | 9 | 3/19/98 | 13 | <1 | <1 | <1 | <1 | <1 | <1 |
| HG16-10-W | 16 | 3/19/98 | 20 | <1 | <1 | <1 | <1 | <1 | <1 |
| HG18-10-W | 18 | 3/19/98 | 20 | <1 | <1 | <1 | <1 | <1 | <1 |
| HG18-11-W | 18 | 3/19/98 | 20 | <1 | <1 | <1 | <1 | <1 | <1 |
| HG19-10-W | 19 | 3/20/98 | 25 | <1 | **1.1** | **1.3** | <1 | <1 | <1 |
| HG20-10-W | 20 | 3/20/98 | 25 | <1 | <1 | <1 | <1 | <1 | <1 |
| HG20-11-W | 20 | 3/20/98 | 25 | <1 | <1 | <1 | <1 | <1 | <1 |

**Notes:**

Samples analyzed for TPH distribution modified EPA Method 8015. Laboratory Practical Quantitation Limits (PQL) were reported.

mg/L - milligrams per Liter

TPH - Total Petroleum Hydrocarbons

Numbers in bold indicate a reported concentration above the practical quantitation limit.

J - Estimated value. Concentration is between PQL and Method Detection Limit (MDL).

"<" - Compound was not detected above indicated PQL.

# TABLE 5-2b
## Groundwater Analytical Results VOC's
## Huntington Beach Generating Station
## (Concentrations in µg/L)

| Sample ID | Sample Location | Sample Date | Sample Depth (feet) | 1,1,1,2-Tetrachloroethane | 1,1,1-Trichloroethane | 1,1,2,2-Tetrachloroethane | 1,1,2-Trichloroethane | 1,1-Dichloroethane | 1,1-Dichloroethene | 1,1-Dichloropropene | 1,2,3-Trichlorobenzene | 1,2,3-Trichloropropane | 1,2,4-Trichlorobenzene | 1,2,4-Trimethylbenzene | 1,2-Dibromo-3-chloropropane | 1,2-Dibromoethane (EDB) | 1,2-Dichlorobenzene | 1,2-Dichloroethane | 1,2-Dichloropropane |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG5B-10-W | 5b | 3/20/98 | 25 | <2.1 | <2.1 | <2.1 | <2.1 | 8.1 | 1.8 J | <2.1 | <2.1 | <2.1 | <2.1 | <2.1 | <4.2 | <2.1 | <2.1 | <2.1 | <2.1 |
| HG5B-11-W | 5b | 3/20/98 | 25 | <2.1 | <2.1 | <2.1 | <2.1 | 8 | 1.5 J | <2.1 | <2.1 | <2.1 | <2.1 | <2.1 | <4.2 | <2.1 | <2.1 | <2.1 | <2.1 |
| HG08-10-W | 8 | 3/20/98 | 13 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <2 | <1 | <1 | <1 | <1 |
| HG09-10-W | 9 | 3/19/98 | 13 | <1 | <1 | <1 | <1 | 0.18 J | <1 | <1 | <1 | <1 | <1 | 0.096 J | <2 | <1 | <1 | <1 | <1 |
| HG16-10-W | 16 | 3/19/98 | 20 | <1 | <1 | <1 | <1 | 0.26 J | <1 | <1 | <1 | <1 | <1 | <1 | <2 | <1 | <1 | <1 | <1 |
| HG18-10-W | 18 | 3/19/98 | 20 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <2 | <1 | <1 | <1 | <1 |
| HG18-11-W | 18 | 3/19/98 | 20 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <2 | <1 | <1 | <1 | <1 |
| HG19-10-W | 19 | 3/20/98 | 25 | <1 | <1 | <1 | <1 | 0.54 J | <1 | <1 | <1 | <1 | <1 | <1 | <2 | <1 | <1 | <1 | <1 |
| HG20-10-W | 20 | 3/20/98 | 25 | <1 | <1 | <1 | <1 | 0.65 J | <1 | <1 | <1 | <1 | <1 | <1 | <2 | <1 | <1 | <1 | <1 |
| HG20-11-W | 20 | 3/20/98 | 25 | <1 | <1 | <1 | <1 | 0.63 J | <1 | <1 | <1 | <1 | <1 | <1 | <2 | <1 | <1 | <1 | <1 |
| State MCLs | | | | | 200 | | | 5 | 6 | | NA | | NA | | | | | 0.5 | |
| Federal MCLs | | | | | 200 | | | NA | 7 | | NA | | NA | | | | | 5 | |

| Sample ID | Sample Location | Sample Date | Sample Depth (feet) | 1,3,5-Trimethylbenzene | 1,3-Dichlorobenzene | 1,3-Dichloropropane | 1,4-Dichlorobenzene | 2,2-Dichloropropane | 2-Butanone | 2-Chloroethyl vinyl ether | 2-Chlorotoluene | 2-Hexanone | 4-Chlorotoluene | 4-Methyl-2-pentanone | Acetone | Benzene | Bromobenzene | Bromochloromethane | Bromodichloromethane | Bromoform | Bromomethane |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG5B-10-W | 5b | 3/20/98 | 25 | <2.1 | <2.1 | <2.1 | <2.1 | <2.1 | <21 | <2.4 | <2.1 | <21 | <2.1 | <21 | <21 | <2.1 | <2.1 | <2.1 | <2.1 | <2.1 | <4.2 |
| HG5B-11-W | 5b | 3/20/98 | 25 | <2.1 | <2.1 | <2.1 | <2.1 | <2.1 | <21 | <2.4 | <2.1 | <21 | <2.1 | <21 | <21 | <2.1 | <2.1 | <2.1 | <2.1 | <2.1 | <4.2 |
| HG08-10-W | 8 | 3/20/98 | 13 | <1 | <1 | <1 | <1 | <1 | <10 | <1.2 | <1 | <10 | <1 | <10 | <33 B | 0.11 J | <1 | <1 | <1 | <1 | <2 |
| HG09-10-W | 9 | 3/19/98 | 13 | <1 | <1 | <1 | <1 | <1 | 7 J | <1.2 | <1 | <10 | <1 | <10 | 13 | <1 | <1 | <1 | <1 | <1 | <2 |
| HG16-10-W | 16 | 3/19/98 | 20 | <1 | <1 | <1 | <1 | <1 | <10 | <1.2 | <1 | <10 | <1 | <10 | <10 | <1 | <1 | <1 | <1 | <1 | <2 |
| HG18-10-W | 18 | 3/19/98 | 20 | <1 | <1 | <1 | <1 | <1 | <10 | <1.2 | <1 | <10 | <1 | <10 | <10 | <1 | <1 | <1 | <1 | <1 | <2 |
| HG18-11-W | 18 | 3/19/98 | 20 | <1 | <1 | <1 | <1 | <1 | <10 | <1.2 | <1 | <10 | <1 | <10 | <10 | 0.17 J | <1 | <1 | <1 | <1 | <2 |
| HG19-10-W | 19 | 3/20/98 | 25 | <1 | <1 | <1 | <1 | <1 | 8.2 J | <1.2 | <1 | <10 | <1 | <10 | <33 B | 0.35 J | <1 | <1 | <1 | <1 | <2 |
| HG20-10-W | 20 | 3/20/98 | 25 | <1 | <1 | <1 | <1 | <1 | <10 | <1.2 | <1 | <10 | <1 | <10 | <10 | <1 | <1 | <1 | <1 | <1 | <2 |
| HG20-11-W | 20 | 3/20/98 | 25 | <1 | <1 | <1 | <1 | <1 | <10 | <1.2 | <1 | <10 | <1 | <10 | <10 | <1 | <1 | <1 | <1 | <1 | <2 |
| State MCLs | | | | NA | | | | | | | | | | | NA | 1 | | | | | |
| Federal MCLs | | | | NA | | | | | | | | | | | NA | 5 | | | | | |

| Sample ID | Sample Location | Sample Date | Sample Depth (feet) | Carbon disulfide | Carbon tetrachloride | Chlorobenzene | Chloroethane | Chloroform | Chloromethane | cis-1,2-Dichloroethene | cis-1,3-Dichloropropene | Dibromochloromethane | Dibromomethane | Dichlorodifluoromethane | Dichlorofluoromethane | Ethylbenzene | Hexachlorobutadiene | Isopropylbenzene | m-Xylene & p-Xylene | Methyl tert-butyl ether | Methylene chloride |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG5B-10-W | 5b | 3/20/98 | 25 | <2.1 | <2.1 | <2.1 | <4.2 | <2.1 | <4.2 | 40 | <2.1 | <2.1 | <2.1 | <4.2 | <4.2 | <2.1 | <2.1 | <2.1 | <1 | <2.1 | <2.1 |
| HG5B-11-W | 5b | 3/20/98 | 25 | <2.1 | <2.1 | <2.1 | <4.2 | <2.1 | <4.2 | 38 | <2.1 | <2.1 | <2.1 | <4.2 | <4.2 | <2.1 | <2.1 | <2.1 | <1 | <2.1 | <2.1 |
| HG08-10-W | 8 | 3/20/98 | 13 | <1 | <1 | <1 | <2 | <1 | <2 | 0.32 J | <1 | <1 | <1 | <2 | <2 | <1 | <1 | <1 | <0.5 | <1 | <1 |
| HG09-10-W | 9 | 3/19/98 | 13 | <1 | <1 | <1 | <2 | 0.29 J | <2 | 0.18 J | <1 | <1 | <1 | <2 | <2 | <1 | <1 | <1 | <0.5 | <1 | <1 |
| HG16-10-W | 16 | 3/19/98 | 20 | <1 | <1 | <1 | <2 | <1 | <2 | 0.56 | <1 | <1 | <1 | <2 | <2 | <1 | <1 | <1 | <0.5 | <1 | <1 |
| HG18-10-W | 18 | 3/19/98 | 20 | 0.26 | <1 | <1 | <2 | <1 | 0.13 J | 4.8 | <1 | <1 | <1 | <2 | <2 | <1 | <1 | <1 | <0.5 | <1 | <1 B |
| HG18-11-W | 18 | 3/19/98 | 20 | <1 | <1 | <1 | <2 | <1 | <2 | 5 | <1 | <1 | <1 | <2 | <2 | <1 | <1 | <1 | <0.5 | <1 | <1 B |
| HG19-10-W | 19 | 3/20/98 | 25 | 1.6 | <1 | <1 | <2 | <1 | <2 | 1.4 | <1 | <1 | <1 | <2 | <2 | <1 | <1 | <1 | 0.31 J | <1 | <1 |
| HG20-10-W | 20 | 3/20/98 | 25 | 0.3 J | <1 | <1 | <2 | <1 | <2 | 1.1 | <1 | <1 | <1 | <2 | <2 | <1 | <1 | <1 | <0.5 | <1 | <1 |
| HG20-11-W | 20 | 3/20/98 | 25 | 0.28 | <1 | <1 | <2 | <1 | <2 | 1.2 | <1 | <1 | <1 | <2 | <2 | <1 | <1 | <1 | <0.5 | <1 | <1 |
| State MCLs | | | | | | | NA | 100 | | 6 | | | | | | 700 | | NA | 1750 | 35 | |
| Federal MCLs | | | | | | | NA | 100 | | 70 | | | | | | 700 | | NA | 10000 | 30-40 | |

| Sample ID | Sample Location | Sample Date | Sample Depth (feet) | n-Butylbenzene | n-Propylbenzene | Naphthalene | o-Xylene | p-Isopropyltoluene | sec-Butylbenzene | Styrene | tert-Butylbenzene | Tetrachloroethene | Toluene | trans-1,2-Dichloroethene | trans-1,3-Dichloropropene | Trichloroethene | Trichlorofluoromethane | Vinyl acetate | Vinyl chloride |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG5B-10-W | 5b | 3/20/98 | 25 | <2.1 | <2.1 | <2.1 | <1 | <2.1 | <2.1 | <2.1 | <2.1 | <2.1 | <2.1 | 10 | <2.1 | 1.9 J | <2.1 | <4.2 | <4.2 |
| HG5B-11-W | 5b | 3/20/98 | 25 | <2.1 | <2.1 | <2.1 | <1 | <2.1 | <2.1 | <2.1 | <2.1 | <2.1 | <2.1 | 10 | <2.1 | 2 J | <2.1 | <4.2 | <4.2 |
| HG08-10-W | 8 | 3/20/98 | 13 | <1 | <1 | 1 | <0.5 | <1 | <1 | <1 | <1 | <1 | 0.28 J | <0.5 | <1 | <1 | <1 | <2 | <2 |
| HG09-10-W | 9 | 3/19/98 | 13 | <1 | <1 | <1 | <0.5 | <1 | <1 | <1 | <1 | <1 | 0.3 J | <0.5 | <1 | <1 | <1 | <2 | <2 |
| HG16-10-W | 16 | 3/19/98 | 20 | <1 | <1 | <1 | <0.5 | <1 | <1 | <1 | <1 | <1 | 0.1 J | <0.5 | <1 | <1 | <1 | <2 | <2 |
| HG18-10-W | 18 | 3/19/98 | 20 | <1 | <1 | <1 | <0.5 | <1 | <1 | <1 | <1 | <1 | 0.13 J | <0.5 | <1 | <1 | <1 | <2 | <2 |
| HG18-11-W | 18 | 3/19/98 | 20 | <1 | <1 | <1 | <0.5 | <1 | <1 | <1 | <1 | <1 | 0.12 J | <0.5 | <1 | <1 | <1 | <2 | <2 |
| HG19-10-W | 19 | 3/20/98 | 25 | <1 | <1 | <1 | 0.19 J | <1 | <1 | <1 | <1 | <1 | 0.38 J | 0.15 J | <1 | <1 | <1 | <2 | 0.88 J |
| HG20-10-W | 20 | 3/20/98 | 25 | <1 | <1 | <1 | <0.5 | <1 | <1 | <1 | <1 | <1 | 0.14 J | <0.5 | <1 | <1 | <1 | <2 | <2 |
| HG20-11-W | 20 | 3/20/98 | 25 | <1 | <1 | <1 | <0.5 | <1 | <1 | <1 | <1 | <1 | 0.11 J | <0.5 | <1 | <1 | <1 | <2 | <2 |
| State MCLs | | | | 45 | NA | NA | 1750 | NA | NA | | NA | 5 | 150 | | | 5 | | | |
| Federal MCLs | | | | NA | NA | 20 | 10000 | NA | NA | | NA | 5 | 1000 | | | 5 | | | |

Notes

Samples analyzed for VOC distribution by EPA Method 8260A. Laboratory Practical Quantitation Limits (PQL) were reported.
ug/L - micrograms per Liter
VOC - Volatile Organic Compound
NA - Not Available
Numbers in bold indicate a reported concentration above the practical quantitation limit
Numbers in bold and shade indicate a reported concentration above screening levels.
J - Estimated value. Concentration is between Practical Quantitation Limit (PQL) and Method Detection Limit (MDL)
B - Data qualified as non detect following QA/QC review due to blank contamination.
" pound was not detected above indicated (PQL).

# TABLE 5-2c
## Groundwater Analytical Results SVOCs
## Huntington Beach Generating Station
## (Concentrations in µg/L)

| Sample ID | Sample Location | Sample Date | Sample Depth (feet) | 2,4,5-Trichlorophenol | 2,4,6-Trichlorophenol | 2,4-Dichlorophenol | 2,4-Dimethylphenol | 2,4-Dinitrophenol | 2,4-Dinitrotoluene | 2,6-Dinitrotoluene | 2-Chloronaphthalene | 2-Chlorophenol | 2-Methylnaphthalene | 2-Methylphenol | 2-Nitroaniline | 2-Nitrophenol | 3,3'-Dichlorobenzidine | 3-Nitroaniline | 4,6-Dinitro-2-methylphenol | 4-Bromophenyl phenyl ether | 4-Chloro-3-methylphenol | 4-Chloroaniline | 4-Chlorophenyl phenyl ether | 4-Methylphenol | 4-Nitroaniline | 4-Nitrophenol | Acenaphthene | Acenaphthylene | Anthracene | Benzo(a)anthracene | Benzo(a)pyrene | Benzo(b)fluoranthene | Benzo(g,h,i)perylene | Benzo(k)fluoranthene | bis(2-Chloroethoxy)-methane | bis(2-Chloroethyl) ether | bis(2-Ethylhexyl)-phthalate | Butyl benzyl phthalate | Carbazole | Chrysene | Di-n-butyl phthalate | Di-n-octyl phthalate | Dibenz(a,h)anthracene | Dibenzofuran | Diethyl phthalate | Dimethyl phthalate | Fluoranthene | Fluorene | Hexachlorobenzene | Hexachlorobutadiene | Hexachlorocyclopentadiene | Hexachloroethane | Indeno(1,2,3-c,d)pyrene | Isophorone | N-Nitroso-di-n-propylamine | N-Nitrosodiphenylamine | Naphthalene | Nitrobenzene | Pentachlorophenol | Phenanthrene | Phenol | Pyrene |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG5B-10-W | 5b | 3/20/98 | 25 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <50 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 2 J | <10 | <10 | <10 | 1 J | <10 | <10 | <10 | 1.1 J | <10 | <10 | <10 | <1 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 |
| HG5B-11-W | 5b | 3/20/98 | 25 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <50 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <1 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 |
| HG06A-10-W | 6a | 3/20/98 | 20 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <50 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 1.1 J | <10 | <10 | <10 | 1.2 J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <1 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 |
| HG06B-10-W | 6b | 3/19/98 | 16 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <50 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <1 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 |
| HG08-10-W | 8 | 3/20/98 | 13 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <50 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 1 J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <1 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | 1.4 J | <10 | <50 | <10 | <10 |
| HG09-10-W | 9 | 3/19/98 | 13 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <50 | <50 | <50 | <10 | 2.5 J | <10 | <10 | <10 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 B | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 3.2 J | 1.2 J | <10 | <10 | <1 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | 1.1 J | <10 | <50 | <10 | <10 |
| HG16-10-W | 16 | 3/19/98 | 20 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <50 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 B | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <1 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 |
| HG18-10-W | 18 | 3/19/98 | 20 | <10 j | <10 j | <10 j | <10 j | <50 j | <10 j | <10 j | <10 j | <10 j | <10 j | <10 j | <50 j | <10 j | <50 j | <50 j | <50 j | <10 j | <10 j | <10 j | <10 j | <10 j | <50 j | <50 j | <10 j | <10 j | <10 j | <10 j | <10 j | <10 j | <10 j | <10 j | <10 j | <10 j | <10 B | <10 j | <10 j | <10 j | 1.1 J | <10 j | <10 j | <10 j | <10 j | <10 j | <10 j | <10 j | < 1 j | <10 j | <50 j | <10 j | <10 j | <10 j | <10 j | <10 j | <10 j | <10 j | <50 | <10 j | <10 j | <10 j |
| HG18-11-W | 18 | 3/19/98 | 20 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <50 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 B | <10 | <10 | <10 | 1.4 J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <1 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 |
| HG19-10-W | 19 | 3/20/98 | 25 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <50 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | 1.3 J | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <1 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 |
| HG20-10-W | 20 | 3/20/98 | 25 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <50 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <1 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 |
| HG20-11-W | 20 | 3/20/98 | 25 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <50 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <50 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <1 | <10 | <50 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <50 | <10 | <10 | <10 |

Notes:

Samples analyzed for SVOC distribution by EPA Method 8270B. Laboratory Practical Quantitation Limits (PQL) were reported.
ug/L - micrograms per liter
SVOC - Semi Volatile Organic Compound
N[illegible]ers in bold indicate a reported concentration above the PQL.
J [illegible]mated value. Concentration is between PQL and Method Detection Limit (MDL).
j - Qualified as estimated value following QA/QC review.
B - Data qualified as non detect following QA/QC review due to blank contamination.
"<" - Compound was not detected above indicated PQL.

## TABLE 5-2d
## Groundwater Analytical Results Metals
## Huntington Beach Generating Station
## (Concentrations in mg/L)

| Sample ID | Sample Location | Sample Date | Sample Depth (feet) | Antimony | Arsenic | Barium | Beryllium | Cadmium | Chromium | Cobalt | Copper | Lead | Mercury | Molybdenum | Nickel | Selenium | Silver | Thallium | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG5B-10-W | 5b | 3/20/98 | 25 | <0.06 | <0.3 | 0.03 J | <0.005 | <0.005 | <0.01 | <0.05 | <0.025 | <0.1 | <0.0002 | 0.041 | 0.0076 J | <0.25 | <0.01 | <2 | <0.05 | 0.01 J |
| HG5B-11-W | 5b | 3/20/98 | 25 | <0.06 | <0.3 | 0.019 J | <0.005 | <0.005 | <0.01 | <0.05 | <0.025 | <0.1 | <0.0002 | 0.03 J | 0.0053 J | <0.25 | <0.01 | <2 | <0.05 | 0.0065 J |
| HG09-10-W | 9 | 3/19/98 | 13 | <0.06 | 0.022 J | 0.045 J | <0.005 | <0.005 | <0.01 | 0.0068 J | 0.0065 J | <0.1 | <0.0002 | 0.033 J | <0.04 B | <0.25 | <0.01 | 0.084 J | <0.05 | 0.0093 J |
| HG16-10-W | 16 | 3/19/98 | 20 | <0.06 | <0.3 | 0.013 J | <0.005 | <0.005 | <0.01 | <0.05 | <0.025 | <0.1 | <0.0002 | 0.015 J | <0.04 | <0.25 | <0.01 | <2 | 0.016 J | <0.02 |
| HG18-10-W | 18 | 3/19/98 | 20 | <0.06 | 0.058 J | 0.074 J | 0.0013 J | <0.005 | 0.035 | 0.0052 J | 0.017 J | <0.1 | <0.0002 | 0.032 J | 0.013 J | <0.25 | <0.01 | <2 | 0.21 | 0.058 |
| HG18-11-W | 18 | 3/19/98 | 20 | <0.06 | <0.3 | 0.05 J | <0.005 | <0.005 | 0.013 | <0.05 | 0.0079 J | <0.1 | <0.0002 | 0.022 J | 0.0063 J | <0.25 | <0.01 | <2 | 0.1 | 0.019 J |
| HG19-10-W | 19 | 3/20/98 | 25 | <0.06 | <0.3 | 0.03 J | <0.005 | <0.005 | <0.01 | <0.05 | <0.025 | <0.1 | <0.0002 | 0.09 | <0.04 | <0.25 | <0.01 | <2 | <0.05 | <0.02 |
| HG20-10-W | 20 | 3/20/98 | 25 | <0.06 | 0.022 J | 0.04 J | <0.005 | <0.005 | <0.01 | <0.05 | <0.025 | <0.1 | <0.0002 | 0.015 J | <0.04 | <0.25 | <0.01 | <2 | <0.05 | <0.02 B |
| HG20-11-W | 20 | 3/20/98 | 25 | <0.06 | <0.3 | 0.033 J | <0.005 | 0.0049 J | <0.01 | <0.05 | <0.025 | <0.1 | <0.0002 | 0.011 J | <0.04 | <0.25 | <0.01 | <2 | <0.05 | <0.02 B |

**Notes:**

Samples analyzed for CCR Title 22 in accordance with EPA Methods 6010A with the exception of mercury (EPA Method 7470A).
mg/L - milligrams per Liter
Numbers in bold indicate a reported concentration above the PQL
J - Estimated value. Concentration is between PQL and Method Detection Limit (MDL).
B - Data qualified as non detect following QA/QC review due to blank contamination.
"<" - Compound was not detected above indicated PQL.

## Table 5-2e
## Groundwater Analytical Results PCBs
## Huntington Beach Generating Station
## (Concentrations in µg/L)

| Sample ID | Sample Location | Sample Date | Sample Depth (feet) | Aroclor 1016 | Aroclor 1221 | Aroclor 1232 | Aroclor 1242 | Aroclor 1248 | Aroclor 1254 | Aroclor 1260 |
|---|---|---|---|---|---|---|---|---|---|---|
| HG06A-10-W | 6a | 3/20/98 | 20 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |
| HG06B-10-W | 6b | 3/19/98 | 16 | <1 | <1 | <1 | <1 | <1 | <1 | <1 |

**Notes:**

Samples analyzed for PCB distribution by EPA Method 8081. Laboratory Practical Quantitation Limits (PQL) were reported.
ug/L - micrograms per Liter
PCB - Polychlorinated Biphenyls
Numbers in bold indicate a reported concentration above the practical quantitation limit.
J - Estimated value. Concentration is between PQL and Method Detection Limit (MDL).
"<" - Compound was not detected above indicated PQL.

# TABLE 5-2f
## Groundwater Analytical Results
## TPH Carbon Chain
## CH2MHILL Collected Duplicate Samples
## Huntington Beach Generating Station
## (Concentrations in mg/L)

| Sample ID | Sample Location | Sample Depth | C10-C15 | C16-C19 | C20-C23 | C24-C27 | C28-C35 | C36-C39 | C40-C43 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| HG05-10 | 5 | | 40 | 132 | 19 | 19 | ND | ND | ND | 210 |
| HG05-11 | 5 | | 160 | 209 | 113 | 87 | 69 | 24 | ND | 662 |
| HG06A-10 | 6a | | 108 | 130 | 82 | 63 | 12 | 12 | 60 | 467 |
| HG06B-10 | 6b | | 264 | 261 | 145 | 125 | 80 | 26 | ND | 901 |
| HG08-10 | 8 | | 205 | 232 | 114 | 126 | 48 | 23 | ND | 748 |
| HG09-10 | 9 | | 170 | 235 | 209 | 101 | 36 | ND | ND | 751 |
| HG16-10 | 16 | | 490 | 373 | 210 | 227 | 217 | 118 | 32 | 1,667 |
| HG18-10 | 18 | | 116 | 188 | 70 | 128 | 33 | 19 | ND | 554 |
| HG19-10 | 19 | | 192 | 237 | 133 | 81 | 48 | 12 | ND | 703 |
| HG20-10 | 20 | | 20 | 111 | ND | ND | ND | ND | ND | 131 |
| HG20-11 | 20 | | 154 | 192 | 80 | 50 | 38 | 14 | ND | 528 |

**Notes:**

Samples analyzed for TPH distribution by modified EPA Method 8015. Laboratory Practical Quantitation Limits (PQL) were reported.
mg/L = milligrams per liter
TPH = Total Petroleum Hydrocarbons
Numbers in bold indicate a reported concentration above the PQL
J = Estimated value. Concentration is between PQL and Method Detection Limit (MDL).
"<" = Compound was not detected above indicated PQL.

**TABLE 6-1**
**Potential LARWQCB Soil Screening Levels for Petroleum-Impacted Sites**
**Huntington Beach Generating Station**
Huntington Beach, California

| | Non-Beneficial Use[1] (mg/kg) | Beneficial Use[1] (mg/kg) |
|---|---|---|
| Benzene | 0.1 | 0.011 |
| Toluene | 15 | 0.15 |
| Ethylbenzene | 70 | 0.7 |
| Xylenes | 175 | 1.75 |
| TPH C4-C12 | 1,000 | 100 |
| TPH C13-C22 | 10,000 | 100 |
| TPH C23-C40 | 50,000 | 1,000 |

**Notes:**

(1) Reference: Regional Water Quality Control Board, Los Angeles Region, 1996. Interim Site Assessment and Cleanup Guidebook. May.
LARWQCB Los Angeles Regional Water Quality Control Board
mg/kg milligrams per kilogram
TPH Total petroleum hydrocarbon (carbon chain distribution shown).

**TABLE 6-2**
**POTENTIAL EPA REGION IX SOIL SCREENING LEVELS**
**HUNTINGTON BEACH GENERATING STATION**
Long Beach, California

| | Residential Use[1] (mg/kg) | Industrial Use[1] (mg/kg) |
|---|---|---|
| 1,1,1-Trichloroethane | 1,200 | 3,000 |
| 1,1-Dichloroethane | 500 | 17,000 |
| 1,1-Dichloroethene | 0.037 | 0.080 |
| 1,2-Dichlorobenzene (o-DCB) | 700 | 700 |
| 1,4-Dichlorobenzene (p-DCB) | 3.6 | 8.5 |
| 0-Chlorotoluene | 160 | 550 |
| Benzene | 0.63 | 1.4 |
| Bis(2-ethylhexyl)phthalate | 32 | 140 |
| Chlorobenzene | 65 | 220 |
| cis-1,2-Dichloroethene | 31 | 100 |
| Ethylbenzene | 230 | 230 |
| Fluorene | 90 | 90 |
| Methylene chloride | 7.8 | 18 |
| Naphthalene | 240 | 240 |
| Phenol | 39,000 | 39,000 |
| Tetrachloroethene (PCE) | 5.4 | 170 |
| Toluene | 790 | 880 |
| Trans-1,2-Dichloroethene | 78 | 270 |
| Trichloroethene | 3.2 | 7.0 |
| Vinyl Chloride | 0.016 | 0.035 |
| Xylenes | 320 | 320 |

**Notes:**

(1) USEPA Region IX, 1996. Region IX Preliminary Remediation Goals (PRGs) 1996. August 1.

mg/kg milligrams per kilogram

## TABLE 6-3
## Typical Concentrations for Metals in California Soils[1]
## HUNTINGTON BEACH GENERATING STATION
Huntington Beach, California

| Compound | Range (mg/kg) | Average[2] (mg/kg) |
|---|---|---|
| Arsenic | 0.6 - 11 | 3.5 |
| Aluminum | 3.0 - 10.6 | 7.3 |
| Antimony | 0.15 - 1.95 | 0.60 |
| Barium | 133 - 1,400 | 509 |
| Beryllium | 0.25 - 2.7 | 1.28 |
| Cadmium | 0.05 - 1.7 | 0.36 |
| Calcium | 2,451 - 45,577 | 14,466 |
| Chromium | 23 - 1,579 | 122 |
| Cobalt | 2.7 - 46.9 | 14.9 |
| Copper | 9.1 - 96.4 | 28.7 |
| Iron | 1.0 - 8.7 | 3.7 |
| Lead | 12.4 - 97.1 | 23.9 |
| Magnesium | 1,456 - 32,378 | 9,923 |
| Manganese | 253 - 1,687 | 646 |
| Mercury | 0.1 - 0.9 | 0.26 |
| Molybdenum | 0.1 - 9.6 | 1.3 |
| Nickel | 9 - 509 | 57 |
| Potassium | 0.21 - 3.0 | 1.73 |
| Selenium | 0.015 - 0.43 | 0.058 |
| Silicon | 13.2 - 39.4 | 29.4 |
| Silver | 0.1 - 8.3 | 0.8 |
| Sodium | 0.1 - 9.6 | 15,838 |
| Thallium | 5.3 - 36.2 | 15.7 |
| Titanium | 2,012 - 12,890 | 4,716 |
| Vanadium | 39 - 288 | 112 |
| Zinc | 88 - 236 | 149 |

(1) Kearney, 1996
(2) The average metal concentrations were used for the analysis of soil screening levels (Table 6-5).

**TABLE 6-4**
**Potential Groundwater Screening Levels**
**Huntington Beach Generating Station**
Huntington Beach, California

| Organics | State MCL µg/L (1) | Federal MCL µg/L (2) | Federal MCL Goal µg/L (3) | Secondary State MCL µg/L (4) | Secondary Federal MCL µg/L (5) | PHG Proposed µg/L (6) |
|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 200 | 200 | 200 | | | |
| 1,1,2,2-Tetrachloroethane | 1 | | | | | |
| 1,1,2-Trichloroethane | 5 | 5 | 3 | | | |
| 1,1-Dichloroethane | 5 | | | | | |
| 1,1-Dichloroethene | 6 | 7 | 7 | | | |
| 1,2,4-Trichlorobenzene | 70 | 70 | 70 | | | |
| 1,2-Dibromo-3-Chloropropane | 0.2 | 0.2 | 0 | | | |
| 1,2-Dichlorobenzene (o-DCB) | 600 | 600 | 600 | | | 600 |
| 1,2-Dichloroethane | 0.5 | 5 | 0 | | | |
| 1,2-Dichloropropane | 5 | 5 | 0 | | | |
| 1,3-Dichloropropene | 0.5 | | | | | |
| 1,4-Dichlorobenzene (p-DCB) | 5 | 75 | 75 | | | 6 |
| Benzene | 1 | 5 | 0 | | | |
| Benzoapyrene | 0.2 | 0.2 | 0 | | | 0.004 |
| Bis(2-ethyl hexyl)phthalate | 4 | 6 | 0 | | | |
| Chloroform (Total trihalomethanes) | 100 | 100 | 0 | | | |
| cis-1,2-Dichloroethene | 6 | 70 | 70 | | | |
| Di (2-ethyl hexyl) phthate (DEHP) | 4 | 6 | 0 | | | 12 |
| Dibutylphthalate | – | 710(7) | | | | |
| Ethylbenzene | 700 | 700 | 700 | | 30 | 340 |
| Methylene chloride | 5 | 5 | 0 | | | |
| Methyl-tert-butylether | 35(8) | 30-40(7) | | | | |
| N-Butylbenzene | 45(8) | | | | | |
| Naphthalene | | 20(7) | | | | |
| Phenol | 5(9) | 4,000(7) | | | | |
| Tetrachloroethene | 5 | 5 | 0 | | | |
| Toluene | 150 | 1,000 | 1,000 | | 40 | |
| trans -1,2- Dichloroethene | 10 | 100 | 100 | | | |
| Trichloroethene | 5 | 5 | 0 | | | |
| Vinyl Chloride | 0.5 | 2.0 | 0 | | | |
| Xylenes (m-p-, and o-isomers) | 1,750 | 10,000 | 10,000 | | 20 | 1,800 |
| **INORGANICS** | | | | | | |
| Aluminum | 1,000 | | | 200 | 200 | |
| Antimony | 6 | 6 | 6 | | | 20 |
| Arsenic | 50 | 50 | 50 | | | |
| Barium | 1,000 | 2,000 | 2,000 | | | |
| Beryllium | 4 | 4 | 4 | | | |
| Cadmium | 5 | 5 | 5 | | | |
| Chloride | | | | 500mg/l | 250 mg/l | |
| Chromium | 50 | 100 | 100 | | | |
| Iron | | | | 300 | 300 | |
| Fluoride | * | 4 | 4 | | | |
| Manganese | | | | 50 | 50 | |
| Mercury | 2 | 2 | 2 | | | |
| Nickel | 100 | | | | | |
| Nitrate (NO3) | 45,000 | 10,000 | 10,000 | | | |
| Selenium | 50 | 50 | 50 | | | |
| Silver | | | 100 | 100 | | |
| Sulfate | | | | 500 mg/l | 250 mg/l | |
| Thallium | 2 | 2 | 0.5 | | | |
| Zinc | | | 5,000 | 5,000 | | |
| **PHYSICAL PARAMETERS** | | | | | | |
| Total Dissolved Solids (TDS) | | | | 1,000 mg/l | 500 mg/l | |
| pH | | | | | 6.5 - 8.5 | |
| Electrical Conductivity (E.C.) | | | | 1,600 uohms | | |
| **DRINKING WATER ACTION LEVELS** | | | | | | |
| Copper | 1,300 (5) | 1,300 (5) | 1,300 | 1,000 | 1,000 | 170 |
| Lead | 15 (5) | 15 (5) | 0 | | | 2 |

**Notes:**

* State MCL for Flouride ranges from 1.4 mg/l to 2.4 mg/l. The specific level depends of annual average of maximum daily air temperatures experienced over a five year period - 22 CCR 64431

(1) California Code of Regulations, Title 22, Section 64431, 64444
(2) Code of Federal Regulations, Title 40, Part 141.61, 141.62
(3) Code of Federal Regulations, Title 40, Part 141.50, 141.51
(4) California Code of Regulations, Title 22, Section 64449
(5) Code of Federal Regulations, Title 40, Part 143 / California Code of Regulations, Title 22, Section 64672.3
(6) Public Health Goal technical support documents proposed by Cal EPA (1997)
(7) Federal Health Advisory
(8) State Interim Action Level for Toxicity
(9) State Action Level for Taste and Odor

**TABLE 6-5**
**Summary of Woodward-Clyde Sampling Effort - Chemicals of Concern**
**Huntington Beach Generating Station**
Huntington Beach, California

| Location No. | Location Name | Soil | Groundwater |
|---|---|---|---|
| 4 | Distillate Storage Tanks, East Fuel Storage Tanks, West Fuel Storage Tanks | TPH | None |
| 5 | Concrete Degreasing Pit | None | Trans 1,2-DCE, 1,1-DCA, CIS 1,2-DCE |
| 6 | Switchyard Perimeters | None | None |
| 8 | Peaker Unit Pumping Area | None | None |
| 9 | Powerblock Perimeters | TPH, cadmium, antimony, arsenic, silver, selenium, mercury, lead, cobalt, copper, molybdenum | thallium, beryllium, cadmium, chromium, copper, lead, mercury |
| 10 | Peaker Unit | cadmium, arsenic, cobalt, silver, antimony, copper, molybdenum, ,mercury | None |
| 13 | Hazardous Materials Storage Area | Antimony, copper, mercury, silver | Mercury, silver |
| 16 | Former Concrete Sump | silver, antimony, arsenic, lead, copper, molybdenum | lead, mercury, nickel, silver |
| 18 | Historic Oil Reservoir | silver, antimony, TPH, molybdenum, mercury | 1,1-DCE, arsenic, cadmium, lead, silver |
| 19 | Oil/Water Seperator and Sump at Units 1 and 2 | benzo(a)pyrene, antimony, molybdenum, mercury, selenium, silver | vinyl chloride |
| 20 | Oil/Water Seperator and Sump at Units 3 and 4 | arsenic, cadmium, molybdenum, antimony, mercury, selenium, silver | None |

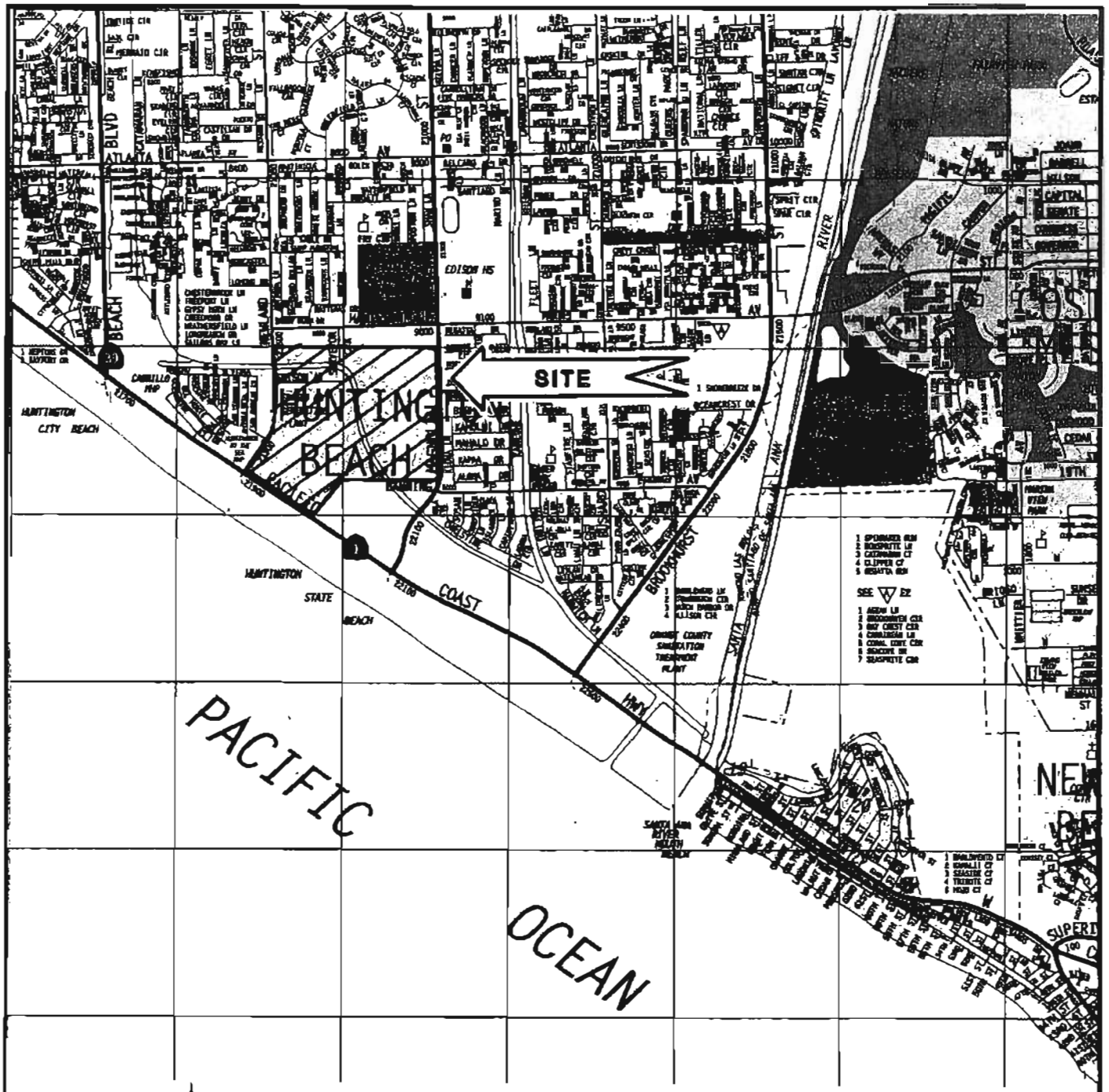
**Notes:**

1,1-DCA = 1,1-dichloroethane
Cis-1, 2-DCE = Cis-1, 2- dichloroethene
Trans-1, 2-DCE = Trans-1, 2- dichloroethene

## TABLE 6-6
## Summary of TPH Duplicate Sampling By CH2M HILL and Woodward-Clyde
## Huntington Beach Generating Station
## Huntington Beach, California

| SOIL | | | GROUNDWATER | | |
|---|---|---|---|---|---|
| Sample Location | Woodward-Clyde TPH (mg/kg) | CH2MHILL TPH (mg/kg) | Sample Location | Woodward-Clyde TPH (mg/L) | CH2MHILL TPH (m/L) |
| 5 | ND | 317 | 5b | ND | 662 |
| 6a | ND | 35 | 6a | ND | 467 |
| 8 | ND | 13,530 | 6b | ND | 901 |
| 9 | ND | 262 | 8 | ND | 748 |
| 10 | ND | 312 | 9 | ND | 751 |
| 16 | ND | 5,430 | 16 | ND | 1,667 |
| 18 | ND | 111 | 18 | ND | 554 |
| 19 | 124 | 7,218 | 19 | 2.4 | 703 |
| 20 | ND | 178 | 20 | ND | 528 |

Notes:
(1) The value reflects the total concentration of TPH (the sum of all ranges from Table 5-1f and 5-2f) detected in area samples.




0 2,400 4,800

SCALE, feet

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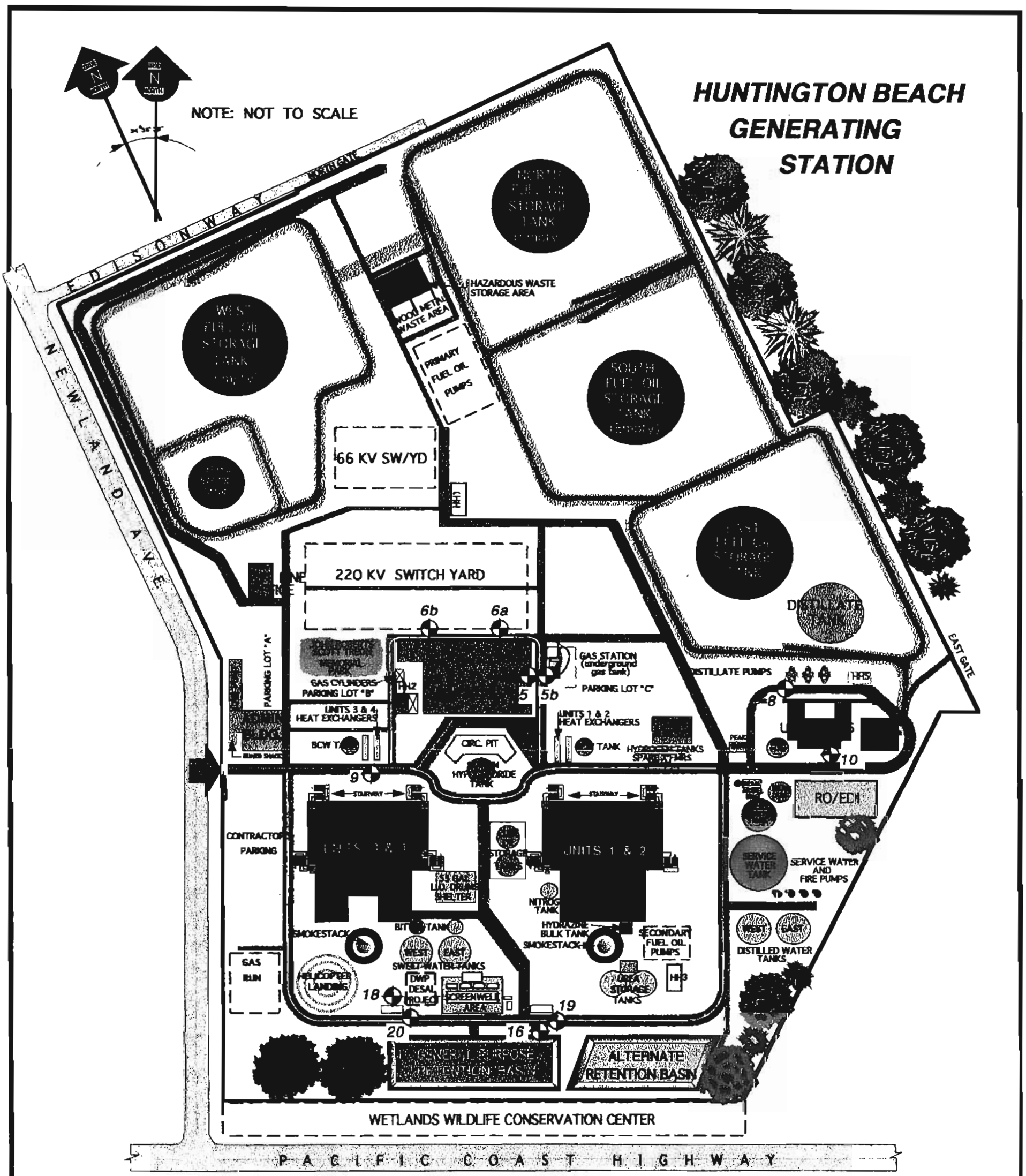
## SITE LOCATION MAP

| Project No.: | Date: | Project: | Fig. |
|---|---|---|---|
| 97SB044 | APRIL 1998 | AES – HUNTINGTON BEACH | 1-1 |

Woodward-Clyde




LEGEND

- Roadway
- Property Line
- F.O. Tanks Dike
- 2a Sample Locations with Identification Number

**Woodward-Clyde**

**ADDITIONAL INVESTIGATION SAMPLE LOCATION MAP**
Huntington Beach Generating Station

| Project No.: 97SB044 | APR., 1998 | Figure 4-1 |
|---|---|---|

# APPENDIX A

# SUMMARY OF CH2M HILL PHASE II ESA ANALYTICAL RESULTS

# APPENDIX B

# FIELD PROCEDURES

Woodward-Clyde conducted a soil and groundwater investigation of the Huntington Beach Generating Station (HBGS) for AES during March 1998. The investigation included advancing borings and collecting groundwater samples. These methods included direct-push (Geoprobe) and Hydropunch methods. Details of Geoprobe and Hydropunch, and groundwater sampling procedures are discussed below. On behalf of Southern California Edison Company (SCE), CH2M HILL personnel witnessed soil sampling procedures and collected split soil samples where possible. In general, Woodward-Clyde personnel collected the bottom two sample tubes and CH2M HILL personnel collected the second tube, or the third from the bottom of sampler barrel. In some instances, because of low recovery at the desired depth, soil borings were advanced further or a new boring installed to collect soil samples for CH2M HILL.

## B.1 SOIL INVESTIGATION

Field procedures for drilling and soil sampling were conducted in general accordance with the guidelines provided by American Society of Testing and Materials (ASTM). A description of the standard field protocols is provided below.

### B.1.1 Soil Sample Collection with Geoprobe

Soil samples were collected using a Geoprobe. This soil drilling method employs direct-push technology that minimizes drill cuttings and allows for relatively undisturbed soil sample collection. In addition, this drilling method was modified such that an outer casing was driven ahead of the sampler barrel and well casing, thereby minimizing the potential for cross-contamination from the overlying strata.

The soil borings were advanced to a maximum of 22 feet bgs using a 2-inch outer diameter (OD), stainless steel drive casing. Approximate 2-foot sample cores consisting of four 1-inch-diameter stainless steel tubes were generally collected at two depths (2-4 and 8-10). Sometimes these depths were modified in the field depending upon groundwater level. The ends of the sample cores were wrapped with Teflon tape and capped. The samples were stored in plastic bags on ice in an insulated cooler for transportation to Quanterra. Prior to drilling each boring, all non-disposable equipment that entered the borehole were steam-cleaned or washed in a solution of Liquinox™ and water followed by three tap water rinses. The soil borings were logged by Woodward-Clyde personnel working under the direction of a California Registered Geologist. The soil borings were backfilled with a bentonite-based cement grout to approximately 1 foot bgs and capped with asphalt or concrete, as appropriate, in paved areas.

## B.2 GROUNDWATER INVESTIGATION

Field procedures for groundwater sampling were conducted in accordance with industry practices for performing environmental assessment and sampling. A description of the standard field protocols for groundwater sampling is provided below.

### B.2.1 Groundwater Sampling - Hydropunch

A total of nine groundwater sampling points were installed approximately between 10 feet bgs and 30 feet bgs. The sampling points were installed using 2-inch OD drive casing. The drive casing was driven to depths ranging between 13 feet to 30 feet bgs to seal off the overlying strata. A stainless steel sampling probe with a stainless steel expendable tip was driven through the outer casing to the completed sampling point depth. The expendable tip was pushed out and the probe retracted approximately 4 feet to expose the annulus of the sampling probe to the formation groundwater. The water level was allowed to equilibrate prior to sampling.

Once sampling was completed, the sampling probe was removed and the borehole backfilled with bentonite-based cement grout by pressure grouting through the outer casing as it was removed from the borehole. The boreholes were backfilled with grout to match surface grade in soil covered areas or to approximately 1 foot bgs and capped with concrete in paved areas.

### B.2.2 Groundwater Sampling - Temporary Piezometers

Groundwater sampling was also conducted using temporary piezometers. The sampling points were installed using a 2-inch OD drive casing. The drive casing was driven to depths ranging from 13 feet bgs to 30 feet bgs. Following that, 1-inch Schedule 40 PVC pipes with 10-foot screen (5-foot screen if shallow depth) were installed through the other casing. Once the PVC pipes were set, the outer casing was pulled out. The water level was allowed to equilibrate prior to sampling.

Once sampling was completed, the sampling probe was removed and the borehole backfilled with bentonite-based cement grout by pressure grouting through the outer casing as it was removed from the borehole. The boreholes were backfilled with grout to match surface grade in soil covered areas or to approximately 1 foot bgs and capped with concrete in paved areas.

### B.2.3 Sample Collection

Following groundwater well setup, the well was allowed to recharge to at least 80 percent of the measured depth to water level prior to sampling; however, the well was sampled within 2 hours following purging, regardless of recovery. The following procedures were followed each time a monitoring well was sampled:

1. Sampling equipment and containers were checked for serviceability prior to use.
2. Each well was sampled within 2 hours after purging. For groundwater sampling points with inadequate recovery, sampling was conducted the following day.
3. Groundwater samples were collected using disposal ¼-inch polygon tubing.
4. Water samples were placed in appropriate sample bottles supplied by the analytical laboratory. The groundwater samples were collected in the containers as specified below:
   - TPH-diesel carbon chain analysis in 1-liter amber bottle and filled so there was no headspace remaining in the bottle.
   - CCR Title 22 metals in a 1-liter plastic bottle. Groundwater samples were filtered at Quanterra within 24 hours of sample collection using an EPA-approved 0.45 micron filter and then preserved.
   - VOCs and TPH-g (HCl preserved) in 40 ml VOA bottles.
   - SVOCs (no preservative) in a 1-liter amber bottle.
   - PCBs (no preservative) in a 1-liter amber bottle.
5. Sample bottles were placed in an insulated cooler containing ice and logged on the COC form.

### B.2.4 Sample Identification, Storage, and Transportation

#### *B.2.4.1 Sample Identification*

The method of identification of a sample depended on the type of measurement or analysis performed. Samples were identified by the type of matrix by the letters "S" or "W" for soil or groundwater, respectively, on the COC. The samples were identified by the boring or well identification, sample depth, the number of the tube, if applicable, the date the sample was collected

and the matrix (soil or liquid). Additional information such as the samplers initials, analysis requested, and applicable project codes were identified on the sample label.

#### *B.2.4.2 Sample Storage*

After collection, samples remained in the possession of the sampling personnel until they were released to VOC Analytical's courier. Immediately after collection, during storage prior to shipment and during shipment to the laboratory, samples were stored on ice in coolers. Any temporary sample storage areas were to be locked and secured to maintain sample integrity and COC requirements.

The procedures and material used for sample packaging adequately protected sample containers from accidental breakage during shipping. Glass sample containers were placed into plastic bags and cushioned in inert packing material. Plastic sample containers were packed well to prevent movement during transport. Ice was placed in plastic bags between sample bottles and containers and on the top of the samples in order to maintain the cooler temperature.

#### *B.2.4.3 Sample Transportation*

During field sampling activities, traceability of each sample was maintained from the time the samples were collected until laboratory data were issued. Information on the custody, transfer, handling, and shipping of samples were recorded on a COC form. The COC is a one-page form with two or three carbonless copies.

The sampler was responsible for initiating and filling out the COC form. The COC form was signed by the sampler when the sampler relinquished the samples to the lab courier. A COC form was completed for each cooler of samples collected daily, and contained the following information:

- Sampler's signature and affiliation
- Project number
- Date and time of collection
- Sample identification number
- Sample type/matrix

- Analyses requested
- Number of containers
- Person to contact regarding analyses
- Signature of persons relinquishing custody, dates, and times
- Signature of persons accepting custody, dates, and times (laboratory)
- Method of shipping

The person responsible for delivery of the samples to Quanterra, the courier service that signed the COC form, retained the last copy of the three-part form, documented the method shipment, and sent the original and the second copy of the form with the samples (taped in a resealable plastic bag to the inner cooler lid). Upon receipt at the analytical laboratory, the person receiving the samples signed the form and returned the second copy to the Woodward-Clyde project file. Copies of the forms and all custody documentation have been filed. The original forms remained with the samples until final disposition of the samples by the laboratory. The analytical laboratory will dispose of the samples in an appropriate manner 60 to 90 days after data reporting.

### B.2.5 Decontamination Procedures

New tubes were used at each sampling depth interval. Groundwater samples were collected using disposable ¼-inch polygen tubes to avoid cross-contamination between wells. Reusable soil sampling equipment were decontaminated between each sampling interval or well location using the following procedures:

1. Wash with Liquinox and brush to remove contaminants.
2. Second wash with Liquinox and brush.
3. Rinse with deionized water.
4. Second rinse with deionized water.
5. Dry with paper towels or drip dry.
6. Keep sampling equipment covered with plastic bags when not in use or between sampling locations.

### B.2.6 Investigation Derived Waste Management

Investigation-derived wastes generated during the field activities included decontamination water and disposable sampling supplies (e.g., paper towels, plastic bags, etc.). Wastes generated during the field activities were stored in DOT-approved 55-gallon drums or roll-off bins, properly labeled, and sealed for later disposal. Notations on drum information were also made on field logs in order manage the disposal of the drums at a later date.

## B.3 GEOPHYSICAL SITE CLEARING

On March 17, 1998 through March 20, 1998, subsurface surveys were tested by Woodward-Clyde to clear proposed Geoprobe/Hydropunch locations at the HBGS. Ground penetrating radar, electromagnetic induction (two types), magnetic gradiometer, and a line tracer were applied to the search.

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 two of the instruments may record excessive "noise", the ground may not provide sufficient contrasts with installations or discards, or there may be overlapping anomalies, and thereby those instruments may not be definitive. Generally, however, the interpretation is based on the best reconciliation of the several data sets acquired.

Survey Design - To the extent of available space, the search followed the standard search pattern (Figure B-1) wherein there are two sets of three parallel lines, mutually perpendicular, and two diagonals, all centered on the marked drill location. Adjacent parallel line are approximately 4 feet apart, and each line is about 16 feet long. This array will image any through-going object, such as a pipe or conduit, or even an equant buried object, on several of the lines; consequently, the obstruction to drilling can be mapped accurately in the vicinity of the planned borehole. When any buried object is sensed, additional traversing with all applicable instruments is undertaken in positions best designed to image the object and enhance its position and identification in the vicinity of the planned drill location.

The radar system was manufactured by Geophysical Survey Systems Incorporated, and is a SIR 3 unit. The electromagnetic instruments were fabricated by Geonics Ltd., and are EM31 and EM61 devices. The magnetic gradiometer is a Schoenstedt GA-52C, and the line tracer is a Metrotech 9800.

**Brief Description of the Geophysical Instruments Applied** - 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 any boundary in the subsurface across which there is an electrical contrast. The recorder continuously makes a 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 EM wave travels at a velocity unique to the material properties of the ground being investigated, and when these velocities are known, or closely estimated from ground conductivity values and other information, two-way travel times can be converted to depth. For this survey, the distance between adjacent horizontal timing lines on the records equals slightly more than 1.5 feet.

Penetration into the ground and resolution of the images produced are a function of ground electrical conductivity and dielectric constant. Images tend to be graphic, even at considerable depth, in dry sandy soils, but penetration and resolution may be limited in drastically more conductive clayey moist ground. Ground conditions were poor to good at each site; the records appear to be reasonably definitive, however.

The magnetometer, naturally, senses objectives having magnetic properties. 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 the field is significantly different at the two sensors, and locally there is a high magnetic gradient, the frequency of the emitted sound increases. Frequency is a function of the gradient between the two sensors. In this instance the gradiometer was used to determine the presence of rebar in the concrete slab, as well as aiding the locations of pipe at the exterior locations that were not on concrete slabs.

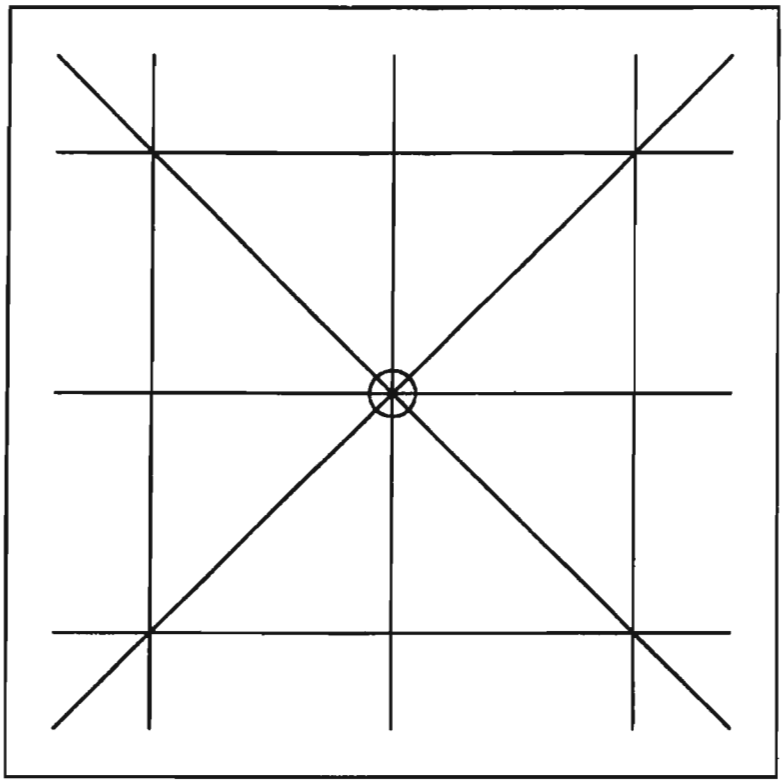
The EM61 time-domain device is a high resolution transient instrument designed to detect buried conductive objects. It consists of a powerful transmitter that generates a pulsed primary magnetic field, which induces eddy currents in nearby conductive materials. The decay of the eddy currents during the transmitter off cycle is measured by the transceiver coils. Two effects are measured, namely, the decay rate and the difference in amplitude in the two coils mounted concentrically, one above the other. By making the measurements at a relatively long time (measured in milliseconds) after termination of the primary pule, the response is nearly independent of the conductivity of the ground. Thus, the instrument is, in this mode, a super-sensitive metal detector. Due to its unique

coil arrangement, the response curve is a single well-defined positive peak directly over the causative body. This facilitates quick and accurate location of the target object. The depth of the object can usually be estimated by the anomaly half width and from the relative response in the two receiver coils.

**Interpretation** - Traversing with gradiometer and EM systems was carried out while continuously monitoring the meters. Thus, no hard data were captured with these instruments; the interpretation was undertaken in real time, as the survey progressed. The radar system always produces hard copy as its output; consequently, these records were captured. Representative radar records are illustrated, but it should be stressed that the interpretation is based on the output of all instruments.

As might be expected at plants with the engineering complexity of an electrical generating facility, many of the locations were complex in the subsurface. That is, there are many pipes, conduit, sumps, and other installations. Moreover, the above-ground installations are also complex, so that the marked locations are often in a position with limited space for surveying. And the installations in close proximity to marked drill location are sensed by the instruments, to varying degrees, so that target and non-target anomalies can significantly overlap. Finally, each of the plants are located in tidal wetlands so that muds (clays) are abundant, and the water is brackish. Consequently, painstaking work utilizing all applicable instruments was necessary at virtually all of the locations.

**Conclusions** - The picture that appears to emerge from the geophysical data, and some surface observations, is that there are underground installations at all sites investigated. Although the ground was somewhat unfavorable for geophysical imaging, and the subsurface was complex with cultural installations, the combined responses of the geophysical instruments appear to have found final locations that are free of subsurface obstructions. Several, however, had to be moved a short distance to increase the offset distance to existing installations.



**STANDARD SEARCH PATTERN IN VICINITY OF PLANNED BOREHOLE - HUNTINGTON BEACH GENERATING STATION**

| Project No.: | 974SB044 | Date: | APRIL 1998 | Project: | AES | Fig. | B-1 |
|---|---|---|---|---|---|---|---|

MS I:\97\97SB044\AES-SSP.dwg R14.0 04/07/98 09:42

Woodward-Clyde

# APPENDIX C

# ANALYTICAL LABORATORY REPORTS, BORING LOGS, WELL PERMITS, AND CHAIN-OF-CUSTODY FORMS

Quanterra
Environmental Services

*Quanterra Incorporated*
*1721 South Grand Avenue*
*Santa Ana, California 92705*

*714 258-8610 Telephone*
*714 258-0921 Fax*

April 3, 1998

QUANTERRA INCORPORATED PROJECT NUMBER: 131262
PO/CONTRACT: 97SB044 (3100)

Partha Bora
Woodward-Clyde Consultants
2020 E. First Street
Santa Ana, CA 92705

Dear Mr. Bora,

This report contains the analytical results for the eleven samples received under chain of custody by Quanterra Incorporated on March 20, 1998. These samples are associated with your AES, Huntington Beach project.

The case narrative is an integral part of this report.

Preliminary results were sent via facsimile on March 31, 1998 for metals.

If you have any questions, please feel free to call me at (714) 258-8610.

Sincerely,

Sharon Meves
Project Manager

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- Method Blank Reports
- Laboratory QC Reports

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- Sample Data Sheets
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## CASE NARRATIVE

## QUANTERRA INCORPORATED PROJECT NUMBER 131262

All applicable internal quality control analyses including calibrations and calibration verifications, calibration (instrument) and method blanks, laboratory control samples (LCS), matrix spikes (MS) and matrix spike duplicates (MSD), and other QC met method-specified acceptance criteria. Any matrix-related anomalies are indicated using footnotes within the report. Any other anomalies are reported within the narrative.

**General:** MS/MSD analyses were performed on aqueous samples as designated on the COC (with the exception of TVPH and TEPH, for which no QC analyses were performed, as discussed with Woodward Clyde personnel). MS/MSD analyses for soil samples were performed as sample volume allowed. (Only 2 small sleeves were submitted to the laboratory. One sleeve was shipped to the Quanterra-North Canton facility for volatiles analysis, so only one sleeve was available for the remaining analyses. Volume concerns were discussed with Woodward Clyde personnel immediately after the first sample shipment arrived.) Where MS/MSD analyses could not be performed, duplicate laboratory control standards were reported.

**TEPH:** The response of continuing calibration check standards were slightly high (above the 15% critieria applied for this project). Since no detections were noted in the samples, no corrective action was taken.

**SVOCs:** The recoveries of several surrogates in sample 131262-0001 were low in the original analysis. The sample was reextracted and reanalyzed, and the recoveries were again low. No further corrective action was taken. Results from the original extraction/analysis were reported.

The recovery of pyrene in the MS analysis of MS Run 23 MAR 98-AA was slightly low. The recovery of this compound in the associated LCS was acceptable, therefore, no corrective action was taken.

**Metals:** All samples requiring ICP and ICP Trace analysis were analyzed by method 6010B, the newly promulgated version of the ICP method in SW846, rather than method 6010A, as specified in the PRG tables.

Sample HG10-02 was reported from a diluted analysis due to matrix interferences.

The recoveries of arsenic in MS Run 25 MAR 98-PA, and the recoveries of antimony, chromium, copper, nickel, vanadium and zinc in MS Run 25 MAR 98-BA were outside control limits. The recoveries of these metals in the associated LCSs were acceptable, therefore, matrix interference is suspected, and no corrective action was taken.

## CASE NARRATIVE

## QUANTERRA INCORPORATED PROJECT NUMBER 131262

**VOCs:** Analyses were performed by the Quanterra-North Canton facility. Please refer to the attached report.

*Quanterra Environmental Services - Western Region*

## Quality Control Definitions

| QC Parameter | Definition |
|---|---|
| QC Batch | A set of up to 20 field samples plus associated laboratory QC samples that are similar in composition (matrix) and that are processed within the same time period with the same reagent and standard lots. |
| Duplicate Control Sample (DCS) | Consist of a pair of LCSs analyzed within the same QC batch to monitor precision and accuracy independent of sample matrix effects. This QC is performed only if required by client or when insufficient sample is available to perform MS/MSD. |
| Duplicate Sample (DU) | A second aliquot of an environmental sample, taken from the same sample container when possible, that is processed independently with the first sample aliquot. The results are used to assess the effect of the sample matrix on the precision of the analytical process. The precision estimated using this sample is not necessarily representative of the precision for other samples in the batch. |
| Laboratory Control Sample (LCS) | A volume of reagent water for aqueous samples or a contaminant-free solid matrix (Ottawa sand) for soil and sediment samples which is spiked with known amounts of representative target analytes and required surrogates. An LCS is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects. |
| Matrix Spike and Matrix Spike Duplicate (MS/MSD) | A field sample fortified with known quantities of target analytes that are also added to the LCS. Matrix spike duplicate is a second matrix spike sample. MSs/MSDs are carried through the entire analytical process and are used to determine sample matrix effect on accuracy of the measurement system. The accuracy and precision estimated using MS/MSD is only representative of the precision of the sample that was spiked. |
| Method Blank (MB) | A sample composed of all the reagents (in the same quantities) in reagent water carried through the entire analytical process. The method blank is used to monitor the level of contamination introduced during sample preparation steps. |
| Surrogate Spike | Organic constituents not expected to be detected in environmental media and are added to every sample and QC at a known concentration. Surrogates are used to determine the efficiency of the sample preparation and the analytical process. |

Source: Quanterra® Quality Control Program, Policy QA-003, Rev. 0, 8/19/96.

**Woodward-Clyde Consultants**

CHAIN OF CUSTODY RECORD

SHIPMENT NO.: 4

PAGE 1 OF

DATE 3/19/98

PROJECT NAME: AES (HUNTINGTON BEACH)

PROJECT NO.: 97SB044 3100

| Sample Number | Location | Type of Sample: Material | Type of Sample: Method | Type of Container | Type of Preservation: Temp | Type of Preservation: Chemical | Analysis Required* |
|---|---|---|---|---|---|---|---|
| HG18-10-W | 18 | WATER | PUMP | 3 40 ML. VOA | ICE | HCL | VOCs |
| | | | | 1 500 ML. PLASTIC | " | NONE | METALS DISSOLVED |
| | | | | 1 1 LITER GLASS | " | " | TPH-d |
| | | | | 2 1 LITER GLASS | " | " | VOCs, SVOCs |
| HG18-11-W | 18 | " | " | 3 40 ML. VOAS | " | HCL | VOCs |
| | | | | 1 500 ML. PLASTIC | " | NONE | METALS |
| | | | | 1 1 LITER GLASS | " | " | TPH-d |
| | | | | 2 1 LITER GLASS | " | " | VOCs, SVOCs |
| HG16-10-W | 16 | " | " | 3 40 ML. VOAS | " | HCL | VOCs |
| | | | | 1 500 ML. PLASTIC | " | NONE | METALS |
| | | | | 1 1 LITER GLASS | " | " | TPH-d |
| | | | | 2 1 LITER GLASS | " | " | VOCs, SVOCs |
| HG16-10-MS/MSD | 16 | " | " | 3 40 ML. VOA | " | " | VOCs |
| | | | | 1 500 ML. PLASTIC | " | " | METALS |
| | | | | 1 1 LITER GLASS | " | " | TPH-d |
| | | | | 2 1 LITER GLASS | " | " | VOCs, SVOCs |
| RBHG10-W | 10 | " | GRAB | 3 40 ML. VOAS | " | HCL | VOCs |
| | | | | 1 500 ML PLASTIC | " | NONE | METALS |
| | | | | 1 1 LITER GLASS | " | " | TPH-d |
| | | | | 2 1 LITER GLASS | " | " | VOCs, SVOCs |

all stuck ok per sm

Total Number of Samples Shipped: 35 | Sampler's Signature: Hector Reyes

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: Hector Reyes<br>Printed Name: HECTOR REYES<br>Company: W.C.C.<br>Reason: ANALYSIS | Signature: RBautista<br>Printed Name: R BAUTISTA<br>Company: C Courier | Date: 3/19/98<br>Time: 1745 |
| Signature: RBautista<br>Printed Name: R BAUTISTA<br>Company:<br>Reason: | Signature: [signature]<br>Printed Name: Carlos Millan<br>Company: Quanterra | Date: 3/19/98<br>Time: 1845 |
| Signature:<br>Printed Name:<br>Company:<br>Reason: | Signature:<br>Printed Name:<br>Company: | Date: / /<br>Time: |
| Signature:<br>Printed Name:<br>Company:<br>Reason: | Signature:<br>Printed Name:<br>Company: | Date: / /<br>Time: |

Special Shipment / Handling / Storage Requirements:

NOTE - FOR METAL ANALYSIS, FILTER AND ADD PRESERVATIVE

* Note – This does not constitute authorization to proceed with analysis

**Woodward-Clyde Consultants**

SHIPMENT NO.: 4

CHAIN OF CUSTODY RECORD

PAGE 2 OF

PROJECT NAME: ARS (HUNTINGTON BEACH)

DATE 3/19/98

PROJECT NO.: 97SB044 (3100)

| Sample Number | Location | Type of Sample | | Type of Container | Type of Preservation | | Analysis Required* |
|---|---|---|---|---|---|---|---|
| | | Material | Method | | Temp | Chemical | |
| HG18-01 | 18 | SOIL | DRIVE | 1" SS. TUBE | ICE | NONE | TPH-d, METALS |
| " | " | " | " | " | " | " | VOCs, SVOCs |
| HG18-02 | " | " | " | " | " | " | TPH-d, METALS |
| " | " | " | " | " | " | " | VOCs, SVOCs |
| HG16-01 | 16 | " | " | " | " | " | TPH-d, METALS |
| " | " | " | " | " | " | " | VOCs, SVOCs |
| HG16-02 | " | " | " | " | " | " | VOCs, SVOCs |
| " | " | " | " | " | " | " | METALS, TPH-d |
| HG16-03 | " | " | " | " | " | " | " " |
| " | " | " | " | " | " | " | VOCs, SVOCs |
| HG10-01 | 10 | " | " | " | " | " | METALS, TPH-d |
| " | " | " | " | " | " | " | VOCs, SVOCs |
| HG10-02 | " | " | " | " | " | " | METALS, TPH-d |
| " | " | " | " | " | " | " | VOCs, SVOCs |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Total Number of Samples Shipped: 14 | Sampler's Signature: Hector Reyes

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: Hector Reyes<br>Printed Name: HECTOR REYES<br>Company: W.C.C.<br>Reason: ANALYSIS | Signature: P Bautista<br>Printed Name: R. BALITISTA<br>Company: W. Corp | Date: 3/19/98<br>Time: 1745 |
| Relinquished By: P Bautista<br>Printed Name: R. BALITISTA<br>Company:<br>Reason: | Received By: [illegible]<br>Printed Name: Carlos Millan<br>Company: Avanterra | Date: 3/19/98<br>Time: 1845 |
| Relinquished By:<br>Signature:<br>Printed Name:<br>Company:<br>Reason: | Received By:<br>Signature:<br>Printed Name:<br>Company: | Date: / /<br>Time: |
| Relinquished By:<br>Signature:<br>Printed Name:<br>Company:<br>Reason: | Received By:<br>Signature:<br>Printed Name:<br>Company: | Date: / /<br>Time: |

Special Shipment / Handling / Storage Requirements:

* Note – This does not constitute authorization to proceed with analysis

SAMPLE DESCRIPTION INFORMATION
for
Woodward-Clyde Consultants

| Lab ID | Client ID | Matrix | Sampled Date | Sampled Time | Received Date |
|---|---|---|---|---|---|
| 131262-0001-SA | HG18-10-W | WATER | 19 MAR 98 | | 19 MAR 98 |
| 131262-0002-SA | HG18-11-W | WATER | 19 MAR 98 | | 19 MAR 98 |
| 131262-0003-SA | HG16-10-W | WATER | 19 MAR 98 | | 19 MAR 98 |
| 131262-0003-MS | HG16-10-W | WATER | 19 MAR 98 | | 19 MAR 98 |
| 131262-0003-SD | HG16-10-W | WATER | 19 MAR 98 | | 19 MAR 98 |
| 131262-0004-SA | RBHG10-W | WATER | 19 MAR 98 | | 19 MAR 98 |
| 131262-0005-SA | HG18-01 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131262-0006-SA | HG18-02 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131262-0007-SA | HG16-01 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131262-0008-SA | HG16-02 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131262-0009-SA | HG16-03 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131262-0010-SA | HG10-01 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131262-0011-SA | HG10-02 | SOIL | 19 MAR 98 | | 19 MAR 98 |

# TEPH

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG18-10-W | | |
| LAB ID: | 131262-0001-SA | | |
| Matrix: | WATER | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 31 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG18-11-W | | |
| LAB ID: | 131262-0002-SA | | |
| Matrix: | WATER | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 31 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG16-10-W | | |
| LAB ID: | 131262-0003-SA | | |
| Matrix: | WATER | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 31 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | RBHG10-W | | |
| LAB ID: | 131262-0004-SA | | |
| Matrix: | WATER | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 01 APR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG18-01 | | |
| LAB ID: | 131262-0005-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 11 | mg/kg |
| C15-<C20 | ND | | 11 | mg/kg |
| C20-<C25 | ND | | 11 | mg/kg |
| C25-<C30 | ND | | 11 | mg/kg |
| C30-<C35 | ND | | 11 | mg/kg |
| C35-C40 | ND | | 11 | mg/kg |

Percent moisture is 7.6%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG18-02 | | |
| LAB ID: | 131262-0006-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 12 | mg/kg |
| C15-<C20 | ND | | 12 | mg/kg |
| C20-<C25 | ND | | 12 | mg/kg |
| C25-<C30 | ND | | 12 | mg/kg |
| C30-<C35 | ND | | 12 | mg/kg |
| C35-C40 | ND | | 12 | mg/kg |

Percent moisture is 16.0%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG16-01 | | |
| LAB ID: | 131262-0007-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 11 | mg/kg |
| C15-<C20 | ND | | 11 | mg/kg |
| C20-<C25 | ND | | 11 | mg/kg |
| C25-<C30 | ND | | 11 | mg/kg |
| C30-<C35 | ND | | 11 | mg/kg |
| C35-C40 | ND | | 11 | mg/kg |

Percent moisture is 12.2%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG16-02 | | |
| LAB ID: | 131262-0008-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 12 | mg/kg |
| C15-<C20 | ND | | 12 | mg/kg |
| C20-<C25 | ND | | 12 | mg/kg |
| C25-<C30 | ND | | 12 | mg/kg |
| C30-<C35 | ND | | 12 | mg/kg |
| C35-C40 | ND | | 12 | mg/kg |

Percent moisture is 15.9%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG16-03 | | |
| LAB ID: | 131262-0009-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 12 | mg/kg |
| C15-<C20 | ND | | 12 | mg/kg |
| C20-<C25 | ND | | 12 | mg/kg |
| C25-<C30 | ND | | 12 | mg/kg |
| C30-<C35 | ND | | 12 | mg/kg |
| C35-C40 | ND | | 12 | mg/kg |

Percent moisture is 15.7%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG10-01 | | |
| LAB ID: | 131262-0010-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 11 | mg/kg |
| C15-<C20 | ND | | 11 | mg/kg |
| C20-<C25 | ND | | 11 | mg/kg |
| C25-<C30 | ND | | 11 | mg/kg |
| C30-<C35 | ND | | 11 | mg/kg |
| C35-C40 | ND | | 11 | mg/kg |

Percent moisture is 12.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG10-02 | | |
| LAB ID: | 131262-0011-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 14 | mg/kg |
| C15-<C20 | ND | | 14 | mg/kg |
| C20-<C25 | ND | | 14 | mg/kg |
| C25-<C30 | ND | | 14 | mg/kg |
| C30-<C35 | ND | | 14 | mg/kg |
| C35-C40 | ND | | 14 | mg/kg |

Percent moisture is 26.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

# *SVOCs*

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG18-10-W
LAB ID: 131262-0001-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 27 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | 1.2 | J | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | 1.1 | J | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | ND | | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG18-10-W
LAB ID: 131262-0001-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 27 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluorene | ND | | 10 | ug/L |
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | ND | | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range | |
|---|---|---|---|---|
| 2-Fluorophenol | 13 | % | 21 - 100 | I |
| Phenol-d5 | 11 | % | 10 - 94 | |
| Nitrobenzene-d5 | 22 | % | 34 - 114 | I |
| 2-Fluorobiphenyl | 20 | % | 43 - 116 | I |
| 2,4,6-Tribromophenol | 14 | % | 10 - 123 | |
| Terphenyl-d14 | 21 | % | 33 - 141 | I |

I = Surrogate recovery outside of limits due to sample matrix interference.
ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG18-11-W
LAB ID: 131262-0002-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | 1.4 | J | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | 1.4 | J | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | ND | | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG18-11-W
LAB ID: 131262-0002-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluorene | ND | | 10 | ug/L |
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | ND | | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 41 | % | 21 - 100 |
| Phenol-d5 | 29 | % | 10 - 94 |
| Nitrobenzene-d5 | 62 | % | 34 - 114 |
| 2-Fluorobiphenyl | 60 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 60 | % | 10 - 123 |
| Terphenyl-d14 | 60 | % | 33 - 141 |

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG16-10-W
LAB ID: 131262-0003-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | 1.1 | J | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | ND | | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | ND | | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG16-10-W
LAB ID: 131262-0003-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluorene | ND | | 10 | ug/L |
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | ND | | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 50 | % | 21 - 100 |
| Phenol-d5 | 33 | % | 10 - 94 |
| Nitrobenzene-d5 | 72 | % | 34 - 114 |
| 2-Fluorobiphenyl | 66 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 75 | % | 10 - 123 |
| Terphenyl-d14 | 72 | % | 33 - 141 |

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: RBHG10-W
LAB ID: 131262-0004-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | 3.0 | J | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | ND | | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | ND | | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: RBHG10-W
LAB ID: 131262-0004-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluorene | ND | | 10 | ug/L |
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | ND | | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 42 | % | 21 - 100 |
| Phenol-d5 | 27 | % | 10 - 94 |
| Nitrobenzene-d5 | 75 | % | 34 - 114 |
| 2-Fluorobiphenyl | 80 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 86 | % | 10 - 123 |
| Terphenyl-d14 | 91 | % | 33 - 141 |

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG18-01
LAB ID: 131262-0005-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1700 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 360 | ug/kg |
| 2,4-Dichlorophenol | ND | | 360 | ug/kg |
| 2,4-Dimethylphenol | ND | | 360 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1700 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 360 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 360 | ug/kg |
| 2-Chloronaphthalene | ND | | 360 | ug/kg |
| 2-Chlorophenol | ND | | 360 | ug/kg |
| 2-Methylnaphthalene | ND | | 360 | ug/kg |
| 2-Methylphenol | ND | | 360 | ug/kg |
| 2-Nitroaniline | ND | | 1700 | ug/kg |
| 2-Nitrophenol | ND | | 360 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 710 | ug/kg |
| 3-Nitroaniline | ND | | 1700 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1700 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 360 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 700 | ug/kg |
| 4-Chloroaniline | ND | | 360 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 360 | ug/kg |
| 4-Methylphenol | ND | | 360 | ug/kg |
| 4-Nitroaniline | ND | | 1700 | ug/kg |
| 4-Nitrophenol | ND | | 1700 | ug/kg |
| Acenaphthene | ND | | 360 | ug/kg |
| Acenaphthylene | ND | | 360 | ug/kg |
| Anthracene | ND | | 360 | ug/kg |
| Benzo(a)anthracene | ND | | 360 | ug/kg |
| Benzo(a)pyrene | ND | | 360 | ug/kg |
| Benzo(b)fluoranthene | ND | | 360 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 360 | ug/kg |
| Benzo(k)fluoranthene | ND | | 360 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 360 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 360 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 360 | ug/kg |
| Butyl benzyl phthalate | ND | | 360 | ug/kg |
| Carbazole | ND | | 360 | ug/kg |
| Chrysene | ND | | 360 | ug/kg |
| Di-n-butyl phthalate | ND | | 360 | ug/kg |
| Di-n-octyl phthalate | ND | | 360 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 360 | ug/kg |
| Dibenzofuran | ND | | 360 | ug/kg |
| Diethyl phthalate | ND | | 360 | ug/kg |
| Dimethyl phthalate | ND | | 360 | ug/kg |
| Fluoranthene | ND | | 360 | ug/kg |
| Fluorene | ND | | 360 | ug/kg |

Percent moisture is 7.6%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG18-01
LAB ID: 131262-0005-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 360 | ug/kg |
| Hexachlorobutadiene | ND | | 360 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1700 | ug/kg |
| Hexachloroethane | ND | | 360 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 360 | ug/kg |
| Isophorone | ND | | 360 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 360 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 360 | ug/kg |
| Naphthalene | ND | | 360 | ug/kg |
| Nitrobenzene | ND | | 360 | ug/kg |
| Pentachlorophenol | ND | | 1700 | ug/kg |
| Phenanthrene | ND | | 360 | ug/kg |
| Pyrene | ND | | 360 | ug/kg |
| Phenol | ND | | 360 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 75 | % | 25 - 121 |
| Phenol-d5 | 73 | % | 24 - 113 |
| Nitrobenzene-d5 | 71 | % | 23 - 120 |
| 2-Fluorobiphenyl | 45 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 59 | % | 19 - 122 |
| Terphenyl-d14 | 66 | % | 18 - 137 |

Percent moisture is 7.6%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG18-02
LAB ID: 131262-0006-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1900 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dimethylphenol | ND | | 390 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1900 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 390 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 390 | ug/kg |
| 2-Chloronaphthalene | ND | | 390 | ug/kg |
| 2-Chlorophenol | ND | | 390 | ug/kg |
| 2-Methylnaphthalene | ND | | 390 | ug/kg |
| 2-Methylphenol | ND | | 390 | ug/kg |
| 2-Nitroaniline | ND | | 1900 | ug/kg |
| 2-Nitrophenol | ND | | 390 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 790 | ug/kg |
| 3-Nitroaniline | ND | | 1900 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1900 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 770 | ug/kg |
| 4-Chloroaniline | ND | | 390 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Methylphenol | ND | | 390 | ug/kg |
| 4-Nitroaniline | ND | | 1900 | ug/kg |
| 4-Nitrophenol | ND | | 1900 | ug/kg |
| Acenaphthene | ND | | 390 | ug/kg |
| Acenaphthylene | ND | | 390 | ug/kg |
| Anthracene | ND | | 390 | ug/kg |
| Benzo(a)anthracene | ND | | 390 | ug/kg |
| Benzo(a)pyrene | ND | | 390 | ug/kg |
| Benzo(b)fluoranthene | ND | | 390 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 390 | ug/kg |
| Benzo(k)fluoranthene | ND | | 390 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 390 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 390 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 390 | ug/kg |
| Butyl benzyl phthalate | ND | | 390 | ug/kg |
| Carbazole | ND | | 390 | ug/kg |
| Chrysene | ND | | 390 | ug/kg |
| Di-n-butyl phthalate | ND | | 390 | ug/kg |
| Di-n-octyl phthalate | ND | | 390 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 390 | ug/kg |
| Dibenzofuran | ND | | 390 | ug/kg |
| Diethyl phthalate | ND | | 390 | ug/kg |
| Dimethyl phthalate | ND | | 390 | ug/kg |
| Fluoranthene | ND | | 390 | ug/kg |
| Fluorene | ND | | 390 | ug/kg |

Percent moisture is 16.0%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG18-02
LAB ID: 131262-0006-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 390 | ug/kg |
| Hexachlorobutadiene | ND | | 390 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1900 | ug/kg |
| Hexachloroethane | ND | | 390 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 390 | ug/kg |
| Isophorone | ND | | 390 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 390 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 390 | ug/kg |
| Naphthalene | ND | | 390 | ug/kg |
| Nitrobenzene | ND | | 390 | ug/kg |
| Pentachlorophenol | ND | | 1900 | ug/kg |
| Phenanthrene | ND | | 390 | ug/kg |
| Pyrene | ND | | 390 | ug/kg |
| Phenol | ND | | 390 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 69 | % | 25 - 121 |
| Phenol-d5 | 74 | % | 24 - 113 |
| Nitrobenzene-d5 | 55 | % | 23 - 120 |
| 2-Fluorobiphenyl | 55 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 62 | % | 19 - 122 |
| Terphenyl-d14 | 60 | % | 18 - 137 |

Percent moisture is 16.0%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG16-01
LAB ID: 131262-0007-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1800 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 380 | ug/kg |
| 2,4-Dichlorophenol | ND | | 380 | ug/kg |
| 2,4-Dimethylphenol | ND | | 380 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1800 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 380 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 380 | ug/kg |
| 2-Chloronaphthalene | ND | | 380 | ug/kg |
| 2-Chlorophenol | ND | | 380 | ug/kg |
| 2-Methylnaphthalene | ND | | 380 | ug/kg |
| 2-Methylphenol | ND | | 380 | ug/kg |
| 2-Nitroaniline | ND | | 1800 | ug/kg |
| 2-Nitrophenol | ND | | 380 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 750 | ug/kg |
| 3-Nitroaniline | ND | | 1800 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1800 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 380 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 740 | ug/kg |
| 4-Chloroaniline | ND | | 380 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 380 | ug/kg |
| 4-Methylphenol | ND | | 380 | ug/kg |
| 4-Nitroaniline | ND | | 1800 | ug/kg |
| 4-Nitrophenol | ND | | 1800 | ug/kg |
| Acenaphthene | ND | | 380 | ug/kg |
| Acenaphthylene | ND | | 380 | ug/kg |
| Anthracene | ND | | 380 | ug/kg |
| Benzo(a)anthracene | ND | | 380 | ug/kg |
| Benzo(a)pyrene | ND | | 380 | ug/kg |
| Benzo(b)fluoranthene | ND | | 380 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 380 | ug/kg |
| Benzo(k)fluoranthene | ND | | 380 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 380 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 380 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 380 | ug/kg |
| Butyl benzyl phthalate | ND | | 380 | ug/kg |
| Carbazole | ND | | 380 | ug/kg |
| Chrysene | ND | | 380 | ug/kg |
| Di-n-butyl phthalate | ND | | 380 | ug/kg |
| Di-n-octyl phthalate | ND | | 380 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 380 | ug/kg |
| Dibenzofuran | ND | | 380 | ug/kg |
| Diethyl phthalate | ND | | 380 | ug/kg |
| Dimethyl phthalate | ND | | 380 | ug/kg |
| Fluoranthene | ND | | 380 | ug/kg |
| Fluorene | ND | | 380 | ug/kg |

Percent moisture is 12.2%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG16-01
LAB ID: 131262-0007-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 380 | ug/kg |
| Hexachlorobutadiene | ND | | 380 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1800 | ug/kg |
| Hexachloroethane | ND | | 380 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 380 | ug/kg |
| Isophorone | ND | | 380 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 380 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 380 | ug/kg |
| Naphthalene | ND | | 380 | ug/kg |
| Nitrobenzene | ND | | 380 | ug/kg |
| Pentachlorophenol | ND | | 1800 | ug/kg |
| Phenanthrene | ND | | 380 | ug/kg |
| Pyrene | ND | | 380 | ug/kg |
| Phenol | ND | | 380 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 47 | % | 25 - 121 |
| Phenol-d5 | 52 | % | 24 - 113 |
| Nitrobenzene-d5 | 44 | % | 23 - 120 |
| 2-Fluorobiphenyl | 61 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 39 | % | 19 - 122 |
| Terphenyl-d14 | 47 | % | 18 - 137 |

Percent moisture is 12.2%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG16-02
LAB ID: 131262-0008-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1900 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dimethylphenol | ND | | 390 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1900 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 390 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 390 | ug/kg |
| 2-Chloronaphthalene | ND | | 390 | ug/kg |
| 2-Chlorophenol | ND | | 390 | ug/kg |
| 2-Methylnaphthalene | ND | | 390 | ug/kg |
| 2-Methylphenol | ND | | 390 | ug/kg |
| 2-Nitroaniline | ND | | 1900 | ug/kg |
| 2-Nitrophenol | ND | | 390 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 780 | ug/kg |
| 3-Nitroaniline | ND | | 1900 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1900 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 770 | ug/kg |
| 4-Chloroaniline | ND | | 390 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Methylphenol | ND | | 390 | ug/kg |
| 4-Nitroaniline | ND | | 1900 | ug/kg |
| 4-Nitrophenol | ND | | 1900 | ug/kg |
| Acenaphthene | ND | | 390 | ug/kg |
| Acenaphthylene | ND | | 390 | ug/kg |
| Anthracene | ND | | 390 | ug/kg |
| Benzo(a)anthracene | ND | | 390 | ug/kg |
| Benzo(a)pyrene | ND | | 390 | ug/kg |
| Benzo(b)fluoranthene | ND | | 390 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 390 | ug/kg |
| Benzo(k)fluoranthene | ND | | 390 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 390 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 390 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | 130 | J | 390 | ug/kg |
| Butyl benzyl phthalate | ND | | 390 | ug/kg |
| Carbazole | ND | | 390 | ug/kg |
| Chrysene | ND | | 390 | ug/kg |
| Di-n-butyl phthalate | ND | | 390 | ug/kg |
| Di-n-octyl phthalate | ND | | 390 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 390 | ug/kg |
| Dibenzofuran | ND | | 390 | ug/kg |
| Diethyl phthalate | ND | | 390 | ug/kg |
| Dimethyl phthalate | ND | | 390 | ug/kg |
| Fluoranthene | ND | | 390 | ug/kg |

Percent moisture is 15.9%. All results and limits are reported on a dry weight basis.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG16-02
LAB ID: 131262-0008-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluorene | ND | | 390 | ug/kg |
| Hexachlorobenzene | ND | | 390 | ug/kg |
| Hexachlorobutadiene | ND | | 390 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1900 | ug/kg |
| Hexachloroethane | ND | | 390 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 390 | ug/kg |
| Isophorone | ND | | 390 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 390 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 390 | ug/kg |
| Naphthalene | ND | | 390 | ug/kg |
| Nitrobenzene | ND | | 390 | ug/kg |
| Pentachlorophenol | ND | | 1900 | ug/kg |
| Phenanthrene | ND | | 390 | ug/kg |
| Pyrene | ND | | 390 | ug/kg |
| Phenol | ND | | 390 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 67 | % | 25 - 121 |
| Phenol-d5 | 70 | % | 24 - 113 |
| Nitrobenzene-d5 | 50 | % | 23 - 120 |
| 2-Fluorobiphenyl | 74 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 91 | % | 19 - 122 |
| Terphenyl-d14 | 99 | % | 18 - 137 |

Percent moisture is 15.9%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG16-03
LAB ID: 131262-0009-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1900 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dimethylphenol | ND | | 390 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1900 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 390 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 390 | ug/kg |
| 2-Chloronaphthalene | ND | | 390 | ug/kg |
| 2-Chlorophenol | ND | | 390 | ug/kg |
| 2-Methylnaphthalene | ND | | 390 | ug/kg |
| 2-Methylphenol | ND | | 390 | ug/kg |
| 2-Nitroaniline | ND | | 1900 | ug/kg |
| 2-Nitrophenol | ND | | 390 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 780 | ug/kg |
| 3-Nitroaniline | ND | | 1900 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1900 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 770 | ug/kg |
| 4-Chloroaniline | ND | | 390 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Methylphenol | ND | | 390 | ug/kg |
| 4-Nitroaniline | ND | | 1900 | ug/kg |
| 4-Nitrophenol | ND | | 1900 | ug/kg |
| Acenaphthene | ND | | 390 | ug/kg |
| Acenaphthylene | ND | | 390 | ug/kg |
| Anthracene | ND | | 390 | ug/kg |
| Benzo(a)anthracene | ND | | 390 | ug/kg |
| Benzo(a)pyrene | ND | | 390 | ug/kg |
| Benzo(b)fluoranthene | ND | | 390 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 390 | ug/kg |
| Benzo(k)fluoranthene | ND | | 390 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 390 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 390 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | 85 | J | 390 | ug/kg |
| Butyl benzyl phthalate | ND | | 390 | ug/kg |
| Carbazole | ND | | 390 | ug/kg |
| Chrysene | ND | | 390 | ug/kg |
| Di-n-butyl phthalate | ND | | 390 | ug/kg |
| Di-n-octyl phthalate | ND | | 390 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 390 | ug/kg |
| Dibenzofuran | ND | | 390 | ug/kg |
| Diethyl phthalate | ND | | 390 | ug/kg |
| Dimethyl phthalate | ND | | 390 | ug/kg |
| Fluoranthene | ND | | 390 | ug/kg |

Percent moisture is 15.7%. All results and limits are reported on a dry weight basis.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG16-03
LAB ID: 131262-0009-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluorene | ND | | 390 | ug/kg |
| Hexachlorobenzene | ND | | 390 | ug/kg |
| Hexachlorobutadiene | ND | | 390 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1900 | ug/kg |
| Hexachloroethane | ND | | 390 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 390 | ug/kg |
| Isophorone | ND | | 390 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 390 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 390 | ug/kg |
| Naphthalene | ND | | 390 | ug/kg |
| Nitrobenzene | ND | | 390 | ug/kg |
| Pentachlorophenol | ND | | 1900 | ug/kg |
| Phenanthrene | ND | | 390 | ug/kg |
| Pyrene | ND | | 390 | ug/kg |
| Phenol | ND | | 390 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 66 | % | 25 - 121 |
| Phenol-d5 | 63 | % | 24 - 113 |
| Nitrobenzene-d5 | 62 | % | 23 - 120 |
| 2-Fluorobiphenyl | 59 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 54 | % | 19 - 122 |
| Terphenyl-d14 | 50 | % | 18 - 137 |

Percent moisture is 15.7%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG10-01
LAB ID: 131262-0010-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1800 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 380 | ug/kg |
| 2,4-Dichlorophenol | ND | | 380 | ug/kg |
| 2,4-Dimethylphenol | ND | | 380 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1800 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 380 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 380 | ug/kg |
| 2-Chloronaphthalene | ND | | 380 | ug/kg |
| 2-Chlorophenol | ND | | 380 | ug/kg |
| 2-Methylnaphthalene | ND | | 380 | ug/kg |
| 2-Methylphenol | ND | | 380 | ug/kg |
| 2-Nitroaniline | ND | | 1800 | ug/kg |
| 2-Nitrophenol | ND | | 380 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 750 | ug/kg |
| 3-Nitroaniline | ND | | 1800 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1800 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 380 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 740 | ug/kg |
| 4-Chloroaniline | ND | | 380 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 380 | ug/kg |
| 4-Methylphenol | ND | | 380 | ug/kg |
| 4-Nitroaniline | ND | | 1800 | ug/kg |
| 4-Nitrophenol | ND | | 1800 | ug/kg |
| Acenaphthene | ND | | 380 | ug/kg |
| Acenaphthylene | ND | | 380 | ug/kg |
| Anthracene | ND | | 380 | ug/kg |
| Benzo(a)anthracene | ND | | 380 | ug/kg |
| Benzo(a)pyrene | ND | | 380 | ug/kg |
| Benzo(b)fluoranthene | ND | | 380 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 380 | ug/kg |
| Benzo(k)fluoranthene | ND | | 380 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 380 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 380 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 380 | ug/kg |
| Butyl benzyl phthalate | ND | | 380 | ug/kg |
| Carbazole | ND | | 380 | ug/kg |
| Chrysene | ND | | 380 | ug/kg |
| Di-n-butyl phthalate | ND | | 380 | ug/kg |
| Di-n-octyl phthalate | ND | | 380 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 380 | ug/kg |
| Dibenzofuran | ND | | 380 | ug/kg |
| Diethyl phthalate | ND | | 380 | ug/kg |
| Dimethyl phthalate | ND | | 380 | ug/kg |
| Fluoranthene | ND | | 380 | ug/kg |
| Fluorene | ND | | 380 | ug/kg |

Percent moisture is 12.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG10-01
LAB ID: 131262-0010-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 380 | ug/kg |
| Hexachlorobutadiene | ND | | 380 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1800 | ug/kg |
| Hexachloroethane | ND | | 380 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 380 | ug/kg |
| Isophorone | ND | | 380 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 380 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 380 | ug/kg |
| Naphthalene | ND | | 380 | ug/kg |
| Nitrobenzene | ND | | 380 | ug/kg |
| Pentachlorophenol | ND | | 1800 | ug/kg |
| Phenanthrene | ND | | 380 | ug/kg |
| Pyrene | ND | | 380 | ug/kg |
| Phenol | ND | | 380 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 86 | % | 25 - 121 |
| Phenol-d5 | 82 | % | 24 - 113 |
| Nitrobenzene-d5 | 47 | % | 23 - 120 |
| 2-Fluorobiphenyl | 61 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 100 | % | 19 - 122 |
| Terphenyl-d14 | 120 | % | 18 - 137 |

Percent moisture is 12.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG10-02
LAB ID: 131262-0011-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 2200 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 450 | ug/kg |
| 2,4-Dichlorophenol | ND | | 450 | ug/kg |
| 2,4-Dimethylphenol | ND | | 450 | ug/kg |
| 2,4-Dinitrophenol | ND | | 2200 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 450 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 450 | ug/kg |
| 2-Chloronaphthalene | ND | | 450 | ug/kg |
| 2-Chlorophenol | ND | | 450 | ug/kg |
| 2-Methylnaphthalene | ND | | 450 | ug/kg |
| 2-Methylphenol | ND | | 450 | ug/kg |
| 2-Nitroaniline | ND | | 2200 | ug/kg |
| 2-Nitrophenol | ND | | 450 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 900 | ug/kg |
| 3-Nitroaniline | ND | | 2200 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 2200 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 450 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 880 | ug/kg |
| 4-Chloroaniline | ND | | 450 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 450 | ug/kg |
| 4-Methylphenol | ND | | 450 | ug/kg |
| 4-Nitroaniline | ND | | 2200 | ug/kg |
| 4-Nitrophenol | ND | | 2200 | ug/kg |
| Acenaphthene | ND | | 450 | ug/kg |
| Acenaphthylene | ND | | 450 | ug/kg |
| Anthracene | ND | | 450 | ug/kg |
| Benzo(a)anthracene | ND | | 450 | ug/kg |
| Benzo(a)pyrene | ND | | 450 | ug/kg |
| Benzo(b)fluoranthene | ND | | 450 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 450 | ug/kg |
| Benzo(k)fluoranthene | ND | | 450 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 450 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 450 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 450 | ug/kg |
| Butyl benzyl phthalate | ND | | 450 | ug/kg |
| Carbazole | ND | | 450 | ug/kg |
| Chrysene | ND | | 450 | ug/kg |
| Di-n-butyl phthalate | ND | | 450 | ug/kg |
| Di-n-octyl phthalate | ND | | 450 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 450 | ug/kg |
| Dibenzofuran | ND | | 450 | ug/kg |
| Diethyl phthalate | ND | | 450 | ug/kg |
| Dimethyl phthalate | ND | | 450 | ug/kg |
| Fluoranthene | ND | | 450 | ug/kg |
| Fluorene | ND | | 450 | ug/kg |

Percent moisture is 26.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG10-02
LAB ID: 131262-0011-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 450 | ug/kg |
| Hexachlorobutadiene | ND | | 450 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 2200 | ug/kg |
| Hexachloroethane | ND | | 450 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 450 | ug/kg |
| Isophorone | ND | | 450 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 450 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 450 | ug/kg |
| Naphthalene | ND | | 450 | ug/kg |
| Nitrobenzene | ND | | 450 | ug/kg |
| Pentachlorophenol | ND | | 2200 | ug/kg |
| Phenanthrene | ND | | 450 | ug/kg |
| Pyrene | ND | | 450 | ug/kg |
| Phenol | ND | | 450 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 92 | % | 25 - 121 |
| Phenol-d5 | 83 | % | 24 - 113 |
| Nitrobenzene-d5 | 42 | % | 23 - 120 |
| 2-Fluorobiphenyl | 53 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 98 | % | 19 - 122 |
| Terphenyl-d14 | 108 | % | 18 - 137 |

Percent moisture is 26.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

QC LOT ASSIGNMENT REPORT - MS QC
Semivolatile Organics by GC/MS

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK/LCS) | MS QC Run Number (SA,MS,SD,DU) |
|---|---|---|---|---|---|
| 131262-0001-SA | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131262-0002-SA | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131262-0003-SA | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131262-0003-MS | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131262-0003-SD | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131262-0004-SA | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131262-0005-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131262-0005-MS | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131262-0005-SD | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131262-0006-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131262-0007-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131262-0008-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131262-0009-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131262-0010-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131262-0011-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |

METHOD BLANK REPORT
Semivolatile Organics by GC/MS
Project: 131262

Test: Q8270-TCL-3510-A Method SW8270B - TCL Semivolatile Organics
Matrix: AQUEOUS
QC Run: 23 MAR 98-AX Date Analyzed: 27 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | ug/L | 10 |
| 2,4,6-Trichlorophenol | ND | ug/L | 10 |
| 2,4-Dichlorophenol | ND | ug/L | 10 |
| 2,4-Dimethylphenol | ND | ug/L | 10 |
| 2,4-Dinitrophenol | ND | ug/L | 50 |
| 2,4-Dinitrotoluene | ND | ug/L | 10 |
| 2,6-Dinitrotoluene | ND | ug/L | 10 |
| 2-Chloronaphthalene | ND | ug/L | 10 |
| 2-Chlorophenol | ND | ug/L | 10 |
| 2-Methylnaphthalene | ND | ug/L | 10 |
| 2-Methylphenol | ND | ug/L | 10 |
| 2-Nitroaniline | ND | ug/L | 50 |
| 2-Nitrophenol | ND | ug/L | 10 |
| 3,3'-Dichlorobenzidine | ND | ug/L | 50 |
| 3-Nitroaniline | ND | ug/L | 50 |
| 4,6-Dinitro-2-methylphenol | ND | ug/L | 50 |
| 4-Bromophenyl phenyl ether | ND | ug/L | 10 |
| 4-Chloro-3-methylphenol | ND | ug/L | 10 |
| 4-Chloroaniline | ND | ug/L | 10 |
| 4-Chlorophenyl phenyl ether | ND | ug/L | 10 |
| 4-Methylphenol | ND | ug/L | 10 |
| 4-Nitroaniline | ND | ug/L | 50 |
| 4-Nitrophenol | ND | ug/L | 50 |
| Acenaphthene | ND | ug/L | 10 |
| Acenaphthylene | ND | ug/L | 10 |
| Anthracene | ND | ug/L | 10 |
| Benzo(a)anthracene | ND | ug/L | 10 |
| Benzo(a)pyrene | ND | ug/L | 10 |
| Benzo(b)fluoranthene | ND | ug/L | 10 |
| Benzo(g,h,i)perylene | ND | ug/L | 10 |
| Benzo(k)fluoranthene | ND | ug/L | 10 |
| bis(2-Chloroethoxy)-methane | ND | ug/L | 10 |
| bis(2-Chloroethyl) ether | ND | ug/L | 10 |
| bis(2-Ethylhexyl)-phthalate | ND | ug/L | 10 |
| Butyl benzyl phthalate | ND | ug/L | 10 |
| Carbazole | ND | ug/L | 10 |
| Chrysene | ND | ug/L | 10 |
| Di-n-butyl phthalate | ND | ug/L | 10 |
| Di-n-octyl phthalate | ND | ug/L | 10 |
| Dibenz(a,h)anthracene | ND | ug/L | 10 |
| Dibenzofuran | ND | ug/L | 10 |
| Diethyl phthalate | ND | ug/L | 10 |
| Dimethyl phthalate | ND | ug/L | 10 |
| Fluoranthene | ND | ug/L | 10 |
| Fluorene | ND | ug/L | 10 |
| Hexachlorobenzene | ND | ug/L | 1.0 |
| Hexachlorobutadiene | ND | ug/L | 10 |

ND = Not Detected

METHOD BLANK REPORT (cont.)
Semivolatile Organics by GC/MS
Project: 131262

Test: Q8270-TCL-3510-A Method SW8270B - TCL Semivolatile Organics (cont.)
Matrix: AQUEOUS
QC Run: 23 MAR 98-AX Date Analyzed: 27 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Hexachlorocyclopentadiene | ND | ug/L | 50 |
| Hexachloroethane | ND | ug/L | 10 |
| Indeno(1,2,3-c,d)pyrene | ND | ug/L | 10 |
| Isophorone | ND | ug/L | 10 |
| N-Nitroso-di-n-propylamine | ND | ug/L | 10 |
| N-Nitrosodiphenylamine | ND | ug/L | 10 |
| Naphthalene | ND | ug/L | 10 |
| Nitrobenzene | ND | ug/L | 10 |
| Pentachlorophenol | ND | ug/L | 50 |
| Phenanthrene | ND | ug/L | 10 |
| Pyrene | ND | ug/L | 10 |
| Phenol | ND | ug/L | 10 |

| Surrogate | Recovery | Acceptable Range |
|---|---|---|
| 2-Fluorophenol | 61 | 21 -100 |
| Phenol-d5 | 41 | 10 -94 |
| Nitrobenzene-d5 | 89 | 34 -114 |
| 2-Fluorobiphenyl | 89 | 43 -116 |
| 2,4,6-Tribromophenol | 90 | 10 -123 |
| Terphenyl-d14 | 99 | 33 -141 |

ND = Not Detected

LABORATORY CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS
Project: 131262

Category: Q8270-S-A Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS Date Analyzed: 27 MAR 98
QC Run: 23 MAR 98-AX
Concentration Units: ug/L

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Phenol | 200 | 72.6 | 36 | 10-96 |
| 2-Chlorophenol | 200 | 141 | 71 | 55-105 |
| 1,4-Dichlorobenzene | 100 | 69.3 | 69 | 56-103 |
| N-Nitroso-di-n-propylamine | 100 | 80.9 | 81 | 58-109 |
| 1,2,4-Trichlorobenzene | 100 | 72.9 | 73 | 55-106 |
| 4-Chloro-3-methylphenol | 200 | 165 | 83 | 67-104 |
| Acenaphthene | 100 | 81.8 | 82 | 63-117 |
| 4-Nitrophenol | 200 | 79.7 | 40 | 10-111 |
| 2,4-Dinitrotoluene | 100 | 93.8 | 94 | 70-110 |
| Pentachlorophenol | 200 | 190 | 95 | 46-133 |
| Pyrene | 100 | 83.6 | 84 | 67-120 |

| Surrogates | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| 2-Fluorophenol | 200 | 96.2 | 48 | 21-100 |
| Phenol-d5 | 200 | 68.1 | 34 | 10-94 |
| Nitrobenzene-d5 | 100 | 78.1 | 78 | 34-114 |
| 2-Fluorobiphenyl | 100 | 77.1 | 77 | 43-116 |
| 2,4,6-Tribromophenol | 200 | 169 | 85 | 10-123 |
| Terphenyl-d14 | 100 | 77.5 | 78 | 33-141 |

Category: Q8270-S Method SW8270 - Acid, Base and Neutrals by GC/MS.
Matrix: SOLID Date Analyzed: 28 MAR 98
QC Run: 23 MAR 98-CX
Concentration Units: ug/kg

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Phenol | 6670 | 4990 | 75 | 39-115 |
| 2-Chlorophenol | 6670 | 5160 | 77 | 55-108 |
| 1,4-Dichlorobenzene | 3330 | 2890 | 87 | 56-107 |
| N-Nitroso-di-n-propylamine | 3330 | 2800 | 84 | 14-110 |
| 1,2,4-Trichlorobenzene | 3330 | 2710 | 81 | 54-104 |
| 4-Chloro-3-methylphenol | 6670 | 4490 | 67 | 52-120 |
| Acenaphthene | 3330 | 2600 | 78 | 60-114 |
| 4-Nitrophenol | 6670 | 4110 | 62 | 56-142 |
| 2,4-Dinitrotoluene | 3330 | 2840 | 85 | 62-117 |
| Pentachlorophenol | 6670 | 6800 | 102 | 49-132 |
| Pyrene | 3330 | 2760 | 83 | 61-106 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS (cont.)
Project: 131262

| Surrogates | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| 2-Fluorophenol | 6670 | 5910 | 89 | 25-121 |
| Phenol-d5 | 6670 | 5310 | 80 | 24-113 |
| Nitrobenzene-d5 | 3330 | 3100 | 93 | 23-120 |
| 2-Fluorobiphenyl | 3330 | 2650 | 80 | 30-115 |
| 2,4,6-Tribromophenol | 6670 | 4960 | 74 | 19-122 |
| Terphenyl-d14 | 3330 | 2720 | 82 | 18-137 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT (cont.)
Semivolatile Organics by GC/MS
Project: 131262

Test: Q8270-TCL-L-S Method 8270B - TCL Semivolatile Organics
Matrix: SOLID
QC Run: 23 MAR 98-CX Date Analyzed: 28 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | ug/kg | 1600 |
| 2,4,6-Trichlorophenol | ND | ug/kg | 330 |
| 2,4-Dichlorophenol | ND | ug/kg | 330 |
| 2,4-Dimethylphenol | ND | ug/kg | 330 |
| 2,4-Dinitrophenol | ND | ug/kg | 1600 |
| 2,4-Dinitrotoluene | ND | ug/kg | 330 |
| 2,6-Dinitrotoluene | ND | ug/kg | 330 |
| 2-Chloronaphthalene | ND | ug/kg | 330 |
| 2-Chlorophenol | ND | ug/kg | 330 |
| 2-Methylnaphthalene | ND | ug/kg | 330 |
| 2-Methylphenol | ND | ug/kg | 330 |
| 2-Nitroaniline | ND | ug/kg | 1600 |
| 2-Nitrophenol | ND | ug/kg | 330 |
| 3,3'-Dichlorobenzidine | ND | ug/kg | 660 |
| 3-Nitroaniline | ND | ug/kg | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ug/kg | 1600 |
| 4-Bromophenyl phenyl ether | ND | ug/kg | 330 |
| 4-Chloro-3-methylphenol | ND | ug/kg | 650 |
| 4-Chloroaniline | ND | ug/kg | 330 |
| 4-Chlorophenyl phenyl ether | ND | ug/kg | 330 |
| 4-Methylphenol | ND | ug/kg | 330 |
| 4-Nitroaniline | ND | ug/kg | 1600 |
| 4-Nitrophenol | ND | ug/kg | 1600 |
| Acenaphthene | ND | ug/kg | 330 |
| Acenaphthylene | ND | ug/kg | 330 |
| Anthracene | ND | ug/kg | 330 |
| Benzo(a)anthracene | ND | ug/kg | 330 |
| Benzo(a)pyrene | ND | ug/kg | 330 |
| Benzo(b)fluoranthene | ND | ug/kg | 330 |
| Benzo(g,h,i)perylene | ND | ug/kg | 330 |
| Benzo(k)fluoranthene | ND | ug/kg | 330 |
| bis(2-Chloroethoxy)-methane | ND | ug/kg | 330 |
| bis(2-Chloroethyl) ether | ND | ug/kg | 330 |
| bis(2-Ethylhexyl)-phthalate | ND | ug/kg | 330 |
| Butyl benzyl phthalate | ND | ug/kg | 330 |
| Carbazole | ND | ug/kg | 330 |
| Chrysene | ND | ug/kg | 330 |
| Di-n-butyl phthalate | ND | ug/kg | 330 |
| Di-n-octyl phthalate | ND | ug/kg | 330 |
| Dibenz(a,h)anthracene | ND | ug/kg | 330 |
| Dibenzofuran | ND | ug/kg | 330 |
| Diethyl phthalate | ND | ug/kg | 330 |
| Dimethyl phthalate | ND | ug/kg | 330 |
| Fluoranthene | ND | ug/kg | 330 |
| Fluorene | ND | ug/kg | 330 |
| Hexachlorobenzene | ND | ug/kg | 330 |

ND = Not Detected

METHOD BLANK REPORT (cont.)
Semivolatile Organics by GC/MS
Project: 131262

Test: Q8270-TCL-L-S Method 8270B - TCL Semivolatile Organics (cont.)
Matrix: SOLID
QC Run: 23 MAR 98-CX Date Analyzed: 28 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Hexachlorobutadiene | ND | ug/kg | 330 |
| Hexachlorocyclopentadiene | ND | ug/kg | 1600 |
| Hexachloroethane | ND | ug/kg | 330 |
| Indeno(1,2,3-c,d)pyrene | ND | ug/kg | 330 |
| Isophorone | ND | ug/kg | 330 |
| N-Nitroso-di-n-propylamine | ND | ug/kg | 330 |
| N-Nitrosodiphenylamine | ND | ug/kg | 330 |
| Naphthalene | ND | ug/kg | 330 |
| Nitrobenzene | ND | ug/kg | 330 |
| Pentachlorophenol | ND | ug/kg | 1600 |
| Phenanthrene | ND | ug/kg | 330 |
| Pyrene | ND | ug/kg | 330 |
| Phenol | ND | ug/kg | 330 |

| Surrogate | Recovery | Acceptable Range |
|---|---|---|
| 2-Fluorophenol | 102 | 25 -121 |
| Phenol-d5 | 85 | 24 -113 |
| Nitrobenzene-d5 | 75 | 23 -120 |
| 2-Fluorobiphenyl | 80 | 30 -115 |
| 2,4,6-Tribromophenol | 75 | 19 -122 |
| Terphenyl-d14 | 107 | 18 -137 |

ND = Not Detected

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC/MS
Project: 131262

Category: Q8270-S-A Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS
Sample: 131262-0003
MS Run: 23 MAR 98-AA
Units: ug/L

| Analyte | Sample Result | Concentration MS Result | Concentration MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| Phenol | ND | 64.3 | 69.2 | 200 | 32 | 35 | 7.3 | 10-96 | 57 |
| 2-Chlorophenol | ND | 128 | 139 | 200 | 64 | 70 | 8.7 | 55-105 | 37 |
| N-Nitroso-di-n-propylamine | ND | 69.3 | 72.4 | 100 | 69 | 72 | 4.4 | 58-109 | 30 |
| 4-Chloro-3-methylphenol | ND | 148 | 160 | 200 | 74 | 80 | 7.7 | 67-104 | 36 |
| Acenaphthene | ND | 65.6 | 67.3 | 100 | 66 | 67 | 2.5 | 63-117 | 23 |
| 4-Nitrophenol | ND | 63.4 | 66.4 | 200 | 32 | 33 | 4.5 | 10-111 | 49 |
| 2,4-Dinitrotoluene | ND | 82.0 | 85.1 | 100 | 82 | 85 | 3.7 | 70-110 | 30 |
| Pentachlorophenol | ND | 140 | 162 | 200 | 70 | 81 | 14 | 46-133 | 39 |
| Pyrene | ND | 62.9 n | 69.1 | 100 | 63 | 69 | 9.4 | 67-120 | 34 |

| Surrogates | Sample %Recovery | %Recovery MS | %Recovery MSD | Acceptance Limit Recovery |
|---|---|---|---|---|
| 2-Fluorophenol | 50 | 42 | 47 | 21-100 |
| Phenol-d5 | 33 | 30 | 33 | 10-94 |
| Nitrobenzene-d5 | 72 | 67 | 70 | 34-114 |
| 2-Fluorobiphenyl | 66 | 60 | 63 | 43-116 |
| 2,4,6-Tribromophenol | 75 | 62 | 72 | 10-123 |
| Terphenyl-d14 | 72 | 58 | 64 | 33-141 |

Category: Q8270-S Method SW8270 - Acid, Base and Neutrals by GC/MS.
Matrix: SOLID
Sample: 131262-0005
MS Run: 23 MAR 98-CA
Units ug/kg Units Qualifier: Wet weight

| Analyte | Sample Result | Concentration MS Result | Concentration MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| Phenol | ND | 4580 | 5120 | 6670 | 69 | 77 | 11 | 39-115 | 39 |
| 2-Chlorophenol | ND | 4240 | 4870 | 6670 | 64 | 73 | 14 | 55-108 | 38 |
| N-Nitroso-di-n-propylamine | ND | 2420 | 2660 | 3330 | 73 | 80 | 9.4 | 14-110 | 41 |
| 4-Chloro-3-methylphenol | ND | 4150 | 4710 | 6670 | 62 | 71 | 13 | 52-120 | 23 |

n = Spiked analyte out of matrix spike acceptance limits; refer to lab control sample results.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC/MS
Project: 131262 (cont.)

Category: Q8270-S Method SW8270 - Acid, Base and Neutrals by GC/MS. (cont.)
Matrix: SOLID
Sample: 131262-0005
MS Run: 23 MAR 98-CA (cont.)
Units ug/kg Units Qualifier: Wet weight

| Analyte | Sample Result | Concentration MS Result | Concentration MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | ND | 2530 | 2670 | 3330 | 76 | 80 | 5.4 | 60-114 | 20 |
| 4-Nitrophenol | ND | 4820 | 4670 | 6670 | 72 | 70 | 3.2 | 56-142 | 42 |
| 2,4-Dinitrotoluene | ND | 2910 | 2790 | 3330 | 87 | 84 | 4.2 | 62-117 | 25 |
| Pentachlorophenol | ND | 6520 | 6790 | 6670 | 98 | 102 | 4.1 | 49-132 | 37 |
| Pyrene | ND | 3290 | 2580 | 3330 | 99 | 77 | 24 | 61-106 | 32 |

| Surrogates | Sample %Recovery | %Recovery MS | %Recovery MSD | Acceptance Limit Recovery |
|---|---|---|---|---|
| 2-Fluorophenol | 75 | 74 | 73 | 25-121 |
| Phenol-d5 | 73 | 74 | 74 | 24-113 |
| Nitrobenzene-d5 | 71 | 58 | 76 | 23-120 |
| 2-Fluorobiphenyl | 45 | 58 | 68 | 30-115 |
| 2,4,6-Tribromophenol | 59 | 78 | 70 | 19-122 |
| Terphenyl-d14 | 66 | 86 | 73 | 18-137 |

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

# Metals

METALS
(Water - Dissolved)

Client Name: Woodward-Clyde Consultants
Client ID: HG18-10-W
LAB ID: 131262-0001-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.0 | 0.060 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Arsenic | 0.058 | J | 1.0 | 0.30 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Barium | 0.074 | J | 1.0 | 0.20 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Beryllium | 0.0013 | J | 1.0 | 0.0050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Cadmium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Chromium | 0.035 | | 1.0 | 0.010 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Cobalt | 0.0052 | J | 1.0 | 0.050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Copper | 0.017 | J | 1.0 | 0.025 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Lead | ND | | 1.0 | 0.10 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Mercury | ND | | 1.0 | 0.00020 | mg/L | 7470A | 24 MAR 98 | 25 MAR 98 |
| Molybdenum | 0.032 | J | 1.0 | 0.040 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Nickel | 0.013 | J | 1.0 | 0.040 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Selenium | ND | | 1.0 | 0.25 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Silver | ND | | 1.0 | 0.010 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Thallium | ND | | 1.0 | 2.0 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Vanadium | 0.21 | | 1.0 | 0.050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Zinc | 0.058 | | 1.0 | 0.020 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS
(Water - Dissolved)

Client Name: Woodward-Clyde Consultants
Client ID: HG18-11-W
LAB ID: 131262-0002-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.0 | 0.060 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Arsenic | ND | | 1.0 | 0.30 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Barium | 0.050 | J | 1.0 | 0.20 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Beryllium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Cadmium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Chromium | 0.013 | | 1.0 | 0.010 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Cobalt | ND | | 1.0 | 0.050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Copper | 0.0079 | J | 1.0 | 0.025 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Lead | ND | | 1.0 | 0.10 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Mercury | ND | | 1.0 | 0.00020 | mg/L | 7470A | 24 MAR 98 | 25 MAR 98 |
| Molybdenum | 0.022 | J | 1.0 | 0.040 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Nickel | 0.0063 | J | 1.0 | 0.040 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Selenium | ND | | 1.0 | 0.25 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Silver | ND | | 1.0 | 0.010 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Thallium | ND | | 1.0 | 2.0 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Vanadium | 0.10 | | 1.0 | 0.050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Zinc | 0.019 | J | 1.0 | 0.020 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS
(Water - Dissolved)

Client Name: Woodward-Clyde Consultants
Client ID: HG16-10-W
LAB ID: 131262-0003-SA
Matrix: WATER — Sampled: 19 MAR 98 — Received: 19 MAR 98
Authorized: 20 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.0 | 0.060 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Arsenic | ND | | 1.0 | 0.30 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Barium | 0.013 | J | 1.0 | 0.20 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Beryllium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Cadmium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Chromium | ND | | 1.0 | 0.010 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Cobalt | ND | | 1.0 | 0.050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Copper | ND | | 1.0 | 0.025 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Lead | ND | | 1.0 | 0.10 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Mercury | ND | | 1.0 | 0.00020 | mg/L | 7470A | 24 MAR 98 | 25 MAR 98 |
| Molybdenum | 0.015 | J | 1.0 | 0.040 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Nickel | ND | | 1.0 | 0.040 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Selenium | ND | | 1.0 | 0.25 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Silver | ND | | 1.0 | 0.010 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Thallium | ND | | 1.0 | 2.0 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Vanadium | 0.016 | J | 1.0 | 0.050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Zinc | ND | | 1.0 | 0.020 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS
(Water - Dissolved)

Client Name: Woodward-Clyde Consultants
Client ID: RBHG10-W
LAB ID: 131262-0004-SA
Matrix: WATER — Sampled: 19 MAR 98 — Received: 19 MAR 98
Authorized: 20 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.0 | 0.060 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Arsenic | ND | | 1.0 | 0.30 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Barium | ND | | 1.0 | 0.20 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Beryllium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Cadmium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Chromium | ND | | 1.0 | 0.010 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Cobalt | ND | | 1.0 | 0.050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Copper | ND | | 1.0 | 0.025 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Lead | ND | | 1.0 | 0.10 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Mercury | ND | | 1.0 | 0.00020 | mg/L | 7470A | 24 MAR 98 | 25 MAR 98 |
| Molybdenum | ND | | 1.0 | 0.040 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Nickel | ND | | 1.0 | 0.040 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Selenium | ND | | 1.0 | 0.25 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Silver | ND | | 1.0 | 0.010 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Thallium | ND | | 1.0 | 2.0 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Vanadium | ND | | 1.0 | 0.050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Zinc | ND | | 1.0 | 0.020 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |

ND = Not Detected

## METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG18-01
LAB ID: 131262-0005-SA
Matrix: SOIL — Sampled: 19 MAR 98 — Received: 19 MAR 98
Authorized: 20 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.47 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 3.2 | q | 1.0 | 0.27 | mg/kg | 7060A | 25 MAR 98 | 27 MAR 98 |
| Barium | 48.3 | B | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.29 | | 1.0 | 0.11 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.17 | J | 1.0 | 0.54 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 17.0 | | 1.0 | 0.54 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 6.0 | | 1.0 | 5.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 18.2 | | 1.0 | 2.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 6.6 | | 1.0 | 0.54 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | ND | | 1.0 | 0.11 | mg/kg | SW7471 | 25 MAR 98 | 25 MAR 98 |
| Molybdenum | 1.6 | J | 1.0 | 4.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 11.4 | | 1.0 | 4.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.54 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.54 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 0.81 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 24.9 | | 1.0 | 5.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 35.5 | | 1.0 | 2.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 7.6%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40 and 85% due to matrix interference.
ND = Not Detected

METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG18-02
LAB ID: 131262-0006-SA
Matrix: SOIL — Sampled: 19 MAR 98 — Received: 19 MAR 98
Authorized: 20 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.38 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 2.5 | q | 1.0 | 0.30 | mg/kg | 7060A | 25 MAR 98 | 27 MAR 98 |
| Barium | 32.8 | B | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.22 | | 1.0 | 0.12 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.071 | J | 1.0 | 0.60 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 14.5 | | 1.0 | 0.60 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 3.9 | J | 1.0 | 6.0 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 5.7 | | 1.0 | 3.0 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 1.9 | | 1.0 | 0.60 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | 0.037 | J | 1.0 | 0.12 | mg/kg | SW7471 | 25 MAR 98 | 25 MAR 98 |
| Molybdenum | 1.2 | J | 1.0 | 4.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 8.4 | | 1.0 | 4.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.60 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.60 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 0.95 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 20.5 | | 1.0 | 6.0 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 30.1 | | 1.0 | 2.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 16.0%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40 and 85% due to matrix interference.
ND = Not Detected

METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG16-01
LAB ID: 131262-0007-SA
Matrix: SOIL — Sampled: 19 MAR 98 — Received: 19 MAR 98
Authorized: 20 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.59 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 3.0 | q | 1.0 | 0.28 | mg/kg | 7060A | 25 MAR 98 | 27 MAR 98 |
| Barium | 55.1 | B | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.49 | | 1.0 | 0.11 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.20 | J | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 19.9 | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 6.4 | | 1.0 | 5.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 17.1 | | 1.0 | 2.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 8.6 | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | ND | | 1.0 | 0.11 | mg/kg | SW7471 | 25 MAR 98 | 25 MAR 98 |
| Molybdenum | 2.9 | J | 1.0 | 4.6 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 13.3 | | 1.0 | 4.6 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 1.0 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 33.7 | | 1.0 | 5.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 58.3 | | 1.0 | 2.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 12.2%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40 and 85% due to matrix interference.
ND = Not Detected

## METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG16-02
LAB ID: 131262-0008-SA
Matrix: SOIL — Sampled: 19 MAR 98 — Received: 19 MAR 98
Authorized: 20 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.44 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 3.1 | q | 1.0 | 0.30 | mg/kg | 7060A | 25 MAR 98 | 27 MAR 98 |
| Barium | 34.3 | B | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.25 | | 1.0 | 0.12 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.099 | J | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 14.9 | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 4.1 | J | 1.0 | 5.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 6.3 | | 1.0 | 3.0 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 2.1 | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | ND | | 1.0 | 0.12 | mg/kg | SW7471 | 25 MAR 98 | 25 MAR 98 |
| Molybdenum | 1.1 | J | 1.0 | 4.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 9.1 | | 1.0 | 4.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 0.74 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 24.1 | | 1.0 | 5.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 32.5 | | 1.0 | 2.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 15.9%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40 and 85% due to matrix interference.
ND = Not Detected

METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG16-03
LAB ID: 131262-0009-SA
Matrix: SOIL
Authorized: 20 MAR 98

Sampled: 19 MAR 98
Prepared: See Below

Received: 19 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.45 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 3.8 | | 1.0 | 0.30 | mg/kg | 7060A | 25 MAR 98 | 27 MAR 98 |
| Barium | 37.4 | B | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.31 | | 1.0 | 0.12 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.14 | J | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 18.1 | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 4.7 | J | 1.0 | 5.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 9.5 | | 1.0 | 3.0 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 3.6 | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | ND | | 1.0 | 0.12 | mg/kg | SW7471 | 25 MAR 98 | 25 MAR 98 |
| Molybdenum | 1.3 | J | 1.0 | 4.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 13.9 | | 1.0 | 4.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 1.0 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 29.9 | | 1.0 | 5.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 37.7 | | 1.0 | 2.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 15.7%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG10-01
LAB ID: 131262-0010-SA
Matrix: SOIL
Authorized: 20 MAR 98

Sampled: 19 MAR 98
Prepared: See Below

Received: 19 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.38 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 1.7 | q | 1.0 | 0.29 | mg/kg | 7060A | 25 MAR 98 | 27 MAR 98 |
| Barium | 25.9 | B | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.32 | | 1.0 | 0.11 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.084 | J | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 15.4 | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 4.1 | J | 1.0 | 5.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 4.3 | | 1.0 | 2.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 2.2 | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | ND | | 1.0 | 0.11 | mg/kg | SW7471 | 25 MAR 98 | 25 MAR 98 |
| Molybdenum | 0.67 | J | 1.0 | 4.6 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 8.6 | | 1.0 | 4.6 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 0.61 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 22.4 | | 1.0 | 5.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 21.6 | | 1.0 | 2.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 12.3%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40 and 85% due to matrix interference.
ND = Not Detected

## METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG10-02
LAB ID: 131262-0011-SA
Matrix: SOIL — Sampled: 19 MAR 98 — Received: 19 MAR 98
Authorized: 20 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 1.3 | GJ | 2.0 | 2.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 5.0 | | 5.0 | 1.7 | mg/kg | 7060A | 25 MAR 98 | 27 MAR 98 |
| Barium | 166 | GB | 2.0 | 2.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.99 | G | 2.0 | 0.27 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.48 | GJ | 2.0 | 1.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 40.7 | G | 2.0 | 1.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 15.1 | G | 2.0 | 13.6 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 42.5 | G | 2.0 | 6.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 13.5 | G | 2.0 | 1.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | 0.037 | J | 1.0 | 0.14 | mg/kg | SW7471 | 25 MAR 98 | 25 MAR 98 |
| Molybdenum | 1.8 | GJ | 2.0 | 10.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 27.5 | G | 2.0 | 10.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | G | 2.0 | 1.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | G | 2.0 | 1.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | ND | G | 2.0 | 2.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 78.7 | G | 2.0 | 13.6 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 108 | G | 2.0 | 5.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 26.3%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
G = Reporting limit(s) raised due to matrix interference.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

QC LOT ASSIGNMENT REPORT - MS QC
Metals Analysis and Preparation

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK/LCS) | MS QC Run Number (SA,MS,SD,DU) |
|---|---|---|---|---|---|
| 131262-0001-SA | AQUEOUS | QICP-A | | 26 MAR 98-PTX | 26 MAR 98-PA |
| 131262-0002-SA | AQUEOUS | QICP-A | | 26 MAR 98-PTX | 26 MAR 98-PA |
| 131262-0003-SA | AQUEOUS | QICP-A | | 26 MAR 98-PTX | 26 MAR 98-PA |
| 131262-0003-MS | AQUEOUS | QICP-A | | 26 MAR 98-PTX | 26 MAR 98-PA |
| 131262-0003-SD | AQUEOUS | QICP-A | | 26 MAR 98-PTX | 26 MAR 98-PA |
| 131262-0004-SA | AQUEOUS | QICP-A | | 26 MAR 98-PTX | 26 MAR 98-PA |
| 131262-0001-SA | AQUEOUS | QHG-A | | 24 MAR 98-JX | 24 MAR 98-JA |
| 131262-0002-SA | AQUEOUS | QHG-A | | 24 MAR 98-JX | 24 MAR 98-JA |
| 131262-0003-SA | AQUEOUS | QHG-A | | 24 MAR 98-JX | 24 MAR 98-JA |
| 131262-0003-MS | AQUEOUS | QHG-A | | 24 MAR 98-JX | 24 MAR 98-JA |
| 131262-0003-SD | AQUEOUS | QHG-A | | 24 MAR 98-JX | 24 MAR 98-JA |
| 131262-0004-SA | AQUEOUS | QHG-A | | 24 MAR 98-JX | 24 MAR 98-JA |
| 131262-0005-SA | SOLID | QHG-S | | 25 MAR 98-HX | 25 MAR 98-HA |
| 131262-0006-SA | SOLID | QHG-S | | 25 MAR 98-HX | 25 MAR 98-HA |
| 131262-0007-SA | SOLID | QHG-S | | 25 MAR 98-HX | 25 MAR 98-HA |
| 131262-0008-SA | SOLID | QHG-S | | 25 MAR 98-HX | 25 MAR 98-HA |
| 131262-0009-SA | SOLID | QHG-S | | 25 MAR 98-HX | 25 MAR 98-HA |
| 131262-0010-SA | SOLID | QHG-S | | 25 MAR 98-HX | 25 MAR 98-HA |
| 131262-0011-SA | SOLID | QHG-S | | 25 MAR 98-HX | 25 MAR 98-HA |
| 131262-0005-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131262-0006-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131262-0007-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131262-0008-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131262-0009-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131262-0010-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131262-0011-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131262-0005-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131262-0006-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131262-0007-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131262-0008-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131262-0009-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131262-0010-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131262-0011-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |

METHOD BLANK REPORT
Metals Analysis and Preparation
Project: 131262

Test: Q-ICP-ADD Method 6010A - ICP Metals, Dissolved
Matrix: AQUEOUS
QC Run: 26 MAR 98-PTX Date Analyzed: 27 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Antimony | ND | mg/L | 0.060 |
| Arsenic | ND | mg/L | 0.30 |
| Barium | ND | mg/L | 0.20 |
| Beryllium | ND | mg/L | 0.0050 |
| Cadmium | ND | mg/L | 0.0050 |
| Chromium | ND | mg/L | 0.010 |
| Cobalt | ND | mg/L | 0.050 |
| Copper | ND | mg/L | 0.025 |
| Lead | ND | mg/L | 0.10 |
| Molybdenum | ND | mg/L | 0.040 |
| Nickel | ND | mg/L | 0.040 |
| Selenium | ND | mg/L | 0.25 |
| Silver | ND | mg/L | 0.010 |
| Thallium | ND | mg/L | 2.0 |
| Vanadium | ND | mg/L | 0.050 |
| Zinc | ND | mg/L | 0.020 |

Test: Q-HG-CVAA-AD Method SW7470A - Mercury, Cold Vapor AA, Dissolved
Matrix: AQUEOUS
QC Run: 24 MAR 98-JX Date Analyzed: 25 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Mercury | ND | mg/L | 0.00020 |

Test: Q-HG-CVAA-S Method SW7471A - Mercury, Cold Vapor AA
Matrix: SOLID
QC Run: 25 MAR 98-HX Date Analyzed: 25 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Mercury | ND | mg/kg | 0.10 |

ND = Not Detected

METHOD BLANK REPORT (cont.)
Metals Analysis and Preparation
Project: 131262

Test: Q-AS-GFAA-S Method 7060A - Arsenic, Graphite Furnace AA
Matrix: SOLID
QC Run: 25 MAR 98-PX Date Analyzed: 26 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Arsenic | ND | mg/kg | 0.25 |

Test: ICPT-CAM-S Method 6010A - CAM TTLC Metals
Matrix: SOLID
QC Run: 25 MAR 98-BX Date Analyzed: 26 MAR 98

| Analyte | Result | | Units | Reporting Limit |
|---|---|---|---|---|
| Antimony | ND | | mg/kg | 1.0 |
| Barium | 0.11 | J | mg/kg | 1.0 |
| Beryllium | ND | | mg/kg | 0.10 |
| Cadmium | ND | | mg/kg | 0.50 |
| Chromium | ND | | mg/kg | 0.50 |
| Cobalt | ND | | mg/kg | 5.0 |
| Copper | ND | | mg/kg | 2.5 |
| Lead | ND | | mg/kg | 0.50 |
| Molybdenum | ND | | mg/kg | 4.0 |
| Nickel | ND | | mg/kg | 4.0 |
| Selenium | ND | | mg/kg | 0.50 |
| Silver | ND | | mg/kg | 0.50 |
| Thallium | ND | | mg/kg | 1.0 |
| Vanadium | ND | | mg/kg | 5.0 |
| Zinc | ND | | mg/kg | 2.0 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

LABORATORY CONTROL SAMPLE REPORT
Metals Analysis and Preparation
Project: 131262

Category: QICP-A Method 6010A - ICP Metals
Matrix: AQUEOUS Date Analyzed: 27 MAR 98
QC Run: 26 MAR 98-PTX
Concentration Units: mg/L

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Antimony | 0.500 | 0.468 | 94 | 80-115 |
| Arsenic | 2.00 | 2.07 | 103 | 85-115 |
| Barium | 2.00 | 1.96 | 98 | 85-115 |
| Beryllium | 0.0500 | 0.0493 | 99 | 85-120 |
| Cadmium | 0.0500 | 0.0467 | 93 | 80-120 |
| Chromium | 0.200 | 0.198 | 99 | 80-115 |
| Cobalt | 0.500 | 0.491 | 98 | 85-120 |
| Copper | 0.250 | 0.248 | 99 | 85-115 |
| Lead | 0.500 | 0.463 | 93 | 85-120 |
| Molybdenum | 1.00 | 1.01 | 101 | 85-115 |
| Nickel | 0.500 | 0.503 | 101 | 85-115 |
| Selenium | 2.00 | 1.97 | 98 | 85-125 |
| Silver | 0.0500 | 0.0446 | 89 | 85-115 |
| Thallium | 2.00 | 1.80 | 90 | 85-120 |
| Vanadium | 0.500 | 0.500 | 100 | 85-120 |
| Zinc | 0.500 | 0.502 | 100 | 85-120 |

Category: QHG-A Mercury by CVAA
Matrix: AQUEOUS Date Analyzed: 25 MAR 98
QC Run: 24 MAR 98-JX
Concentration Units: mg/L

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Mercury | 0.00500 | 0.00489 | 98 | 85-115 |

Category: QHG-S Mercury by CVAA
Matrix: SOLID Date Analyzed: 25 MAR 98
QC Run: 25 MAR 98-HX
Concentration Units: mg/kg

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Mercury | 0.833 | 0.848 | 102 | 85-115 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)
Project: 131262

Category: QAS-GF-S Arsenic, Graphite Furnace AA
Matrix: SOLID Date Analyzed: 26 MAR 98
QC Run: 25 MAR 98-PX
Concentration Units: mg/kg

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Arsenic | 4.00 | 3.89 | 97 | 80-120 |

Category: ICP-S ICP Metals
Matrix: SOLID Date Analyzed: 26 MAR 98
QC Run: 25 MAR 98-BX
Concentration Units: mg/kg

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Antimony | 50.0 | 45.9 | 92 | 70-110 |
| Barium | 200 | 209 | 104 | 85-115 |
| Beryllium | 5.00 | 5.41 | 108 | 80-115 |
| Cadmium | 5.00 | 5.22 | 104 | 80-115 |
| Chromium | 20.0 | 21.5 | 107 | 85-120 |
| Cobalt | 50.0 | 51.0 | 102 | 85-120 |
| Copper | 25.0 | 25.4 | 101 | 85-115 |
| Lead | 50.0 | 50.5 | 101 | 80-110 |
| Molybdenum | 100 | 103 | 103 | 80-115 |
| Nickel | 50.0 | 52.5 | 105 | 85-115 |
| Selenium | 200 | 193 | 96 | 70-105 |
| Silver | 5.00 | 4.52 | 90 | 80-110 |
| Thallium | 200 | 193 | 97 | 80-110 |
| Vanadium | 50.0 | 52.2 | 104 | 85-115 |
| Zinc | 50.0 | 52.5 | 105 | 80-115 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 131262

Category: QICP-A Method 6010A - ICP Metals
Matrix: AQUEOUS
Sample: 131262-0003
MS Run: 26 MAR 98-PA
Units: mg/L

| Analyte | Sample Result | Concentration MS Result | Concentration MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | 0.493 | 0.486 | 0.500 | 99 | 97 | 1.4 | 80-115 | 20 |
| Arsenic | ND | 2.10 | 2.07 | 2.00 | 105 | 103 | 1.8 | 85-115 | 20 |
| Barium | 0.0132 J | 1.99 | 1.97 | 2.00 | 99 | 98 | 1.1 | 85-115 | 20 |
| Beryllium | ND | 0.0510 | 0.0500 | 0.0500 | 102 | 100 | 2.1 | 85-120 | 20 |
| Cadmium | ND | 0.0477 | 0.0439 | 0.0500 | 95 | 88 | 8.3 | 80-120 | 20 |
| Chromium | ND | 0.203 | 0.200 | 0.200 | 102 | 100 | 1.5 | 80-115 | 20 |
| Cobalt | ND | 0.493 | 0.487 | 0.500 | 99 | 97 | 1.3 | 85-120 | 20 |
| Copper | ND | 0.254 | 0.251 | 0.250 | 102 | 100 | 1.2 | 85-115 | 20 |
| Lead | ND | 0.474 | 0.460 | 0.500 | 95 | 92 | 3.0 | 80-120 | 20 |
| Molybdenum | 0.0151 J | 1.03 | 1.01 | 1.00 | 101 | 100 | 1.5 | 85-115 | 20 |
| Nickel | ND | 0.507 | 0.505 | 0.500 | 101 | 101 | 0.3 | 85-115 | 20 |
| Selenium | ND | 2.01 | 1.99 | 2.00 | 100 | 99 | 1.1 | 85-125 | 20 |
| Silver | ND | 0.0447 | 0.0460 | 0.0500 | 89 | 92 | 2.8 | 85-115 | 20 |
| Thallium | ND | 1.77 | 1.75 | 2.00 | 88 | 87 | 1.0 | 85-120 | 20 |
| Vanadium | 0.0163 J | 0.522 | 0.512 | 0.500 | 101 | 99 | 1.9 | 85-120 | 20 |
| Zinc | ND | 0.502 | 0.496 | 0.500 | 100 | 99 | 1.1 | 85-120 | 20 |

Category: QHG-A Mercury by CVAA
Matrix: AQUEOUS
Sample: 131262-0003
MS Run: 24 MAR 98-JA
Units: mg/L

| Analyte | Sample Result | Concentration MS Result | Concentration MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.00104 | 0.00104 | 0.00100 | 104 | 104 | 0.0 | 85-115 | 20 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 131262 (cont.)

Category: QHG-S Mercury by CVAA
Matrix: SOLID
Sample: 131212-0010
MS Run: 25 MAR 98-HA
Units mg/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| | Concentration | | | | | | | | |
| Mercury | 0.0393 J | 0.218 | 0.215 | 0.167 | 107 | 105 | 1.4 | 85-115 | 20 |

Category: QAS-GF-S Arsenic, Graphite Furnace AA
Matrix: SOLID
Sample: 131259-0001
MS Run: 25 MAR 98-PA
Units mg/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | MSD Result | | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | Concentration | | | | | | | | | |
| Arsenic | 2.92 | 4.56 | 4.46 | n | 2.00 | 82 | 77 | 2.2 | 80-120 | 20 |

Category: ICP-S ICP Metals
Matrix: SOLID
Sample: 131259-0001
MS Run: 25 MAR 98-BA
Units mg/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | | MSD Result | | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Concentration | | | | | | | | | | |
| Antimony | 0.470 J | 5.47 | n | 4.63 | n | 25.0 | 20 | 17 | 17 | 70-110 | 20 |
| Barium | 52.0 | 141 | | 139 | | 100 | 89 | 87 | 1.6 | 85-115 | 20 |
| Beryllium | 0.406 | 2.79 | | 2.75 | | 2.50 | 95 | 94 | 1.2 | 80-115 | 20 |
| Cadmium | 0.208 J | 2.51 | | 2.50 | | 2.50 | 92 | 92 | 0.5 | 80-115 | 20 |
| Chromium | 24.2 | 32.9 | | 40.2 | n | 10.0 | 87 | 161 | 20 | 85-120 | 20 |
| Cobalt | 5.84 | 28.2 | | 28.0 | | 25.0 | 89 | 89 | 0.5 | 85-120 | 20 |
| Copper | 13.7 | 23.8 | n | 23.9 | n | 12.5 | 81 | 82 | 0.3 | 85-115 | 20 |
| Lead | 5.38 | 27.5 | | 27.0 | | 25.0 | 88 | 87 | 1.7 | 80-110 | 20 |
| Molybdenum | 1.34 J | 46.3 | | 45.8 | | 50.0 | 90 | 89 | 1.2 | 80-115 | 20 |
| Nickel | 15.1 | 37.8 | | 45.1 | n | 25.0 | 91 | 120 | 18 | 85-115 | 20 |

J = Result is detected below the reporting limit or is an estimated concentration.
n = Spiked analyte out of matrix spike acceptance limits; refer to lab control sample results.

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 131262 (cont.)

Category: ICP-S ICP Metals (cont.)
Matrix: SOLID
Sample: 131259-0001
MS Run: 25 MAR 98-BA (cont.)
Units mg/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| | Concentration | | | | | | | | |
| Selenium | ND | 90.1 | 89.2 | 100 | 90 | 89 | 1.0 | 70-105 | 20 |
| Silver | ND | 2.18 | 2.17 | 2.50 | 87 | 87 | 0.6 | 80-110 | 20 |
| Thallium | 0.819 J | 88.0 | 86.9 | 100 | 87 | 86 | 1.2 | 80-110 | 20 |
| Vanadium | 32.6 | 52.9 n | 55.4 | 25.0 | 81 | 91 | 4.7 | 85-115 | 20 |
| Zinc | 44.7 | 64.2 n | 63.2 n | 25.0 | 78 | 74 | 1.6 | 80-115 | 20 |

J = Result is detected below the reporting limit or is an estimated concentration.
n = Spiked analyte out of matrix spike acceptance limits; refer to lab control sample results.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

# Moisture

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG18-01
LAB ID: 131262-0005-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 7.6 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG18-02
LAB ID: 131262-0006-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 16 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG16-01
LAB ID: 131262-0007-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 12 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG16-02
LAB ID: 131262-0008-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 16 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG16-03
LAB ID: 131262-0009-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 16 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG10-01
LAB ID: 131262-0010-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 12 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG10-02
LAB ID: 131262-0011-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 26 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

QC LOT ASSIGNMENT REPORT - MS QC
GC/MS Preparation

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK/LCS) | MS QC Run Number (SA,MS,SD,DU) |
|---|---|---|---|---|---|
| 131262-0005-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131262-0006-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131262-0007-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131262-0008-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131262-0009-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131262-0010-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131262-0011-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |

MATRIX DUPLICATE QC REPORT
GC/MS Preparation
Project: 131262

Category: MOISTURE-S Method ASTM D2216 - Percent Moisture
Matrix: SOLID
Sample: 131262-0005
MS Run: 23 MAR 98-AA
Units: %

| Analyte | Concentration Sample | Concentration Duplicate | %RPD SA-DU | Acceptance Limit |
|---|---|---|---|---|
| Percent Water | 7.60 | 7.60 | 0.0 | 10 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

# VOCs

Quanterra
Environmental Services

Quanterra Incorporated
4101 Shuffel Drive, NW
North Canton, Ohio 44720

330 497-9396 Telephone
330 497-0772 Fax

# ANALYTICAL REPORT

PROJECT NO. 131262

WWC/131262

Lot #: A8C260158

SHARON MEYERS

Quanterra Inc - Santa Ana CA L

QUANTERRA INCORPORATED

Alesia M. Danford
Project Manager

April 2, 1998

# CASE NARRATIVE

The following report contains the analytical results for seven solid and four water samples submitted to Quanterra-North Canton by Quanterra-Santa Ana from the WWC/131262 Site, project number 131262. The samples were received March 25, 1998, according to documented sample acceptance procedures.

Quanterra-North Canton utilizes only USEPA approved methods and instrumentation in all analytical work. The samples presented in this report were analyzed for the parameters listed on the method reference page in accordance with the methods indicated.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

The samples were received at the laboratory at a temperature of 5.9° C.

## SUPPLEMENTAL QC INFORMATION

### SAMPLE RECEIVING

Additional volume was received on March 27, 1998, for sample HG16-10-W 131262-0003 SA MS SD.

One 40ml Volatile vial for sample RG17-10-W 131277-0011 SA was received with headspace.

### GC/MS VOLATILES

Sample(s) which contain results between the MDL and the RL are flagged with "J". There is the possibility of false positive or misidentification at these quantitation levels. In analytical methods requiring confirmation of the analyte reported, confirmation will be performed only down to the standard reporting limit (SRL). The acceptance criteria for quality control criteria may not be met at these quantitation levels.

Acid preservation causes 2-Chloroethyl vinyl ether to decompose. When detected, the concentration found will be reported; however, a true reporting limit cannot be reported when the compound is not detected.

# ANALYTICAL METHODS SUMMARY

A8C260158

| PARAMETER | ANALYTICAL METHOD |
|---|---|
| Total Residue as Percent Solids | MCAWW 160.3 MOD |
| Volatile Organics by GC/MS | SW846 8260A |

**References:**

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

# SAMPLE SUMMARY

**A8C260158**

| WO # | SAMPLE# | CLIENT SAMPLE ID | DATE | TIME |
|---|---|---|---|---|
| CG46V | 001 | HG18-10-W 131262-0001 SA | 03/19/98 | 00:0 |
| CG472 | 002 | HG18-11-W 131262-0002 SA | 03/19/98 | 00:0 |
| CG474 | 003 | HG16-10-W 131262-0003 SA | 03/19/98 | 00:0 |
| CG476 | 004 | RBHG10-W 131262-0004 SA | 03/19/98 | 00:0 |
| CG478 | 005 | HG18-01 131262-0005 SA | 03/19/98 | 00:0 |
| CG47C | 006 | HG18-02 131262-0006 SA | 03/19/98 | 00:0 |
| CG47D | 007 | HG16-01 131262-0007 SA | 03/19/98 | 00:0 |
| CG47E | 008 | HG16-02 131262-0008 SA | 03/19/98 | 00:0 |
| CG47G | 009 | HG16-03 131262-0009 SA | 03/19/98 | 00:0 |
| CG47H | 010 | HG10-01 131262-0010 SA | 03/19/98 | 00:0 |
| CG47K | 011 | HG10-02 131262-0011 SA | 03/19/98 | 00:0 |

**NOTE(S):**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG18-10-W 131262-0001 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-001 Work Order #...: CG46V101 Matrix.....: WATER
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089213
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 10 | ug/L | SW846 8260A |
| Benzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| **Carbon disulfide** | **0.26 J** | **1.0** | **ug/L** | **SW846 8260A** |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| **Chloromethane** | **0.13 J** | **2.0** | **ug/L** | **SW846 8260A** |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| **cis-1,2-Dichloroethene** | **4.8** | **0.50** | **ug/L** | **SW846 8260A** |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |

(Continued on next page)

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG18-10-W 131262-0001 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-001 Work Order #...: CG46V101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | 0.20 J | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | 0.13 J | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | (69 - 127) |
| Toluene-d8 | 97 | (90 - 112) |
| Bromofluorobenzene | 97 | (87 - 114) |

NOTE(S):

J Estimated result. Result is less than RL.

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG18-11-W 131262-0002 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-002 Work Order #...: CG472101 Matrix.....: WATER
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089213
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 10 | ug/L | SW846 8260A |
| **Benzene** | **0.17 J** | **1.0** | **ug/L** | **SW846 8260A** |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| **cis-1,2-Dichloroethene** | **5.0** | **0.50** | **ug/L** | **SW846 8260A** |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |

(Continued on next page)

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG18-11-W 131262-0002 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-002 Work Order #...: CG472101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | 0.19 J | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | 0.12 J | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 94 | (69 - 127) |
| Toluene-d8 | 95 | (90 - 112) |
| Bromofluorobenzene | 97 | (87 - 114) |

NOTE(S):

J Estimated result. Result is less than RL.

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG16-10-W 131262-0003 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-003 Work Order #...: CG474101 Matrix.....: WATER
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089213
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 10 | ug/L | SW846 8260A |
| Benzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | 0.26 J | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | 0.56 | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG16-10-W 131262-0003 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-003 Work Order #...: CG474101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | 0.10 J | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 96 | (69 - 127) |
| Toluene-d8 | 94 | (90 - 112) |
| Bromofluorobenzene | 100 | (87 - 114) |

NOTE(S):

J Estimated result. Result is less than RL.

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: RBHG10-W 131262-0004 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-004 Work Order #...: CG476101 Matrix.....: WATER
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089160
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 10 | ug/L | SW846 8260A |
| Benzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: RBHG10-W 131262-0004 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-004 Work Order #...: CG476101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | 0.14 J | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 89 | (69 - 127) |
| Toluene-d8 | 98 | (90 - 112) |
| Bromofluorobenzene | 96 | (87 - 114) |

NOTE(S):

J Estimated result. Result is less than RL.

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG18-01 131262-0005 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-005 Work Order #...: CG478102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/28/98 Analysis Date..: 03/28/98
Prep Batch #...: 8088132
Dilution Factor: 1
% Moisture.....: 7.8

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG18-01 131262-0005 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-005 Work Order #...: CG478102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 96 | (61 - 115) |
| Toluene-d8 | 99 | (82 - 129) |
| Bromofluorobenzene | 94 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG18-02 131262-0006 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-006 Work Order #...: CG47C102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/28/98 Analysis Date..: 03/28/98
Prep Batch #...: 8088132
Dilution Factor: 1
% Moisture.....: 18

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG18-02 131262-0006 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-006 Work Order #...: CG47C102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | (61 - 115) |
| Toluene-d8 | 100 | (82 - 129) |
| Bromofluorobenzene | 93 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG16-01 131262-0007 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-007 Work Order #...: CG47D102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/28/98 Analysis Date..: 03/28/98
Prep Batch #...: 8088132
Dilution Factor: 1
% Moisture.....: 5.5

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG16-01 131262-0007 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-007 Work Order #...: CG47D102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 105 | (61 - 115) |
| Toluene-d8 | 93 | (82 - 129) |
| Bromofluorobenzene | 82 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG16-02 131262-0008 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-008 Work Order #...: CG47E102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/28/98 Analysis Date..: 03/28/98
Prep Batch #...: 8088132
Dilution Factor: 1
% Moisture.....: 16

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG16-02 131262-0008 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-008 Work Order #...: CG47E102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | (61 - 115) |
| Toluene-d8 | 97 | (82 - 129) |
| Bromofluorobenzene | 92 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG16-03 131262-0009 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-009 Work Order #...: CG47G102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/28/98 Analysis Date..: 03/28/98
Prep Batch #...: 8088132
Dilution Factor: 1
% Moisture.....: 14

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG16-03 131262-0009 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-009 Work Order #...: CG47G102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | (61 - 115) |
| Toluene-d8 | 98 | (82 - 129) |
| Bromofluorobenzene | 95 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG10-01 131262-0010 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-010 Work Order #...: CG47H102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/29/98 Analysis Date..: 03/29/98
Prep Batch #...: 8089140
Dilution Factor: 1
% Moisture.....: 14

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG10-01 131262-0010 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-010 Work Order #...: CG47H102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | (61 - 115) |
| Toluene-d8 | 99 | (82 - 129) |
| Bromofluorobenzene | 94 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG10-02 131262-0011 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-011 Work Order #...: CG47K102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/28/98 Analysis Date..: 03/28/98
Prep Batch #...: 8088132
Dilution Factor: 1
% Moisture.....: 25

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

(Continued on next page)

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG10-02 131262-0011 SA

GC/MS Volatiles

Lot-Sample #...: A8C260158-011 Work Order #...: CG47K102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | 2.0 J | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 103 | (61 - 115) |
| Toluene-d8 | 97 | (82 - 129) |
| Bromofluorobenzene | 89 | (64 - 112) |

NOTE(S):

J Estimated result. Result is less than RL.

# QUALITY CONTROL SECTION

# QUALITY CONTROL ELEMENTS OF SW-846 METHODS

Quanterra® Incorporated conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data.

## QC BATCH

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. Quanterra requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples. These QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

## LABORATORY CONTROL SAMPLE

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. Failure to meet the established recovery guidelines requires the repreparation and reanalysis of all samples in the QC batch. The only exception is that if the LCS recoveries are biased high and the associated sample is ND for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). Failure of the RPDs to fall within the laboratory-generated acceptance windows requires the repreparation and reanalysis of all samples in the QC batch. The only exception is that if the MS/MSD RPDs are within acceptance criteria, the batch is acceptable.

## METHOD BLANK

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except for the common laboratory contaminants indicated below.

| Volatile (GC or GC/MS) | Semivolatile (GC/MS) | Metals |
|---|---|---|
| Methylene chloride | Phthalate Esters | Copper |
| Acetone | | Iron |
| 2-Butanone | | Zinc |
| | | Lead* |

** for analyses run on TJA Trace ICP or GFAA only*

## QUALITY CONTROL ELEMENTS OF SW-846 METHODS (continued)

**METHOD BLANK (continued)**
The listed volatile and semivolatile compounds may be present in concentrations up to 5 times the reporting limits. The listed metals may be present in concentrations up to 2 times the reporting limit or must be twenty fold less than the results of the environmental samples. Failure to meet these Method Blank criteria requires the repreparation and reanalysis of all samples in the QC batch.

**MATRIX SPIKE/MATRIX SPIKE DUPLICATE**
A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. When these values fail to meet acceptance criteria, the data is reviewed to determine the cause. If, in the analyst's judgment, sample matrix effects are indicated, no corrective action is performed. Otherwise, the MS/MSD and the environmental sample used to prepare them are reprepared and reanalyzed.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch.

**SURROGATE COMPOUNDS**
In addition to these batch-related QC indicators, each organic environmental and QC sample are spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

The acceptance criteria do not apply to samples that are diluted. If the dilution is more than 5X, the recoveries will be reported as diluted out. All other surrogate recoveries will be reported. If the LCS, LCSD, or the Method Blank surrogates fail to meet recovery criteria (exception for dilutions), the entire batch of samples is reprepared and reanalyzed.

If the surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank and the associated sample(s) are ND, the batch is acceptable. If the surrogate recoveries are outside criteria for environmental or MS/MSD samples, the batch may be acceptable based on the analyst's judgment that sample matrix effects are indicated.

For the GC/MS BNA methods, the surrogate criteria is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide/PCB, PAH, TPH, and Herbicide methods, the surrogate criteria is that one of two surrogate compounds meet acceptance criteria.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C260158 Work Order #...: CG5MD102 Matrix.....: SOLID
LCS Lot-Sample#: A8C290000-132
Prep Date.....: 03/28/98 Analysis Date..: 03/28/98
Prep Batch #...: 8088132
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| 1,1-Dichloroethene | 97 | (60 - 119) | SW846 8260A |
| Trichloroethene | 97 | (74 - 115) | SW846 8260A |
| Chlorobenzene | 98 | (85 - 116) | SW846 8260A |
| Toluene | 97 | (87 - 118) | SW846 8260A |
| Benzene | 99 | (83 - 118) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 94 | (61 - 115) |
| Toluene-d8 | 98 | (82 - 129) |
| Bromofluorobenzene | 95 | (64 - 112) |

NOTE(S):
Calculations are performed before rounding to avoid round-off errors in calculated results.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C260158 Work Order #...: CG5PV102 Matrix.....: SOLID
LCS Lot-Sample#: A8C300000-140
Prep Date.....: 03/29/98 Analysis Date..: 03/29/98
Prep Batch #...: 8089140
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| 1,1-Dichloroethene | 108 | (60 - 119) | SW846 8260A |
| Trichloroethene | 101 | (74 - 115) | SW846 8260A |
| Chlorobenzene | 101 | (85 - 116) | SW846 8260A |
| Toluene | 100 | (87 - 118) | SW846 8260A |
| Benzene | 105 | (83 - 118) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 87 | (61 - 115) |
| Toluene-d8 | 100 | (82 - 129) |
| Bromofluorobenzene | 94 | (64 - 112) |

NOTE(S):
Calculations are performed before rounding to avoid round-off errors in calculated results.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C260158 Work Order #...: CG5QM102 Matrix.....: WATER
LCS Lot-Sample#: A8C300000-160
Prep Date.....: 03/29/98 Analysis Date..: 03/29/98
Prep Batch #...: 8089160
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| 1,1-Dichloroethene | 108 | (87 - 113) | SW846 8260A |
| Trichloroethene | 100 | (89 - 115) | SW846 8260A |
| Chlorobenzene | 95 | (89 - 119) | SW846 8260A |
| Toluene | 94 | (81 - 117) | SW846 8260A |
| Benzene | 99 | (77 - 126) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 88 | (69 - 127) |
| Toluene-d8 | 98 | (90 - 112) |
| Bromofluorobenzene | 97 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C260158 Work Order #...: CG5XD102 Matrix.....: WATER
LCS Lot-Sample#: A8C300000-213
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089213
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| 1,1-Dichloroethene | 112 | (87 - 113) | SW846 8260A |
| Trichloroethene | 100 | (89 - 115) | SW846 8260A |
| Chlorobenzene | 96 | (89 - 119) | SW846 8260A |
| Toluene | 94 | (81 - 117) | SW846 8260A |
| Benzene | 99 | (77 - 126) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 89 | (69 - 127) |
| Toluene-d8 | 98 | (90 - 112) |
| Bromofluorobenzene | 96 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C260158 Work Order #...: CG5MD101 Matrix.....: SOLID
MB Lot-Sample #: A8C290000-132

Prep Date.....: 03/28/98
Analysis Date..: 03/28/98 Prep Batch #...: 8088132
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |

(Continued on next page)

## METHOD BLANK REPORT

### GC/MS Volatiles

Client Lot #...: A8C260158 Work Order #...: CG5MD101 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 93 | (61 - 115) |
| Toluene-d8 | 97 | (82 - 129) |
| Bromofluorobenzene | 94 | (64 - 112) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C260158
MB Lot-Sample #: A8C300000-140
Work Order #...: CG5PV101
Matrix.....: SOLID
Prep Date.....: 03/29/98
Analysis Date..: 03/29/98
Prep Batch #...: 8089140
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |

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## METHOD BLANK REPORT

### GC/MS Volatiles

Client Lot #...: A8C260158 Work Order #...: CG5PV101 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 88 | (61 - 115) |
| Toluene-d8 | 98 | (82 - 129) |
| Bromofluorobenzene | 92 | (64 - 112) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C260158
MB Lot-Sample #: A8C300000-160

Work Order #...: CG5QM101
Prep Date.....: 03/29/98
Prep Batch #...: 8089160

Matrix.....: WATER

Analysis Date..: 03/29/98
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 10 | ug/L | SW846 8260A |
| Benzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C260158 Work Order #...: CG5QM101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 87 | (69 - 127) |
| Toluene-d8 | 97 | (90 - 112) |
| Bromofluorobenzene | 97 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C260158
MB Lot-Sample #: A8C300000-213
Work Order #...: CG5XD101
Matrix.....: WATER
Prep Date.....: 03/30/98
Prep Batch #...: 8089213
Analysis Date..: 03/30/98
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 10 | ug/L | SW846 8260A |
| Benzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |

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## METHOD BLANK REPORT

### GC/MS Volatiles

Client Lot #...: A8C260158 Work Order #...: CG5XD101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 89 | (69 - 127) |
| Toluene-d8 | 97 | (90 - 112) |
| Bromofluorobenzene | 96 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C260158 Work Order #...: CG474102-MS Matrix.....: WATER
MS Lot-Sample #: A8C260158-003 CG474103-MSD
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089213
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| Benzene | 99 | (78 - 117) | | | SW846 8260A |
| | 100 | (78 - 117) | 0.81 | (0-17) | SW846 8260A |
| Chlorobenzene | 93 | (81 - 115) | | | SW846 8260A |
| | 95 | (81 - 115) | 1.9 | (0-18) | SW846 8260A |
| 1,1-Dichloroethene | 110 | (75 - 113) | | | SW846 8260A |
| | 111 | (75 - 113) | 0.63 | (0-20) | SW846 8260A |
| Toluene | 92 | (78 - 126) | | | SW846 8260A |
| | 88 | (78 - 126) | 4.4 | (0-24) | SW846 8260A |
| Trichloroethene | 100 | (71 - 110) | | | SW846 8260A |
| | 101 | (71 - 110) | 0.79 | (0-22) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | (69 - 127) |
| | 103 | (69 - 127) |
| Toluene-d8 | 95 | (90 - 112) |
| | 94 | (90 - 112) |
| Bromofluorobenzene | 95 | (87 - 114) |
| | 97 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C260158 Work Order #...: CG478103-MS Matrix.....: SOLID
MS Lot-Sample #: A8C260158-005 CG478104-MSD
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/28/98 Analysis Date..: 03/28/98
Prep Batch #...: 8088132
Dilution Factor: 1 % Moisture.....: 7.8

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| Benzene | 96 | (78 - 117) | | | SW846 8260A |
| | 111 | (78 - 117) | 15 | (0-17) | SW846 8260A |
| Chlorobenzene | 94 | (81 - 115) | | | SW846 8260A |
| | 111 | (81 - 115) | 17 | (0-18) | SW846 8260A |
| 1,1-Dichloroethene | 95 | (75 - 113) | | | SW846 8260A |
| | 113 | (75 - 113) | 17 | (0-20) | SW846 8260A |
| Toluene | 94 | (78 - 126) | | | SW846 8260A |
| | 109 | (78 - 126) | 14 | (0-24) | SW846 8260A |
| Trichloroethene | 94 | (71 - 110) | | | SW846 8260A |
| | 110 | (71 - 110) | 16 | (0-22) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 98 | (61 - 115) |
| | 98 | (61 - 115) |
| Toluene-d8 | 100 | (82 - 129) |
| | 100 | (82 - 129) |
| Bromofluorobenzene | 96 | (64 - 112) |
| | 96 | (64 - 112) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C260158 Work Order #...: CG3ET103-MS Matrix.....: SOLID
MS Lot-Sample #: A8C250186-004 CG3ET104-MSD
Date Sampled...: 03/23/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/29/98 Analysis Date..: 03/29/98
Prep Batch #...: 8089140
Dilution Factor: 1 % Moisture.....: 4.0

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 96 | (75 - 113) | | | SW846 8260A |
| | 86 | (75 - 113) | 11 | (0-20) | SW846 8260A |
| Trichloroethene | 96 | (71 - 110) | | | SW846 8260A |
| | 83 | (71 - 110) | 15 | (0-22) | SW846 8260A |
| Chlorobenzene | 96 | (81 - 115) | | | SW846 8260A |
| | 84 | (81 - 115) | 13 | (0-18) | SW846 8260A |
| Toluene | 97 | (78 - 126) | | | SW846 8260A |
| | 85 | (78 - 126) | 13 | (0-24) | SW846 8260A |
| Benzene | 98 | (78 - 117) | | | SW846 8260A |
| | 88 | (78 - 117) | 11 | (0-17) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 102 | (61 - 115) |
| | 101 | (61 - 115) |
| Toluene-d8 | 100 | (82 - 129) |
| | 100 | (82 - 129) |
| Bromofluorobenzene | 93 | (64 - 112) |
| | 93 | (64 - 112) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

**Client Lot #...:** A8C260158 **Work Order #...:** CG132102-MS **Matrix.....:** WATER
**MS Lot-Sample #:** A8C220104-010 CG132103-MSD
**Date Sampled...:** 03/18/98 00:00 **Date Received..:** 03/21/98
**Prep Date.....:** 03/30/98 **Analysis Date..:** 03/30/98
**Prep Batch #...:** 8089160
**Dilution Factor:** 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 106 | (75 - 113) | | | SW846 8260A |
| | 109 | (75 - 113) | 3.5 | (0-20) | SW846 8260A |
| Trichloroethene | 100 | (71 - 110) | | | SW846 8260A |
| | 101 | (71 - 110) | 0.82 | (0-22) | SW846 8260A |
| Chlorobenzene | 91 | (81 - 115) | | | SW846 8260A |
| | 93 | (81 - 115) | 1.7 | (0-18) | SW846 8260A |
| Toluene | 88 | (78 - 126) | | | SW846 8260A |
| | 89 | (78 - 126) | 1.4 | (0-24) | SW846 8260A |
| Benzene | 98 | (78 - 117) | | | SW846 8260A |
| | 100 | (78 - 117) | 1.3 | (0-17) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | (69 - 127) |
| | 99 | (69 - 127) |
| Toluene-d8 | 94 | (90 - 112) |
| | 93 | (90 - 112) |
| Bromofluorobenzene | 95 | (87 - 114) |
| | 96 | (87 - 114) |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

# CHAIN-OF-CUSTODY

PROJECT NAME: WWC
PO NUMBER: 131262
PROJECT MANAGER: Sharon Meyer

**QUANTERRA** ENVIRONMENTAL SERVICES
1721 South Grand Avenue
Santa Ana, CA 92705
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TO: QES, NORTH CANTON
4101 Shuffel Drive N.W.
North Canton, OH 44720

| SAMPLE DESCRIPTION | LAB ID | DATE | TIME | MATRIX | CONTAINERS | ANALYSES: 8260 (SW8260A) | | | | | | | | | REMARKS/ SPCL INSTR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG18-10-W | 131262-0001 SA | 19 MAR 98 | | WATER | | X | | | | | | | | | |
| HG18-11-W | 131262-0002 SA | 19 MAR 98 | | WATER | | X | | | | | | | | | |
| HG16-10-W | 131262-0003 SA | 19 MAR 98 | | WATER | | X | | | | | | | | | |
| HG16-10-W | 131262-0003 MS | 19 MAR 98 | | WATER | | X | | | | | | | | | |
| HG16-10-W | 131262-0003 SD | 19 MAR 98 | | WATER | | X | | | | | | | | | |
| RBHG10-W | 131262-0004 SA | 19 MAR 98 | | WATER | | X | | | | | | | | | |
| HG18-01 | 131262-0005 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG18-02 | 131262-0006 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG16-01 | 131262-0007 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG16-02 | 131262-0008 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG16-03 | 131262-0009 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG10-01 | 131262-0010 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG10-02 | 131262-0011 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |

| | SIGNATURE | PRINT NAME | COMPANY/TITLE | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | [signature] | Steve Sharer | Quanterra | 3/24/98 | 1600 |
| Received by: | [signature] | Kim Hutmans | QES N.C. | 3/25/98 | 10:00 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

Comments:

QA373 4/96 CMD

# CHAIN-OF-CUSTODY

PROJECT NAME:

PO NUMBER: 131262

PROJECT MANAGER: Sharon Meves

**QUANTERRA** ENVIRONMENTAL SERVICES
1721 South Grand Avenue
Santa Ana, CA 92705
Phone #: (714) 258-8610

DUE: 01 APR 98
TO: QES, NORTH CANTON
4101 Shuffel Drive N.W.
North Canton, OH 44720

| SAMPLE DESCRIPTION | LAB ID | DATE | TIME | MATRIX | CONTAINERS | ANALYSES: 8260 | | | | | | | | | REMARKS/ SPCL INSTR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG16-10-W | 131262-0003 SA | 19 MAR 98 | | WATER | | X | | | | | | | | | |
| HG16-10-W | 131262-0003 MS | 19 MAR 98 | | WATER | | X | | | | | | | | | |
| HG16-10-W | 131262-0003 SD | 19 MAR 98 | | WATER | | X | | | | | | | | | |

| | SIGNATURE | PRINT NAME | COMPANY/TITLE | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | C. Mill | Carlos Millan | Quanterra ST.SA | 3-26-98 | 1050 |
| Received by: | Doris Herren | DORIS HERREN | QUANTERRA NC | 3-27-98 | 1000 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

Comments:

QA373 4/96 CMD

Quanterra
Environmental Services

*Quanterra Incorporated*
*1721 South Grand Avenue*
*Santa Ana, California 92705*

*714 258-8610 Telephone*
*714 258-0921 Fax*

April 2, 1998

QUANTERRA INCORPORATED PROJECT NUMBER: 131259
PO/CONTRACT: 97SB044 (3100)

Partha Bora
Woodward-Clyde Consultants
2020 E. First Street
Santa Ana, CA 92705

Dear Mr. Bora,

This report contains the analytical results for the fourteen samples received under chain of custody by Quanterra Incorporated on March 19, 1998. These samples are associated with your AES, Huntington Beach project.

The case narrative is an integral part of this report.

Preliminary results were sent via facsimile on March 31, 1998 for metals.

If you have any questions, please feel free to call me at (714) 258-8610.

Sincerely,

Sharon Meves
Project Manager

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Case Narrative

Quanterra's Quality Assurance Program

Chain of Custody Documentation

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- Method Blank Reports
- Laboratory QC Reports

PCBs
Sample(s): 3-6, 13, 14
- Sample Data Sheets
- Method Blank Reports
- Laboratory QC Reports

SVOCs
Sample(s): 1-14
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- Laboratory QC Reports

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- Method Blank Reports
- Laboratory QC Reports

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Sample(s): 1, 2, 7-12, 14
- Sample Data Sheets
- Method Blank Reports
- Laboratory QC Reports

## CASE NARRATIVE

## QUANTERRA INCORPORATED PROJECT NUMBER 131259

All applicable internal quality control analyses including calibrations and calibration verifications, calibration (instrument) and method blanks, laboratory control samples (LCS), matrix spikes (MS) and matrix spike duplicates (MSD), and other QC met method-specified acceptance criteria. Any matrix-related anomalies are indicated using footnotes within the report. Any other anomalies are reported within the narrative.

**General:** MS/MSD analyses were performed on aqueous samples as designated on the COC (with the exception of TVPH and TEPH, for which no QC analyses were performed, as discussed with Woodward Clyde personnel). MS/MSD analyses for soil samples were performed as sample volume allowed. (Only 2 small sleeves were submitted to the laboratory. One sleeve was shipped to the Quanterra-North Canton facility for volatiles analysis, so only one sleeve was available for the remaining analyses. Volume concerns were discussed with Woodward Clyde personnel immediately after the first sample shipment arrived.) Where MS/MSD analyses could not be performed, duplicate laboratory control standards were reported.

**PCBs:** The recovery of decachlorobiphenyl was low, outside control limits in sample HG06B-10-W. The recovery of tetrachloro-m-xylene in this sample, meeting method requirements, therefore, no corrective action was taken.

**SVOCs:** The recovery of pyrene in the MS analysis of MS Run 23 MAR 98-AA was slightly low. The recovery of this compound in the associated LCS was acceptable, therefore, no corrective action was taken.

**Metals:** All samples requiring ICP and ICPT analysis were analyzed by method 6010B, the newly promulgated version of the ICP method in SW846, rather than method 6010A, as specified in the PRG tables.

Sample HG08-02 was reported from a diluted analysis due to matrix interferences.

The recoveries of arsenic in MS Run 25 MAR 98-PA, and the recoveries of antimony, chromium, copper, nickel, vanadium and zinc in MS Run 25 MAR 98-BA were outside control limits. The recoveries of these metals in the associated LCSs were acceptable, therefore, matrix interference is suspected, and no corrective action was taken.

**VOCs:** Analyses were performed by the Quanterra-North Canton facility. Please refer to the attached report.

*Quanterra Environmental Services - Western Region*

## Quality Control Definitions

| QC Parameter | Definition |
|---|---|
| QC Batch | A set of up to 20 field samples plus associated laboratory QC samples that are similar in composition (matrix) and that are processed within the same time period with the same reagent and standard lots. |
| Duplicate Control Sample (DCS) | Consist of a pair of LCSs analyzed within the same QC batch to monitor precision and accuracy independent of sample matrix effects. This QC is performed only if required by client or when insufficient sample is available to perform MS/MSD. |
| Duplicate Sample (DU) | A second aliquot of an environmental sample, taken from the same sample container when possible, that is processed independently with the first sample aliquot. The results are used to assess the effect of the sample matrix on the precision of the analytical process. The precision estimated using this sample is not necessarily representative of the precision for other samples in the batch. |
| Laboratory Control Sample (LCS) | A volume of reagent water for aqueous samples or a contaminant-free solid matrix (Ottawa sand) for soil and sediment samples which is spiked with known amounts of representative target analytes and required surrogates. An LCS is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects. |
| Matrix Spike and Matrix Spike Duplicate (MS/MSD) | A field sample fortified with known quantities of target analytes that are also added to the LCS. Matrix spike duplicate is a second matrix spike sample. MSs/MSDs are carried through the entire analytical process and are used to determine sample matrix effect on accuracy of the measurement system. The accuracy and precision estimated using MS/MSD is only representative of the precision of the sample that was spiked. |
| Method Blank (MB) | A sample composed of all the reagents (in the same quantities) in reagent water carried through the entire analytical process. The method blank is used to monitor the level of contamination introduced during sample preparation steps. |
| Surrogate Spike | Organic constituents not expected to be detected in environmental media and are added to every sample and QC at a known concentration. Surrogates are used to determine the efficiency of the sample preparation and the analytical process. |

Source: Quanterra® Quality Control Program, Policy QA-003, Rev. 0, 8/19/96.

**Woodward-Clyde Consultants**

SHIPMENT NO.: 4

CHAIN OF CUSTODY RECORD

PAGE ____ OF ____

DATE 3/19/98

PROJECT NAME: AES

PROJECT NO.: 97Sb044

| | Sample Number | Location | Type of Sample: Material | Type of Sample: Method | Type of Container | Type of Preservation: Temp | Type of Preservation: Chemical | Analysis Required* |
|---|---|---|---|---|---|---|---|---|
| 1 | HG09-01 | B-9 | SOIL | PUSH | 2 ss liners | ICED | NONE | METALS |
| | | | " | " | " " | " | " | TPH-d |
| | | | " | " | " " | " | " | VOCs |
| | | | " | " | " " | " | " | SVOCs |
| 2 | HG09-02 | B-9 | SOIL | PUSH | 2 ss liners | ICED | NONE | METALS |
| | | | " | " | " " | " | " | TPH-d |
| | | | " | " | " " | " | " | VOCs |
| | | | " | " | " " | " | " | SVOCs |
| 3 | HG06B-01 | B-6B | SOIL | PUSH | 2 ss liners | ICED | NONE | TPH-d |
| | | | " | " | " " | " | " | SVOCs |
| | | | " | " | " " | " | " | PCBs |
| 4 | HG01B-02 | B-6B | SOIL | PUSH | 2 ss liners | ICED | NONE | TPH-d |
| | | | " | " | " " | " | " | SVOCs |
| | | | " | " | " " | " | " | PCBs |
| 5 | HG06A-01 | B-6A | SOIL | PUSH | 2 ss liners | ICED | NONE | TPH-d |
| | | | " | " | " " | " | " | SVOCs |
| | | | " | " | " " | " | " | PCBs |
| 6 | HG01B-02 | B-6A | SOIL | PUSH | 2 ss liners | ICED | NONE | TPH-d |
| | | | " | " | " " | " | " | SVOCs |
| | | | " | " | " " | " | " | PCBs |

Total Number of Samples Shipped: 6 | Sampler's Signature: [signature]

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature [signature]<br>Printed Name Anthony King<br>Company Woodward-Clyde<br>Reason Ship to Lab for Analysis | Signature R Bautista<br>Printed Name R BAUTISTA<br>Company Q Concur | Date 3/19/98<br>Time 1748 |
| Signature R Bautista<br>Printed Name R BAUTISTA<br>Company<br>Reason | Signature [signature]<br>Printed Name Carlos Millan<br>Company Avanterra | Date 3/19/98<br>Time 1845 |
| Signature<br>Printed Name<br>Company<br>Reason | Signature<br>Printed Name<br>Company | Date / /<br>Time |
| Signature<br>Printed Name<br>Company<br>Reason | Signature<br>Printed Name<br>Company | Date / /<br>Time |

Special Shipment / Handling / Storage Requirements:

* Note – This does not constitute authorization to proceed with analysis

**Woodward-Clyde Consultants**

SHIPMENT NO.: 4

PAGE ____ OF ____

## CHAIN OF CUSTODY RECORD

DATE 3/19/98

PROJECT NAME: AES

PROJECT NO.: 9756044

| | Sample Number | Location | Type of Sample: Material | Type of Sample: Method | Type of Container | Type of Preservation: Temp | Type of Preservation: Chemical | Analysis Required* |
|---|---|---|---|---|---|---|---|---|
| 7 | HG05-01 | B-5 | SOIL | PUSH | 2 SS liners | ICED | NONE | METALS |
| | | | | | | " | | TPH-d |
| | | | | | | " | | VOCs |
| | | | | | | " | | SVOCs |
| 8 | HG05-02 | B-5 | SOIL | PUSH | 2 SS liners | ICED | NONE | METALS |
| | | | | | | " | | TPH-d |
| | | | | | | " | | VOCs |
| | | | | | | " | | SVOCs |
| 9 | HG08-01 | B-8 | SOIL | PUSH | 2 SS liners | ICED | NONE | METALS |
| | | | | | | " | | TPH-d |
| | | | | | | " | | VOCs |
| | | | | | | " | | SVOCs |
| 10 | HG08-02 | B-8 | SOIL | PUSH | 2 SS liners | ICED | NONE | METALS |
| | | | | | | " | | TPH-d |
| | | | | | | " | | VOCs |
| | | | | | | " | | SVOCs |
| 11 | HG08-03 | B-8 | SOIL | PUSH | 2 SS liners | ICED | NONE | METALS |
| | | | | | | " | | TPH-d |
| | | | | | | " | | VOCs |
| | | | | | | " | | SVOCs |

Total Number of Samples Shipped: 5 Sampler's Signature: [signature]

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: [signature]<br>Printed Name: AUTUMN KING<br>Company: WOODWARD-Clyde<br>Reason: Ship to Lab for analysis | Signature: P Bautista<br>Printed Name: P BAUTISTA<br>Company: [illegible] | Date: 3/19/98<br>Time: 1740 |
| Relinquished By: P Bautista<br>Signature: [signature]<br>Printed Name: P BAUTISTA<br>Company:<br>Reason: | Received By: [signature]<br>Signature: [signature]<br>Printed Name: Carlos Millan<br>Company: Quanterra | Date: 3/19/98<br>Time: 1845 |
| Relinquished By:<br>Signature:<br>Printed Name:<br>Company:<br>Reason: | Received By:<br>Signature:<br>Printed Name:<br>Company: | Date: / /<br>Time: |
| Relinquished By:<br>Signature:<br>Printed Name:<br>Company:<br>Reason: | Received By:<br>Signature:<br>Printed Name:<br>Company: | Date: / /<br>Time: |

Special Shipment / Handling / Storage Requirements:

* Note — This does not constitute authorization to proceed with analysis

contact Partha @714-835-6886

**Woodward-Clyde Consultants**

## CHAIN OF CUSTODY RECORD

SHIPMENT NO.: 4

PAGE ____ OF ____

DATE 3/19/98

PROJECT NAME: AES

PROJECT NO.: 97sb044

| | Sample Number | Location | Type of Sample: Material | Type of Sample: Method | Type of Container | Type of Preservation: Temp | Type of Preservation: Chemical | Analysis Required* |
|---|---|---|---|---|---|---|---|---|
| 1 | HG-09-10-W | B-9 | $H_2O$ | GRAB | 1000 ml poly | ICED | NONE | METALS |
| | | | | | 1L amber glass | ICED | NONE | TPH-d |
| | | | | | 3(40ml) vials | ICED | HCL | VOCs |
| | | | | | 2(1L) amber glass | ICED | NONE | SVOCs |
| 2 | HG-01B-10-W | B-16 | $H_2O$ | GRAB | 1L amber glass | ICED | NONE | TPH-d |
| | | | | | 2(1L) amber glass | ICED | NONE | SVOCs |
| | | | | | 1 L amber glass | ICED | NONE | PCBs |
| 3 | FB0319 | FB | $H_2O$ | GRAB | 1000ml poly | ICED | NONE | METAL |
| | | | | | 1L amber glass | ICED | NONE | TPH-d |
| | | | | | 3(40ml) vials | ICED | HCL | VOCs |
| | | | | | 2(1L) amber glass | ICED | NONE | SVOCs |
| | | | | | 1 L amber glass | ICED | NONE | PCBs |

END OF RECORD

Total Number of Samples Shipped: 3

Sampler's Signature: [signature]

| Relinquished By | Received By | Date / Time |
|---|---|---|
| Signature: [signature]<br>Printed Name: Arthur King<br>Company: Woodward-Clyde<br>Reason: Ship to Lab for analysis | Signature: PBautista<br>Printed Name: RBAUTISTA<br>Company: Q Connect | Date: 3/19/98<br>Time: 1740 |
| Signature: PBautista<br>Printed Name: RBAUTISTA<br>Company:<br>Reason: | Signature: C Mill<br>Printed Name: Carlos Millan<br>Company: Quantera | Date: 3/19/98<br>Time: 1845 |
| Signature:<br>Printed Name:<br>Company:<br>Reason: | Signature:<br>Printed Name:<br>Company: | Date: / /<br>Time: |
| Signature:<br>Printed Name:<br>Company:<br>Reason: | Signature:<br>Printed Name:<br>Company: | Date: / /<br>Time: |

Special Shipment / Handling / Storage Requirements:

* for metal analysis do filter and then preserve

* Note – This does not constitute authorization to proceed with analysis

SAMPLE DESCRIPTION INFORMATION
for
Woodward-Clyde Consultants

| Lab ID | Client ID | Matrix | Sampled Date | Sampled Time | Received Date |
|---|---|---|---|---|---|
| 131259-0001-SA | HG09-01 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131259-0002-SA | HG09-02 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131259-0003-SA | HG06B-01 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131259-0004-SA | HG06B-02 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131259-0005-SA | HG06A-01 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131259-0006-SA | HG06A-02 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131259-0007-SA | HG05-01 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131259-0008-SA | HG05-02 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131259-0009-SA | HG08-01 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131259-0010-SA | HG08-02 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131259-0011-SA | HG08-03 | SOIL | 19 MAR 98 | | 19 MAR 98 |
| 131259-0012-SA | HG09-10-W | WATER | 19 MAR 98 | | 19 MAR 98 |
| 131259-0013-SA | HG06B-10-W | WATER | 19 MAR 98 | | 19 MAR 98 |
| 131259-0014-FB | FB0319 | WATER | 19 MAR 98 | | 19 MAR 98 |

# TEPH

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG09-01 | | |
| LAB ID: | 131259-0001-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 11 | mg/kg |
| C15-<C20 | ND | | 11 | mg/kg |
| C20-<C25 | ND | | 11 | mg/kg |
| C25-<C30 | ND | | 11 | mg/kg |
| C30-<C35 | ND | | 11 | mg/kg |
| C35-C40 | ND | | 11 | mg/kg |

Percent moisture is 7.9%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG09-02 | | |
| LAB ID: | 131259-0002-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 12 | mg/kg |
| C15-<C20 | ND | | 12 | mg/kg |
| C20-<C25 | ND | | 12 | mg/kg |
| C25-<C30 | ND | | 12 | mg/kg |
| C30-<C35 | ND | | 12 | mg/kg |
| C35-C40 | ND | | 12 | mg/kg |

Percent moisture is 13.8%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG06B-01 | | |
| LAB ID: | 131259-0003-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 12 | mg/kg |
| C15-<C20 | ND | | 12 | mg/kg |
| C20-<C25 | ND | | 12 | mg/kg |
| C25-<C30 | ND | | 12 | mg/kg |
| C30-<C35 | ND | | 12 | mg/kg |
| C35-C40 | ND | | 12 | mg/kg |

Percent moisture is 17.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG06B-02 | | |
| LAB ID: | 131259-0004-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 12 | mg/kg |
| C15-<C20 | ND | | 12 | mg/kg |
| C20-<C25 | ND | | 12 | mg/kg |
| C25-<C30 | ND | | 12 | mg/kg |
| C30-<C35 | ND | | 12 | mg/kg |
| C35-C40 | ND | | 12 | mg/kg |

Percent moisture is 15.7%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG06A-01 | | |
| LAB ID: | 131259-0005-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 12 | mg/kg |
| C15-<C20 | ND | | 12 | mg/kg |
| C20-<C25 | ND | | 12 | mg/kg |
| C25-<C30 | ND | | 12 | mg/kg |
| C30-<C35 | ND | | 12 | mg/kg |
| C35-C40 | ND | | 12 | mg/kg |

Percent moisture is 17.1%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG06A-02 | | |
| LAB ID: | 131259-0006-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 11 | mg/kg |
| C15-<C20 | ND | | 11 | mg/kg |
| C20-<C25 | ND | | 11 | mg/kg |
| C25-<C30 | ND | | 11 | mg/kg |
| C30-<C35 | ND | | 11 | mg/kg |
| C35-C40 | ND | | 11 | mg/kg |

Percent moisture is 11.1%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG05-01 | | |
| LAB ID: | 131259-0007-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 12 | mg/kg |
| C15-<C20 | ND | | 12 | mg/kg |
| C20-<C25 | ND | | 12 | mg/kg |
| C25-<C30 | ND | | 12 | mg/kg |
| C30-<C35 | ND | | 12 | mg/kg |
| C35-C40 | ND | | 12 | mg/kg |

Percent moisture is 14.5%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG05-02 | | |
| LAB ID: | 131259-0008-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 11 | mg/kg |
| C15-<C20 | ND | | 11 | mg/kg |
| C20-<C25 | ND | | 11 | mg/kg |
| C25-<C30 | ND | | 11 | mg/kg |
| C30-<C35 | ND | | 11 | mg/kg |
| C35-C40 | ND | | 11 | mg/kg |

Percent moisture is 13.0%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG08-01 | | |
| LAB ID: | 131259-0009-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 12 | mg/kg |
| C15-<C20 | ND | | 12 | mg/kg |
| C20-<C25 | ND | | 12 | mg/kg |
| C25-<C30 | ND | | 12 | mg/kg |
| C30-<C35 | ND | | 12 | mg/kg |
| C35-C40 | ND | | 12 | mg/kg |

Percent moisture is 15.5%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG08-02 | | |
| LAB ID: | 131259-0010-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 11 | mg/kg |
| C15-<C20 | ND | | 11 | mg/kg |
| C20-<C25 | ND | | 11 | mg/kg |
| C25-<C30 | ND | | 11 | mg/kg |
| C30-<C35 | ND | | 11 | mg/kg |
| C35-C40 | ND | | 11 | mg/kg |

Percent moisture is 12.2%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG08-03 | | |
| LAB ID: | 131259-0011-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 12 | mg/kg |
| C15-<C20 | ND | | 12 | mg/kg |
| C20-<C25 | ND | | 12 | mg/kg |
| C25-<C30 | ND | | 12 | mg/kg |
| C30-<C35 | ND | | 12 | mg/kg |
| C35-C40 | ND | | 12 | mg/kg |

Percent moisture is 15.4%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG09-10-W | | |
| LAB ID: | 131259-0012-SA | | |
| Matrix: | WATER | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 30 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG06B-10-W | | |
| LAB ID: | 131259-0013-SA | | |
| Matrix: | WATER | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 31 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | FB0319 | | |
| LAB ID: | 131259-0014-FB | | |
| Matrix: | WATER | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 31 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

# PCBs

Polychlorinated Biphenyls
Method 8081

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | MG06B-01 | | |
| LAB ID: | 131259-0003-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 25 MAR 98 |
| Instrument: | GC/ECD-PXA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Aroclor 1016 | ND | | 40 | ug/kg |
| Aroclor 1221 | ND | | 40 | ug/kg |
| Aroclor 1232 | ND | | 40 | ug/kg |
| Aroclor 1242 | ND | | 40 | ug/kg |
| Aroclor 1248 | ND | | 40 | ug/kg |
| Aroclor 1254 | ND | | 40 | ug/kg |
| Aroclor 1260 | ND | | 40 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 90 | % | 60 - 150 |
| Decachlorobiphenyl | 111 | % | 60 - 150 |

Percent moisture is 17.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Polychlorinated Biphenyls
Method 8081

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG06B-02 | | |
| LAB ID: | 131259-0004-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 25 MAR 98 |
| Instrument: | GC/ECD-PXA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Aroclor 1016 | ND | | 39 | ug/kg |
| Aroclor 1221 | ND | | 39 | ug/kg |
| Aroclor 1232 | ND | | 39 | ug/kg |
| Aroclor 1242 | ND | | 39 | ug/kg |
| Aroclor 1248 | ND | | 39 | ug/kg |
| Aroclor 1254 | ND | | 39 | ug/kg |
| Aroclor 1260 | ND | | 39 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 79 | % | 60 - 150 |
| Decachlorobiphenyl | 110 | % | 60 - 150 |

Percent moisture is 15.7%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Polychlorinated Biphenyls
Method 8081

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG06A-01 | | |
| LAB ID: | 131259-0005-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 25 MAR 98 |
| Instrument: | GC/ECD-PXA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Aroclor 1016 | ND | | 40 | ug/kg |
| Aroclor 1221 | ND | | 40 | ug/kg |
| Aroclor 1232 | ND | | 40 | ug/kg |
| Aroclor 1242 | ND | | 40 | ug/kg |
| Aroclor 1248 | ND | | 40 | ug/kg |
| Aroclor 1254 | ND | | 40 | ug/kg |
| Aroclor 1260 | ND | | 40 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 86 | % | 60 - 150 |
| Decachlorobiphenyl | 111 | % | 60 - 150 |

Percent moisture is 17.1%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Polychlorinated Biphenyls
Method 8081

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG06A-02 | | |
| LAB ID: | 131259-0006-SA | | |
| Matrix: | SOIL | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 26 MAR 98 |
| Instrument: | GC/ECD-PXA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Aroclor 1016 | ND | | 37 | ug/kg |
| Aroclor 1221 | ND | | 37 | ug/kg |
| Aroclor 1232 | ND | | 37 | ug/kg |
| Aroclor 1242 | ND | | 37 | ug/kg |
| Aroclor 1248 | ND | | 37 | ug/kg |
| Aroclor 1254 | ND | | 37 | ug/kg |
| Aroclor 1260 | ND | | 37 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 94 | % | 60 - 150 |
| Decachlorobiphenyl | 119 | % | 60 - 150 |

Percent moisture is 11.1%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Polychlorinated Biphenyls
Method 8081

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG06B-10-W | | |
| LAB ID: | 131259-0013-SA | | |
| Matrix: | WATER | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 25 MAR 98 |
| Instrument: | GC/ECD-PXA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Aroclor 1016 | ND | | 1.0 | ug/L |
| Aroclor 1221 | ND | | 1.0 | ug/L |
| Aroclor 1232 | ND | | 1.0 | ug/L |
| Aroclor 1242 | ND | | 1.0 | ug/L |
| Aroclor 1248 | ND | | 1.0 | ug/L |
| Aroclor 1254 | ND | | 1.0 | ug/L |
| Aroclor 1260 | ND | | 1.0 | ug/L |

| Surrogate | Recovery | | Acceptable Range | |
|---|---|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 84 | % | 60 - 150 | |
| Decachlorobiphenyl | 36 | % | 60 - 150 | I |

I = Surrogate recovery outside of limits due to sample matrix interference.
ND = Not Detected

Polychlorinated Biphenyls
Method 8081

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | FB0319 | | |
| LAB ID: | 131259-0014-FB | | |
| Matrix: | WATER | Sampled: 19 MAR 98 | Received: 19 MAR 98 |
| Authorized: | 20 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 25 MAR 98 |
| Instrument: | GC/ECD-PXA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Aroclor 1016 | ND | | 1.0 | ug/L |
| Aroclor 1221 | ND | | 1.0 | ug/L |
| Aroclor 1232 | ND | | 1.0 | ug/L |
| Aroclor 1242 | ND | | 1.0 | ug/L |
| Aroclor 1248 | ND | | 1.0 | ug/L |
| Aroclor 1254 | ND | | 1.0 | ug/L |
| Aroclor 1260 | ND | | 1.0 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 97 | % | 60 - 150 |
| Decachlorobiphenyl | 72 | % | 60 - 150 |

ND = Not Detected

QC LOT ASSIGNMENT REPORT - MS QC
Semivolatile Organics by GC

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK/LCS) | MS QC Run Number (SA,MS,SD,DU) |
|---|---|---|---|---|---|
| 131259-0003-SA | SOLID | PCB-PAC-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0004-SA | SOLID | PCB-PAC-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0005-SA | SOLID | PCB-PAC-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0006-SA | SOLID | PCB-PAC-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0013-SA | AQUEOUS | PCB1PAC10A | 24 MAR 98-B | 24 MAR 98-B | |
| 131259-0014-FB | AQUEOUS | PCB1PAC10A | 24 MAR 98-B | 24 MAR 98-B | |

METHOD BLANK REPORT
Semivolatile Organics by GC
Project: 131259

Test: 8081-PCB-PACDIV-S Method 8081- PCBs
Matrix: SOLID
QC Run: 23 MAR 98-CX

Date Analyzed: 25 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Aroclor 1016 | ND | ug/kg | 33 |
| Aroclor 1221 | ND | ug/kg | 33 |
| Aroclor 1232 | ND | ug/kg | 33 |
| Aroclor 1242 | ND | ug/kg | 33 |
| Aroclor 1248 | ND | ug/kg | 33 |
| Aroclor 1254 | ND | ug/kg | 33 |
| Aroclor 1260 | ND | ug/kg | 33 |

| Surrogate | Recovery | Acceptable Range |
|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 109 | 60 -150 |
| Decachlorobiphenyl | 124 | 60 -150 |

Test: 8081-PCB-3510-PAC-A Method 8081 - PCBs
Matrix: AQUEOUS
QC Run: 24 MAR 98-B

Date Analyzed: 25 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Aroclor 1016 | ND | ug/L | 1.0 |
| Aroclor 1221 | ND | ug/L | 1.0 |
| Aroclor 1232 | ND | ug/L | 1.0 |
| Aroclor 1242 | ND | ug/L | 1.0 |
| Aroclor 1248 | ND | ug/L | 1.0 |
| Aroclor 1254 | ND | ug/L | 1.0 |
| Aroclor 1260 | ND | ug/L | 1.0 |

| Surrogate | Recovery | Acceptable Range |
|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 120 | 60 -150 |
| Decachlorobiphenyl | 136 | 60 -150 |

ND = Not Detected

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC
Project: 131259

Category: PCB1PAC10A Method 8081 - PCBs
Matrix: AQUEOUS
QC Lot: 24 MAR 98-B
Date Analyzed: 25 MAR 98
Concentration Units: ug/L

| Analyte | Concentration Spiked | Measured DCS1 | Measured DCS2 | %Recovery DCS1 | %Recovery DCS2 | RPD | Acceptance Limits Recov. | Acceptance Limits RPD |
|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | 5.00 | 5.09 | 5.40 | 102 | 108 | 5.9 | 50-114 | 30 |
| Aroclor 1260 | 5.00 | 5.20 | 5.53 | 104 | 111 | 6.2 | 8-127 | 30 |

| Surrogate | Concentration Spiked | Measured DCS1 | Measured DCS2 | %Recovery DCS1 | %Recovery DCS2 | Acceptance Limits Recovery |
|---|---|---|---|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 0.200 | 0.224 | 0.240 | 112 | 120 | 60-150 |
| Decachlorobiphenyl | 0.200 | 0.260 | 0.272 | 130 | 136 | 60-150 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE REPORT
Semivolatile Organics by GC
Project: 131259

Category: PCB-PAC-S Method 8081 - PCBs
Matrix: SOLID
Date Analyzed: 25 MAR 98
QC Run: 23 MAR 98-CX
Concentration Units: ug/kg

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Aroclor 1016 | 167 | 172 | 103 | 50-114 |
| Aroclor 1260 | 167 | 177 | 106 | 8-127 |

| Surrogates | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 6.67 | 7.52 | 113 | 60-150 |
| Decachlorobiphenyl | 6.67 | 8.41 | 126 | 60-150 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC
Project: 131259

Category: PCB-PAC-S Method 8081 - PCBs
Matrix: SOLID
Sample: 131259-0004
MS Run: 23 MAR 98-CA
Units ug/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| | Concentration | | | | | | | | |
| Aroclor 1016 | ND | 151 | 145 | 167 | 90 | 87 | 4.1 | 50-114 | 30 |
| Aroclor 1260 | ND | 158 | 152 | 167 | 95 | 91 | 3.9 | 8-127 | 30 |

| Surrogates | Sample %Recovery | %Recovery MS | %Recovery MSD | Acceptance Limit Recovery |
|---|---|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 79 | 82 | 89 | 60-150 |
| Decachlorobiphenyl | 110 | 108 | 111 | 60-150 |

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

# SVOCs

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG09-01
LAB ID: 131259-0001-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 27 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1700 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 360 | ug/kg |
| 2,4-Dichlorophenol | ND | | 360 | ug/kg |
| 2,4-Dimethylphenol | ND | | 360 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1700 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 360 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 360 | ug/kg |
| 2-Chloronaphthalene | ND | | 360 | ug/kg |
| 2-Chlorophenol | ND | | 360 | ug/kg |
| 2-Methylnaphthalene | ND | | 360 | ug/kg |
| 2-Methylphenol | ND | | 360 | ug/kg |
| 2-Nitroaniline | ND | | 1700 | ug/kg |
| 2-Nitrophenol | ND | | 360 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 720 | ug/kg |
| 3-Nitroaniline | ND | | 1700 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1700 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 360 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 710 | ug/kg |
| 4-Chloroaniline | ND | | 360 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 360 | ug/kg |
| 4-Methylphenol | ND | | 360 | ug/kg |
| 4-Nitroaniline | ND | | 1700 | ug/kg |
| 4-Nitrophenol | ND | | 1700 | ug/kg |
| Acenaphthene | ND | | 360 | ug/kg |
| Acenaphthylene | ND | | 360 | ug/kg |
| Anthracene | ND | | 360 | ug/kg |
| Benzo(a)anthracene | ND | | 360 | ug/kg |
| Benzo(a)pyrene | ND | | 360 | ug/kg |
| Benzo(b)fluoranthene | ND | | 360 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 360 | ug/kg |
| Benzo(k)fluoranthene | ND | | 360 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 360 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 360 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 360 | ug/kg |
| Butyl benzyl phthalate | ND | | 360 | ug/kg |
| Carbazole | ND | | 360 | ug/kg |
| Chrysene | ND | | 360 | ug/kg |
| Di-n-butyl phthalate | ND | | 360 | ug/kg |
| Di-n-octyl phthalate | ND | | 360 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 360 | ug/kg |
| Dibenzofuran | ND | | 360 | ug/kg |
| Diethyl phthalate | ND | | 360 | ug/kg |
| Dimethyl phthalate | ND | | 360 | ug/kg |
| Fluoranthene | ND | | 360 | ug/kg |
| Fluorene | ND | | 360 | ug/kg |

Percent moisture is 7.9%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG09-01
LAB ID: 131259-0001-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 27 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 360 | ug/kg |
| Hexachlorobutadiene | ND | | 360 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1700 | ug/kg |
| Hexachloroethane | ND | | 360 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 360 | ug/kg |
| Isophorone | ND | | 360 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 360 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 360 | ug/kg |
| Naphthalene | ND | | 360 | ug/kg |
| Nitrobenzene | ND | | 360 | ug/kg |
| Pentachlorophenol | ND | | 1700 | ug/kg |
| Phenanthrene | ND | | 360 | ug/kg |
| Pyrene | ND | | 360 | ug/kg |
| Phenol | ND | | 360 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 67 | % | 25 - 121 |
| Phenol-d5 | 73 | % | 24 - 113 |
| Nitrobenzene-d5 | 70 | % | 23 - 120 |
| 2-Fluorobiphenyl | 79 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 70 | % | 19 - 122 |
| Terphenyl-d14 | 73 | % | 18 - 137 |

Percent moisture is 7.9%. All results and limits are reported on a dry weight basis.

ND = Not Detected

5

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG09-02
LAB ID: 131259-0002-SA
Matrix: SOIL — Sampled: 19 MAR 98 — Received: 19 MAR 98
Authorized: 20 MAR 98 — Prepared: 23 MAR 98 — Analyzed: 27 MAR 98
Instrument: GC/MS-MA — Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1900 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 380 | ug/kg |
| 2,4-Dichlorophenol | ND | | 380 | ug/kg |
| 2,4-Dimethylphenol | ND | | 380 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1900 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 380 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 380 | ug/kg |
| 2-Chloronaphthalene | ND | | 380 | ug/kg |
| 2-Chlorophenol | ND | | 380 | ug/kg |
| 2-Methylnaphthalene | ND | | 380 | ug/kg |
| 2-Methylphenol | ND | | 380 | ug/kg |
| 2-Nitroaniline | ND | | 1900 | ug/kg |
| 2-Nitrophenol | ND | | 380 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 770 | ug/kg |
| 3-Nitroaniline | ND | | 1900 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1900 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 380 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 750 | ug/kg |
| 4-Chloroaniline | ND | | 380 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 380 | ug/kg |
| 4-Methylphenol | ND | | 380 | ug/kg |
| 4-Nitroaniline | ND | | 1900 | ug/kg |
| 4-Nitrophenol | ND | | 1900 | ug/kg |
| Acenaphthene | ND | | 380 | ug/kg |
| Acenaphthylene | ND | | 380 | ug/kg |
| Anthracene | ND | | 380 | ug/kg |
| Benzo(a)anthracene | ND | | 380 | ug/kg |
| Benzo(a)pyrene | ND | | 380 | ug/kg |
| Benzo(b)fluoranthene | ND | | 380 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 380 | ug/kg |
| Benzo(k)fluoranthene | ND | | 380 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 380 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 380 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 380 | ug/kg |
| Butyl benzyl phthalate | ND | | 380 | ug/kg |
| Carbazole | ND | | 380 | ug/kg |
| Chrysene | ND | | 380 | ug/kg |
| Di-n-butyl phthalate | ND | | 380 | ug/kg |
| Di-n-octyl phthalate | ND | | 380 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 380 | ug/kg |
| Dibenzofuran | ND | | 380 | ug/kg |
| Diethyl phthalate | ND | | 380 | ug/kg |
| Dimethyl phthalate | ND | | 380 | ug/kg |
| Fluoranthene | ND | | 380 | ug/kg |
| Fluorene | ND | | 380 | ug/kg |

Percent moisture is 13.8%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG09-02
LAB ID: 131259-0002-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 27 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 380 | ug/kg |
| Hexachlorobutadiene | ND | | 380 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1900 | ug/kg |
| Hexachloroethane | ND | | 380 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 380 | ug/kg |
| Isophorone | ND | | 380 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 380 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 380 | ug/kg |
| Naphthalene | ND | | 380 | ug/kg |
| Nitrobenzene | ND | | 380 | ug/kg |
| Pentachlorophenol | ND | | 1900 | ug/kg |
| Phenanthrene | ND | | 380 | ug/kg |
| Pyrene | ND | | 380 | ug/kg |
| Phenol | ND | | 380 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 56 | % | 25 - 121 |
| Phenol-d5 | 70 | % | 24 - 113 |
| Nitrobenzene-d5 | 35 | % | 23 - 120 |
| 2-Fluorobiphenyl | 53 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 85 | % | 19 - 122 |
| Terphenyl-d14 | 105 | % | 18 - 137 |

Percent moisture is 13.8%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG06B-01
LAB ID: 131259-0003-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 27 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1900 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 400 | ug/kg |
| 2,4-Dichlorophenol | ND | | 400 | ug/kg |
| 2,4-Dimethylphenol | ND | | 400 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1900 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 400 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 400 | ug/kg |
| 2-Chloronaphthalene | ND | | 400 | ug/kg |
| 2-Chlorophenol | ND | | 400 | ug/kg |
| 2-Methylnaphthalene | ND | | 400 | ug/kg |
| 2-Methylphenol | ND | | 400 | ug/kg |
| 2-Nitroaniline | ND | | 1900 | ug/kg |
| 2-Nitrophenol | ND | | 400 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 800 | ug/kg |
| 3-Nitroaniline | ND | | 1900 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1900 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 400 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 790 | ug/kg |
| 4-Chloroaniline | ND | | 400 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 400 | ug/kg |
| 4-Methylphenol | ND | | 400 | ug/kg |
| 4-Nitroaniline | ND | | 1900 | ug/kg |
| 4-Nitrophenol | ND | | 1900 | ug/kg |
| Acenaphthene | ND | | 400 | ug/kg |
| Acenaphthylene | ND | | 400 | ug/kg |
| Anthracene | ND | | 400 | ug/kg |
| Benzo(a)anthracene | ND | | 400 | ug/kg |
| Benzo(a)pyrene | ND | | 400 | ug/kg |
| Benzo(b)fluoranthene | ND | | 400 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 400 | ug/kg |
| Benzo(k)fluoranthene | ND | | 400 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 400 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 400 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 400 | ug/kg |
| Butyl benzyl phthalate | ND | | 400 | ug/kg |
| Carbazole | ND | | 400 | ug/kg |
| Chrysene | ND | | 400 | ug/kg |
| Di-n-butyl phthalate | ND | | 400 | ug/kg |
| Di-n-octyl phthalate | ND | | 400 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 400 | ug/kg |
| Dibenzofuran | ND | | 400 | ug/kg |
| Diethyl phthalate | ND | | 400 | ug/kg |
| Dimethyl phthalate | ND | | 400 | ug/kg |
| Fluoranthene | ND | | 400 | ug/kg |
| Fluorene | ND | | 400 | ug/kg |

Percent moisture is 17.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG06B-01
LAB ID: 131259-0003-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 27 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 400 | ug/kg |
| Hexachlorobutadiene | ND | | 400 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1900 | ug/kg |
| Hexachloroethane | ND | | 400 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 400 | ug/kg |
| Isophorone | ND | | 400 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 400 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 400 | ug/kg |
| Naphthalene | ND | | 400 | ug/kg |
| Nitrobenzene | ND | | 400 | ug/kg |
| Pentachlorophenol | ND | | 1900 | ug/kg |
| Phenanthrene | ND | | 400 | ug/kg |
| Pyrene | ND | | 400 | ug/kg |
| Phenol | ND | | 400 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 78 | % | 25 - 121 |
| Phenol-d5 | 66 | % | 24 - 113 |
| Nitrobenzene-d5 | 42 | % | 23 - 120 |
| 2-Fluorobiphenyl | 55 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 94 | % | 19 - 122 |
| Terphenyl-d14 | 102 | % | 18 - 137 |

Percent moisture is 17.3%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG06B-02
LAB ID: 131259-0004-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1900 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dimethylphenol | ND | | 390 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1900 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 390 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 390 | ug/kg |
| 2-Chloronaphthalene | ND | | 390 | ug/kg |
| 2-Chlorophenol | ND | | 390 | ug/kg |
| 2-Methylnaphthalene | ND | | 390 | ug/kg |
| 2-Methylphenol | ND | | 390 | ug/kg |
| 2-Nitroaniline | ND | | 1900 | ug/kg |
| 2-Nitrophenol | ND | | 390 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 780 | ug/kg |
| 3-Nitroaniline | ND | | 1900 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1900 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 770 | ug/kg |
| 4-Chloroaniline | ND | | 390 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Methylphenol | ND | | 390 | ug/kg |
| 4-Nitroaniline | ND | | 1900 | ug/kg |
| 4-Nitrophenol | ND | | 1900 | ug/kg |
| Acenaphthene | ND | | 390 | ug/kg |
| Acenaphthylene | ND | | 390 | ug/kg |
| Anthracene | ND | | 390 | ug/kg |
| Benzo(a)anthracene | ND | | 390 | ug/kg |
| Benzo(a)pyrene | ND | | 390 | ug/kg |
| Benzo(b)fluoranthene | ND | | 390 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 390 | ug/kg |
| Benzo(k)fluoranthene | ND | | 390 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 390 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 390 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 390 | ug/kg |
| Butyl benzyl phthalate | ND | | 390 | ug/kg |
| Carbazole | ND | | 390 | ug/kg |
| Chrysene | ND | | 390 | ug/kg |
| Di-n-butyl phthalate | ND | | 390 | ug/kg |
| Di-n-octyl phthalate | ND | | 390 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 390 | ug/kg |
| Dibenzofuran | ND | | 390 | ug/kg |
| Diethyl phthalate | ND | | 390 | ug/kg |
| Dimethyl phthalate | ND | | 390 | ug/kg |
| Fluoranthene | ND | | 390 | ug/kg |
| Fluorene | ND | | 390 | ug/kg |

Percent moisture is 15.7%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG06B-02
LAB ID: 131259-0004-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 390 | ug/kg |
| Hexachlorobutadiene | ND | | 390 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1900 | ug/kg |
| Hexachloroethane | ND | | 390 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 390 | ug/kg |
| Isophorone | ND | | 390 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 390 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 390 | ug/kg |
| Naphthalene | ND | | 390 | ug/kg |
| Nitrobenzene | ND | | 390 | ug/kg |
| Pentachlorophenol | ND | | 1900 | ug/kg |
| Phenanthrene | ND | | 390 | ug/kg |
| Pyrene | ND | | 390 | ug/kg |
| Phenol | ND | | 390 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 89 | % | 25 - 121 |
| Phenol-d5 | 78 | % | 24 - 113 |
| Nitrobenzene-d5 | 48 | % | 23 - 120 |
| 2-Fluorobiphenyl | 53 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 75 | % | 19 - 122 |
| Terphenyl-d14 | 87 | % | 18 - 137 |

Percent moisture is 15.7%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG06A-01
LAB ID: 131259-0005-SA
Matrix: SOIL — Sampled: 19 MAR 98 — Received: 19 MAR 98
Authorized: 20 MAR 98 — Prepared: 23 MAR 98 — Analyzed: 28 MAR 98
Instrument: GC/MS-MA — Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1900 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 400 | ug/kg |
| 2,4-Dichlorophenol | ND | | 400 | ug/kg |
| 2,4-Dimethylphenol | ND | | 400 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1900 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 400 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 400 | ug/kg |
| 2-Chloronaphthalene | ND | | 400 | ug/kg |
| 2-Chlorophenol | ND | | 400 | ug/kg |
| 2-Methylnaphthalene | ND | | 400 | ug/kg |
| 2-Methylphenol | ND | | 400 | ug/kg |
| 2-Nitroaniline | ND | | 1900 | ug/kg |
| 2-Nitrophenol | ND | | 400 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 800 | ug/kg |
| 3-Nitroaniline | ND | | 1900 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1900 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 400 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 780 | ug/kg |
| 4-Chloroaniline | ND | | 400 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 400 | ug/kg |
| 4-Methylphenol | ND | | 400 | ug/kg |
| 4-Nitroaniline | ND | | 1900 | ug/kg |
| 4-Nitrophenol | ND | | 1900 | ug/kg |
| Acenaphthene | ND | | 400 | ug/kg |
| Acenaphthylene | ND | | 400 | ug/kg |
| Anthracene | ND | | 400 | ug/kg |
| Benzo(a)anthracene | ND | | 400 | ug/kg |
| Benzo(a)pyrene | ND | | 400 | ug/kg |
| Benzo(b)fluoranthene | ND | | 400 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 400 | ug/kg |
| Benzo(k)fluoranthene | ND | | 400 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 400 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 400 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 400 | ug/kg |
| Butyl benzyl phthalate | ND | | 400 | ug/kg |
| Carbazole | ND | | 400 | ug/kg |
| Chrysene | ND | | 400 | ug/kg |
| Di-n-butyl phthalate | ND | | 400 | ug/kg |
| Di-n-octyl phthalate | ND | | 400 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 400 | ug/kg |
| Dibenzofuran | ND | | 400 | ug/kg |
| Diethyl phthalate | ND | | 400 | ug/kg |
| Dimethyl phthalate | ND | | 400 | ug/kg |
| Fluoranthene | ND | | 400 | ug/kg |
| Fluorene | ND | | 400 | ug/kg |

Percent moisture is 17.1%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG06A-01
LAB ID: 131259-0005-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 400 | ug/kg |
| Hexachlorobutadiene | ND | | 400 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1900 | ug/kg |
| Hexachloroethane | ND | | 400 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 400 | ug/kg |
| Isophorone | ND | | 400 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 400 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 400 | ug/kg |
| Naphthalene | ND | | 400 | ug/kg |
| Nitrobenzene | ND | | 400 | ug/kg |
| Pentachlorophenol | ND | | 1900 | ug/kg |
| Phenanthrene | ND | | 400 | ug/kg |
| Pyrene | ND | | 400 | ug/kg |
| Phenol | ND | | 400 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 67 | % | 25 - 121 |
| Phenol-d5 | 65 | % | 24 - 113 |
| Nitrobenzene-d5 | 58 | % | 23 - 120 |
| 2-Fluorobiphenyl | 52 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 59 | % | 19 - 122 |
| Terphenyl-d14 | 66 | % | 18 - 137 |

Percent moisture is 17.1%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG06A-02
LAB ID: 131259-0006-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1800 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 370 | ug/kg |
| 2,4-Dichlorophenol | ND | | 370 | ug/kg |
| 2,4-Dimethylphenol | ND | | 370 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1800 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 370 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 370 | ug/kg |
| 2-Chloronaphthalene | ND | | 370 | ug/kg |
| 2-Chlorophenol | ND | | 370 | ug/kg |
| 2-Methylnaphthalene | ND | | 370 | ug/kg |
| 2-Methylphenol | ND | | 370 | ug/kg |
| 2-Nitroaniline | ND | | 1800 | ug/kg |
| 2-Nitrophenol | ND | | 370 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 740 | ug/kg |
| 3-Nitroaniline | ND | | 1800 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1800 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 370 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 730 | ug/kg |
| 4-Chloroaniline | ND | | 370 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 370 | ug/kg |
| 4-Methylphenol | ND | | 370 | ug/kg |
| 4-Nitroaniline | ND | | 1800 | ug/kg |
| 4-Nitrophenol | ND | | 1800 | ug/kg |
| Acenaphthene | ND | | 370 | ug/kg |
| Acenaphthylene | ND | | 370 | ug/kg |
| Anthracene | ND | | 370 | ug/kg |
| Benzo(a)anthracene | ND | | 370 | ug/kg |
| Benzo(a)pyrene | ND | | 370 | ug/kg |
| Benzo(b)fluoranthene | ND | | 370 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 370 | ug/kg |
| Benzo(k)fluoranthene | ND | | 370 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 370 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 370 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 370 | ug/kg |
| Butyl benzyl phthalate | ND | | 370 | ug/kg |
| Carbazole | ND | | 370 | ug/kg |
| Chrysene | ND | | 370 | ug/kg |
| Di-n-butyl phthalate | ND | | 370 | ug/kg |
| Di-n-octyl phthalate | ND | | 370 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 370 | ug/kg |
| Dibenzofuran | ND | | 370 | ug/kg |
| Diethyl phthalate | ND | | 370 | ug/kg |
| Dimethyl phthalate | ND | | 370 | ug/kg |
| Fluoranthene | ND | | 370 | ug/kg |
| Fluorene | ND | | 370 | ug/kg |

Percent moisture is 11.1%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG06A-02
LAB ID: 131259-0006-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 370 | ug/kg |
| Hexachlorobutadiene | ND | | 370 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1800 | ug/kg |
| Hexachloroethane | ND | | 370 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 370 | ug/kg |
| Isophorone | ND | | 370 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 370 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 370 | ug/kg |
| Naphthalene | ND | | 370 | ug/kg |
| Nitrobenzene | ND | | 370 | ug/kg |
| Pentachlorophenol | ND | | 1800 | ug/kg |
| Phenanthrene | ND | | 370 | ug/kg |
| Pyrene | ND | | 370 | ug/kg |
| Phenol | ND | | 370 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 69 | % | 25 - 121 |
| Phenol-d5 | 72 | % | 24 - 113 |
| Nitrobenzene-d5 | 67 | % | 23 - 120 |
| 2-Fluorobiphenyl | 58 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 68 | % | 19 - 122 |
| Terphenyl-d14 | 61 | % | 18 - 137 |

Percent moisture is 11.1%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG05-01
LAB ID: 131259-0007-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1900 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dimethylphenol | ND | | 390 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1900 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 390 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 390 | ug/kg |
| 2-Chloronaphthalene | ND | | 390 | ug/kg |
| 2-Chlorophenol | ND | | 390 | ug/kg |
| 2-Methylnaphthalene | ND | | 390 | ug/kg |
| 2-Methylphenol | ND | | 390 | ug/kg |
| 2-Nitroaniline | ND | | 1900 | ug/kg |
| 2-Nitrophenol | ND | | 390 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 770 | ug/kg |
| 3-Nitroaniline | ND | | 1900 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1900 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 760 | ug/kg |
| 4-Chloroaniline | ND | | 390 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Methylphenol | ND | | 390 | ug/kg |
| 4-Nitroaniline | ND | | 1900 | ug/kg |
| 4-Nitrophenol | ND | | 1900 | ug/kg |
| Acenaphthene | ND | | 390 | ug/kg |
| Acenaphthylene | ND | | 390 | ug/kg |
| Anthracene | ND | | 390 | ug/kg |
| Benzo(a)anthracene | ND | | 390 | ug/kg |
| Benzo(a)pyrene | ND | | 390 | ug/kg |
| Benzo(b)fluoranthene | ND | | 390 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 390 | ug/kg |
| Benzo(k)fluoranthene | ND | | 390 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 390 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 390 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 390 | ug/kg |
| Butyl benzyl phthalate | ND | | 390 | ug/kg |
| Carbazole | ND | | 390 | ug/kg |
| Chrysene | ND | | 390 | ug/kg |
| Di-n-butyl phthalate | ND | | 390 | ug/kg |
| Di-n-octyl phthalate | ND | | 390 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 390 | ug/kg |
| Dibenzofuran | ND | | 390 | ug/kg |
| Diethyl phthalate | ND | | 390 | ug/kg |
| Dimethyl phthalate | ND | | 390 | ug/kg |
| Fluoranthene | ND | | 390 | ug/kg |
| Fluorene | ND | | 390 | ug/kg |

Percent moisture is 14.5%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG05-01
LAB ID: 131259-0007-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 390 | ug/kg |
| Hexachlorobutadiene | ND | | 390 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1900 | ug/kg |
| Hexachloroethane | ND | | 390 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 390 | ug/kg |
| Isophorone | ND | | 390 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 390 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 390 | ug/kg |
| Naphthalene | ND | | 390 | ug/kg |
| Nitrobenzene | ND | | 390 | ug/kg |
| Pentachlorophenol | ND | | 1900 | ug/kg |
| Phenanthrene | ND | | 390 | ug/kg |
| Pyrene | ND | | 390 | ug/kg |
| Phenol | ND | | 390 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 61 | % | 25 - 121 |
| Phenol-d5 | 72 | % | 24 - 113 |
| Nitrobenzene-d5 | 63 | % | 23 - 120 |
| 2-Fluorobiphenyl | 71 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 84 | % | 19 - 122 |
| Terphenyl-d14 | 75 | % | 18 - 137 |

Percent moisture is 14.5%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG05-02
LAB ID: 131259-0008-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1800 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 380 | ug/kg |
| 2,4-Dichlorophenol | ND | | 380 | ug/kg |
| 2,4-Dimethylphenol | ND | | 380 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1800 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 380 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 380 | ug/kg |
| 2-Chloronaphthalene | ND | | 380 | ug/kg |
| 2-Chlorophenol | ND | | 380 | ug/kg |
| 2-Methylnaphthalene | ND | | 380 | ug/kg |
| 2-Methylphenol | ND | | 380 | ug/kg |
| 2-Nitroaniline | ND | | 1800 | ug/kg |
| 2-Nitrophenol | ND | | 380 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 760 | ug/kg |
| 3-Nitroaniline | ND | | 1800 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1800 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 380 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 750 | ug/kg |
| 4-Chloroaniline | ND | | 380 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 380 | ug/kg |
| 4-Methylphenol | ND | | 380 | ug/kg |
| 4-Nitroaniline | ND | | 1800 | ug/kg |
| 4-Nitrophenol | ND | | 1800 | ug/kg |
| Acenaphthene | ND | | 380 | ug/kg |
| Acenaphthylene | ND | | 380 | ug/kg |
| Anthracene | ND | | 380 | ug/kg |
| Benzo(a)anthracene | ND | | 380 | ug/kg |
| Benzo(a)pyrene | ND | | 380 | ug/kg |
| Benzo(b)fluoranthene | ND | | 380 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 380 | ug/kg |
| Benzo(k)fluoranthene | ND | | 380 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 380 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 380 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 380 | ug/kg |
| Butyl benzyl phthalate | ND | | 380 | ug/kg |
| Carbazole | ND | | 380 | ug/kg |
| Chrysene | ND | | 380 | ug/kg |
| Di-n-butyl phthalate | ND | | 380 | ug/kg |
| Di-n-octyl phthalate | ND | | 380 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 380 | ug/kg |
| Dibenzofuran | ND | | 380 | ug/kg |
| Diethyl phthalate | ND | | 380 | ug/kg |
| Dimethyl phthalate | ND | | 380 | ug/kg |
| Fluoranthene | ND | | 380 | ug/kg |
| Fluorene | ND | | 380 | ug/kg |

Percent moisture is 13.0%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG05-02
LAB ID: 131259-0008-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 380 | ug/kg |
| Hexachlorobutadiene | ND | | 380 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1800 | ug/kg |
| Hexachloroethane | ND | | 380 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 380 | ug/kg |
| Isophorone | ND | | 380 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 380 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 380 | ug/kg |
| Naphthalene | ND | | 380 | ug/kg |
| Nitrobenzene | ND | | 380 | ug/kg |
| Pentachlorophenol | ND | | 1800 | ug/kg |
| Phenanthrene | ND | | 380 | ug/kg |
| Pyrene | ND | | 380 | ug/kg |
| Phenol | ND | | 380 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 78 | % | 25 - 121 |
| Phenol-d5 | 85 | % | 24 - 113 |
| Nitrobenzene-d5 | 51 | % | 23 - 120 |
| 2-Fluorobiphenyl | 76 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 93 | % | 19 - 122 |
| Terphenyl-d14 | 98 | % | 18 - 137 |

Percent moisture is 13.0%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG08-01
LAB ID: 131259-0009-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1900 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dimethylphenol | ND | | 390 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1900 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 390 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 390 | ug/kg |
| 2-Chloronaphthalene | ND | | 390 | ug/kg |
| 2-Chlorophenol | ND | | 390 | ug/kg |
| 2-Methylnaphthalene | ND | | 390 | ug/kg |
| 2-Methylphenol | ND | | 390 | ug/kg |
| 2-Nitroaniline | ND | | 1900 | ug/kg |
| 2-Nitrophenol | ND | | 390 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 780 | ug/kg |
| 3-Nitroaniline | ND | | 1900 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1900 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 770 | ug/kg |
| 4-Chloroaniline | ND | | 390 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Methylphenol | ND | | 390 | ug/kg |
| 4-Nitroaniline | ND | | 1900 | ug/kg |
| 4-Nitrophenol | ND | | 1900 | ug/kg |
| Acenaphthene | ND | | 390 | ug/kg |
| Acenaphthylene | ND | | 390 | ug/kg |
| Anthracene | ND | | 390 | ug/kg |
| Benzo(a)anthracene | ND | | 390 | ug/kg |
| Benzo(a)pyrene | ND | | 390 | ug/kg |
| Benzo(b)fluoranthene | ND | | 390 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 390 | ug/kg |
| Benzo(k)fluoranthene | ND | | 390 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 390 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 390 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 390 | ug/kg |
| Butyl benzyl phthalate | ND | | 390 | ug/kg |
| Carbazole | ND | | 390 | ug/kg |
| Chrysene | ND | | 390 | ug/kg |
| Di-n-butyl phthalate | ND | | 390 | ug/kg |
| Di-n-octyl phthalate | ND | | 390 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 390 | ug/kg |
| Dibenzofuran | ND | | 390 | ug/kg |
| Diethyl phthalate | ND | | 390 | ug/kg |
| Dimethyl phthalate | ND | | 390 | ug/kg |
| Fluoranthene | ND | | 390 | ug/kg |
| Fluorene | ND | | 390 | ug/kg |

Percent moisture is 15.5%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG08-01
LAB ID: 131259-0009-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 390 | ug/kg |
| Hexachlorobutadiene | ND | | 390 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1900 | ug/kg |
| Hexachloroethane | ND | | 390 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 390 | ug/kg |
| Isophorone | ND | | 390 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 390 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 390 | ug/kg |
| Naphthalene | ND | | 390 | ug/kg |
| Nitrobenzene | ND | | 390 | ug/kg |
| Pentachlorophenol | ND | | 1900 | ug/kg |
| Phenanthrene | ND | | 390 | ug/kg |
| Pyrene | ND | | 390 | ug/kg |
| Phenol | ND | | 390 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 96 | % | 25 - 121 |
| Phenol-d5 | 82 | % | 24 - 113 |
| Nitrobenzene-d5 | 73 | % | 23 - 120 |
| 2-Fluorobiphenyl | 66 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 66 | % | 19 - 122 |
| Terphenyl-d14 | 78 | % | 18 - 137 |

Percent moisture is 15.5%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG08-02
LAB ID: 131259-0010-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1800 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 380 | ug/kg |
| 2,4-Dichlorophenol | ND | | 380 | ug/kg |
| 2,4-Dimethylphenol | ND | | 380 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1800 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 380 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 380 | ug/kg |
| 2-Chloronaphthalene | ND | | 380 | ug/kg |
| 2-Chlorophenol | ND | | 380 | ug/kg |
| 2-Methylnaphthalene | ND | | 380 | ug/kg |
| 2-Methylphenol | ND | | 380 | ug/kg |
| 2-Nitroaniline | ND | | 1800 | ug/kg |
| 2-Nitrophenol | ND | | 380 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 750 | ug/kg |
| 3-Nitroaniline | ND | | 1800 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1800 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 380 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 740 | ug/kg |
| 4-Chloroaniline | ND | | 380 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 380 | ug/kg |
| 4-Methylphenol | ND | | 380 | ug/kg |
| 4-Nitroaniline | ND | | 1800 | ug/kg |
| 4-Nitrophenol | ND | | 1800 | ug/kg |
| Acenaphthene | ND | | 380 | ug/kg |
| Acenaphthylene | ND | | 380 | ug/kg |
| Anthracene | ND | | 380 | ug/kg |
| Benzo(a)anthracene | ND | | 380 | ug/kg |
| Benzo(a)pyrene | ND | | 380 | ug/kg |
| Benzo(b)fluoranthene | ND | | 380 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 380 | ug/kg |
| Benzo(k)fluoranthene | ND | | 380 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 380 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 380 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 380 | ug/kg |
| Butyl benzyl phthalate | ND | | 380 | ug/kg |
| Carbazole | ND | | 380 | ug/kg |
| Chrysene | ND | | 380 | ug/kg |
| Di-n-butyl phthalate | ND | | 380 | ug/kg |
| Di-n-octyl phthalate | ND | | 380 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 380 | ug/kg |
| Dibenzofuran | ND | | 380 | ug/kg |
| Diethyl phthalate | ND | | 380 | ug/kg |
| Dimethyl phthalate | ND | | 380 | ug/kg |
| Fluoranthene | ND | | 380 | ug/kg |
| Fluorene | ND | | 380 | ug/kg |

Percent moisture is 12.2%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG08-02
LAB ID: 131259-0010-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 380 | ug/kg |
| Hexachlorobutadiene | ND | | 380 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1800 | ug/kg |
| Hexachloroethane | ND | | 380 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 380 | ug/kg |
| Isophorone | ND | | 380 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 380 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 380 | ug/kg |
| Naphthalene | ND | | 380 | ug/kg |
| Nitrobenzene | ND | | 380 | ug/kg |
| Pentachlorophenol | ND | | 1800 | ug/kg |
| Phenanthrene | ND | | 380 | ug/kg |
| Pyrene | ND | | 380 | ug/kg |
| Phenol | ND | | 380 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 82 | % | 25 - 121 |
| Phenol-d5 | 73 | % | 24 - 113 |
| Nitrobenzene-d5 | 45 | % | 23 - 120 |
| 2-Fluorobiphenyl | 57 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 72 | % | 19 - 122 |
| Terphenyl-d14 | 89 | % | 18 - 137 |

Percent moisture is 12.2%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG08-03
LAB ID: 131259-0011-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1900 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dichlorophenol | ND | | 390 | ug/kg |
| 2,4-Dimethylphenol | ND | | 390 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1900 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 390 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 390 | ug/kg |
| 2-Chloronaphthalene | ND | | 390 | ug/kg |
| 2-Chlorophenol | ND | | 390 | ug/kg |
| 2-Methylnaphthalene | ND | | 390 | ug/kg |
| 2-Methylphenol | ND | | 390 | ug/kg |
| 2-Nitroaniline | ND | | 1900 | ug/kg |
| 2-Nitrophenol | ND | | 390 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 780 | ug/kg |
| 3-Nitroaniline | ND | | 1900 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1900 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 770 | ug/kg |
| 4-Chloroaniline | ND | | 390 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 390 | ug/kg |
| 4-Methylphenol | ND | | 390 | ug/kg |
| 4-Nitroaniline | ND | | 1900 | ug/kg |
| 4-Nitrophenol | ND | | 1900 | ug/kg |
| Acenaphthene | ND | | 390 | ug/kg |
| Acenaphthylene | ND | | 390 | ug/kg |
| Anthracene | ND | | 390 | ug/kg |
| Benzo(a)anthracene | ND | | 390 | ug/kg |
| Benzo(a)pyrene | ND | | 390 | ug/kg |
| Benzo(b)fluoranthene | ND | | 390 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 390 | ug/kg |
| Benzo(k)fluoranthene | ND | | 390 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 390 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 390 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | 330 | J | 390 | ug/kg |
| Butyl benzyl phthalate | ND | | 390 | ug/kg |
| Carbazole | ND | | 390 | ug/kg |
| Chrysene | ND | | 390 | ug/kg |
| Di-n-butyl phthalate | ND | | 390 | ug/kg |
| Di-n-octyl phthalate | ND | | 390 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 390 | ug/kg |
| Dibenzofuran | ND | | 390 | ug/kg |
| Diethyl phthalate | ND | | 390 | ug/kg |
| Dimethyl phthalate | ND | | 390 | ug/kg |
| Fluoranthene | ND | | 390 | ug/kg |

Percent moisture is 15.4%. All results and limits are reported on a dry weight basis.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG08-03
LAB ID: 131259-0011-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-MA Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluorene | ND | | 390 | ug/kg |
| Hexachlorobenzene | ND | | 390 | ug/kg |
| Hexachlorobutadiene | ND | | 390 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1900 | ug/kg |
| Hexachloroethane | ND | | 390 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 390 | ug/kg |
| Isophorone | ND | | 390 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 390 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 390 | ug/kg |
| Naphthalene | ND | | 390 | ug/kg |
| Nitrobenzene | ND | | 390 | ug/kg |
| Pentachlorophenol | ND | | 1900 | ug/kg |
| Phenanthrene | ND | | 390 | ug/kg |
| Pyrene | ND | | 390 | ug/kg |
| Phenol | ND | | 390 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 95 | % | 25 - 121 |
| Phenol-d5 | 78 | % | 24 - 113 |
| Nitrobenzene-d5 | 60 | % | 23 - 120 |
| 2-Fluorobiphenyl | 56 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 65 | % | 19 - 122 |
| Terphenyl-d14 | 93 | % | 18 - 137 |

Percent moisture is 15.4%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG09-10-W
LAB ID: 131259-0012-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | 2.5 | J | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | 1.0 | J | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | ND | | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | 3.2 | J | 10 | ug/L |
| Dimethyl phthalate | 1.2 | J | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG09-10-W
LAB ID: 131259-0012-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluorene | ND | | 10 | ug/L |
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | 1.1 | J | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 42 | % | 21 - 100 |
| Phenol-d5 | 28 | % | 10 - 94 |
| Nitrobenzene-d5 | 68 | % | 34 - 114 |
| 2-Fluorobiphenyl | 71 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 78 | % | 10 - 123 |
| Terphenyl-d14 | 75 | % | 33 - 141 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG06B-10-W
LAB ID: 131259-0013-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | ND | | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | ND | | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | ND | | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |
| Fluorene | ND | | 10 | ug/L |

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG06B-10-W
LAB ID: 131259-0013-SA
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | ND | | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 39 | % | 21 - 100 |
| Phenol-d5 | 26 | % | 10 - 94 |
| Nitrobenzene-d5 | 70 | % | 34 - 114 |
| 2-Fluorobiphenyl | 71 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 80 | % | 10 - 123 |
| Terphenyl-d14 | 79 | % | 33 - 141 |

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: FB0319
LAB ID: 131259-0014-FB
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | 1.2 | J | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | ND | | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | ND | | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: FB0319
LAB ID: 131259-0014-FB
Matrix: WATER Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluorene | ND | | 10 | ug/L |
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | ND | | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 42 | % | 21 - 100 |
| Phenol-d5 | 27 | % | 10 - 94 |
| Nitrobenzene-d5 | 69 | % | 34 - 114 |
| 2-Fluorobiphenyl | 74 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 77 | % | 10 - 123 |
| Terphenyl-d14 | 82 | % | 33 - 141 |

ND = Not Detected

QC LOT ASSIGNMENT REPORT - MS QC
Semivolatile Organics by GC/MS

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK/LCS) | MS QC Run Number (SA,MS,SD,DU) |
|---|---|---|---|---|---|
| 131259-0001-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0002-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0003-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0004-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0005-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0006-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0007-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0008-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0009-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0010-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0011-SA | SOLID | Q8270-S | | 23 MAR 98-CX | 23 MAR 98-CA |
| 131259-0012-SA | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131259-0013-SA | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131259-0014-FB | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |

METHOD BLANK REPORT
Semivolatile Organics by GC/MS
Project: 131259

Test: Q8270-TCL-L-S Method 8270B - TCL Semivolatile Organics
Matrix: SOLID
QC Run: 23 MAR 98-CX Date Analyzed: 28 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | ug/kg | 1600 |
| 2,4,6-Trichlorophenol | ND | ug/kg | 330 |
| 2,4-Dichlorophenol | ND | ug/kg | 330 |
| 2,4-Dimethylphenol | ND | ug/kg | 330 |
| 2,4-Dinitrophenol | ND | ug/kg | 1600 |
| 2,4-Dinitrotoluene | ND | ug/kg | 330 |
| 2,6-Dinitrotoluene | ND | ug/kg | 330 |
| 2-Chloronaphthalene | ND | ug/kg | 330 |
| 2-Chlorophenol | ND | ug/kg | 330 |
| 2-Methylnaphthalene | ND | ug/kg | 330 |
| 2-Methylphenol | ND | ug/kg | 330 |
| 2-Nitroaniline | ND | ug/kg | 1600 |
| 2-Nitrophenol | ND | ug/kg | 330 |
| 3,3'-Dichlorobenzidine | ND | ug/kg | 660 |
| 3-Nitroaniline | ND | ug/kg | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ug/kg | 1600 |
| 4-Bromophenyl phenyl ether | ND | ug/kg | 330 |
| 4-Chloro-3-methylphenol | ND | ug/kg | 650 |
| 4-Chloroaniline | ND | ug/kg | 330 |
| 4-Chlorophenyl phenyl ether | ND | ug/kg | 330 |
| 4-Methylphenol | ND | ug/kg | 330 |
| 4-Nitroaniline | ND | ug/kg | 1600 |
| 4-Nitrophenol | ND | ug/kg | 1600 |
| Acenaphthene | ND | ug/kg | 330 |
| Acenaphthylene | ND | ug/kg | 330 |
| Anthracene | ND | ug/kg | 330 |
| Benzo(a)anthracene | ND | ug/kg | 330 |
| Benzo(a)pyrene | ND | ug/kg | 330 |
| Benzo(b)fluoranthene | ND | ug/kg | 330 |
| Benzo(g,h,i)perylene | ND | ug/kg | 330 |
| Benzo(k)fluoranthene | ND | ug/kg | 330 |
| bis(2-Chloroethoxy)-methane | ND | ug/kg | 330 |
| bis(2-Chloroethyl) ether | ND | ug/kg | 330 |
| bis(2-Ethylhexyl)-phthalate | ND | ug/kg | 330 |
| Butyl benzyl phthalate | ND | ug/kg | 330 |
| Carbazole | ND | ug/kg | 330 |
| Chrysene | ND | ug/kg | 330 |
| Di-n-butyl phthalate | ND | ug/kg | 330 |
| Di-n-octyl phthalate | ND | ug/kg | 330 |
| Dibenz(a,h)anthracene | ND | ug/kg | 330 |
| Dibenzofuran | ND | ug/kg | 330 |
| Diethyl phthalate | ND | ug/kg | 330 |
| Dimethyl phthalate | ND | ug/kg | 330 |
| Fluoranthene | ND | ug/kg | 330 |
| Fluorene | ND | ug/kg | 330 |
| Hexachlorobenzene | ND | ug/kg | 330 |
| Hexachlorobutadiene | ND | ug/kg | 330 |

ND = Not Detected

METHOD BLANK REPORT (cont.)
Semivolatile Organics by GC/MS
Project: 131259

Test: Q8270-TCL-L-S Method 8270B - TCL Semivolatile Organics (cont.)
Matrix: SOLID
QC Run: 23 MAR 98-CX Date Analyzed: 28 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Hexachlorocyclopentadiene | ND | ug/kg | 1600 |
| Hexachloroethane | ND | ug/kg | 330 |
| Indeno(1,2,3-c,d)pyrene | ND | ug/kg | 330 |
| Isophorone | ND | ug/kg | 330 |
| N-Nitroso-di-n-propylamine | ND | ug/kg | 330 |
| N-Nitrosodiphenylamine | ND | ug/kg | 330 |
| Naphthalene | ND | ug/kg | 330 |
| Nitrobenzene | ND | ug/kg | 330 |
| Pentachlorophenol | ND | ug/kg | 1600 |
| Phenanthrene | ND | ug/kg | 330 |
| Pyrene | ND | ug/kg | 330 |
| Phenol | ND | ug/kg | 330 |

| Surrogate | Recovery | Acceptable Range |
|---|---|---|
| 2-Fluorophenol | 102 | 25 -121 |
| Phenol-d5 | 85 | 24 -113 |
| Nitrobenzene-d5 | 75 | 23 -120 |
| 2-Fluorobiphenyl | 80 | 30 -115 |
| 2,4,6-Tribromophenol | 75 | 19 -122 |
| Terphenyl-d14 | 107 | 18 -137 |

ND = Not Detected

METHOD BLANK REPORT (cont.)
Semivolatile Organics by GC/MS
Project: 131259

Test: Q8270-TCL-3510-A Method SW8270B - TCL Semivolatile Organics
Matrix: AQUEOUS
QC Run: 23 MAR 98-AX Date Analyzed: 27 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | ug/L | 10 |
| 2,4,6-Trichlorophenol | ND | ug/L | 10 |
| 2,4-Dichlorophenol | ND | ug/L | 10 |
| 2,4-Dimethylphenol | ND | ug/L | 10 |
| 2,4-Dinitrophenol | ND | ug/L | 50 |
| 2,4-Dinitrotoluene | ND | ug/L | 10 |
| 2,6-Dinitrotoluene | ND | ug/L | 10 |
| 2-Chloronaphthalene | ND | ug/L | 10 |
| 2-Chlorophenol | ND | ug/L | 10 |
| 2-Methylnaphthalene | ND | ug/L | 10 |
| 2-Methylphenol | ND | ug/L | 10 |
| 2-Nitroaniline | ND | ug/L | 50 |
| 2-Nitrophenol | ND | ug/L | 10 |
| 3,3'-Dichlorobenzidine | ND | ug/L | 50 |
| 3-Nitroaniline | ND | ug/L | 50 |
| 4,6-Dinitro-2-methylphenol | ND | ug/L | 50 |
| 4-Bromophenyl phenyl ether | ND | ug/L | 10 |
| 4-Chloro-3-methylphenol | ND | ug/L | 10 |
| 4-Chloroaniline | ND | ug/L | 10 |
| 4-Chlorophenyl phenyl ether | ND | ug/L | 10 |
| 4-Methylphenol | ND | ug/L | 10 |
| 4-Nitroaniline | ND | ug/L | 50 |
| 4-Nitrophenol | ND | ug/L | 50 |
| Acenaphthene | ND | ug/L | 10 |
| Acenaphthylene | ND | ug/L | 10 |
| Anthracene | ND | ug/L | 10 |
| Benzo(a)anthracene | ND | ug/L | 10 |
| Benzo(a)pyrene | ND | ug/L | 10 |
| Benzo(b)fluoranthene | ND | ug/L | 10 |
| Benzo(g,h,i)perylene | ND | ug/L | 10 |
| Benzo(k)fluoranthene | ND | ug/L | 10 |
| bis(2-Chloroethoxy)-methane | ND | ug/L | 10 |
| bis(2-Chloroethyl) ether | ND | ug/L | 10 |
| bis(2-Ethylhexyl)-phthalate | ND | ug/L | 10 |
| Butyl benzyl phthalate | ND | ug/L | 10 |
| Carbazole | ND | ug/L | 10 |
| Chrysene | ND | ug/L | 10 |
| Di-n-butyl phthalate | ND | ug/L | 10 |
| Di-n-octyl phthalate | ND | ug/L | 10 |
| Dibenz(a,h)anthracene | ND | ug/L | 10 |
| Dibenzofuran | ND | ug/L | 10 |
| Diethyl phthalate | ND | ug/L | 10 |
| Dimethyl phthalate | ND | ug/L | 10 |
| Fluoranthene | ND | ug/L | 10 |
| Fluorene | ND | ug/L | 10 |
| Hexachlorobenzene | ND | ug/L | 1.0 |

ND = Not Detected

METHOD BLANK REPORT (cont.)
Semivolatile Organics by GC/MS
Project: 131259

Test: Q8270-TCL-3510-A Method SW8270B - TCL Semivolatile Organics (cont.)
Matrix: AQUEOUS
QC Run: 23 MAR 98-AX Date Analyzed: 27 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Hexachlorobutadiene | ND | ug/L | 10 |
| Hexachlorocyclopentadiene | ND | ug/L | 50 |
| Hexachloroethane | ND | ug/L | 10 |
| Indeno(1,2,3-c,d)pyrene | ND | ug/L | 10 |
| Isophorone | ND | ug/L | 10 |
| N-Nitroso-di-n-propylamine | ND | ug/L | 10 |
| N-Nitrosodiphenylamine | ND | ug/L | 10 |
| Naphthalene | ND | ug/L | 10 |
| Nitrobenzene | ND | ug/L | 10 |
| Pentachlorophenol | ND | ug/L | 50 |
| Phenanthrene | ND | ug/L | 10 |
| Pyrene | ND | ug/L | 10 |
| Phenol | ND | ug/L | 10 |

| Surrogate | Recovery | Acceptable Range |
|---|---|---|
| 2-Fluorophenol | 61 | 21 -100 |
| Phenol-d5 | 41 | 10 -94 |
| Nitrobenzene-d5 | 89 | 34 -114 |
| 2-Fluorobiphenyl | 89 | 43 -116 |
| 2,4,6-Tribromophenol | 90 | 10 -123 |
| Terphenyl-d14 | 99 | 33 -141 |

ND = Not Detected

LABORATORY CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS
Project: 131259

Category: Q8270-S  Method SW8270 - Acid, Base and Neutrals by GC/MS.
Matrix: SOLID  Date Analyzed: 28 MAR 98
QC Run: 23 MAR 98-CX
Concentration Units: ug/kg

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Phenol | 6670 | 4990 | 75 | 39-115 |
| 2-Chlorophenol | 6670 | 5160 | 77 | 55-108 |
| 1,4-Dichlorobenzene | 3330 | 2890 | 87 | 56-107 |
| N-Nitroso-di-n-propylamine | 3330 | 2800 | 84 | 14-110 |
| 1,2,4-Trichlorobenzene | 3330 | 2710 | 81 | 54-104 |
| 4-Chloro-3-methylphenol | 6670 | 4490 | 67 | 52-120 |
| Acenaphthene | 3330 | 2600 | 78 | 60-114 |
| 4-Nitrophenol | 6670 | 4110 | 62 | 56-142 |
| 2,4-Dinitrotoluene | 3330 | 2840 | 85 | 62-117 |
| Pentachlorophenol | 6670 | 6800 | 102 | 49-132 |
| Pyrene | 3330 | 2760 | 83 | 61-106 |

| Surrogates | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| 2-Fluorophenol | 6670 | 5910 | 89 | 25-121 |
| Phenol-d5 | 6670 | 5310 | 80 | 24-113 |
| Nitrobenzene-d5 | 3330 | 3100 | 93 | 23-120 |
| 2-Fluorobiphenyl | 3330 | 2650 | 80 | 30-115 |
| 2,4,6-Tribromophenol | 6670 | 4960 | 74 | 19-122 |
| Terphenyl-d14 | 3330 | 2720 | 82 | 18-137 |

Category: Q8270-S-A  Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS  Date Analyzed: 27 MAR 98
QC Run: 23 MAR 98-AX
Concentration Units: ug/L

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Phenol | 200 | 72.6 | 36 | 10-96 |
| 2-Chlorophenol | 200 | 141 | 71 | 55-105 |
| 1,4-Dichlorobenzene | 100 | 69.3 | 69 | 56-103 |
| N-Nitroso-di-n-propylamine | 100 | 80.9 | 81 | 58-109 |
| 1,2,4-Trichlorobenzene | 100 | 72.9 | 73 | 55-106 |
| 4-Chloro-3-methylphenol | 200 | 165 | 83 | 67-104 |
| Acenaphthene | 100 | 81.8 | 82 | 63-117 |
| 4-Nitrophenol | 200 | 79.7 | 40 | 10-111 |
| 2,4-Dinitrotoluene | 100 | 93.8 | 94 | 70-110 |
| Pentachlorophenol | 200 | 190 | 95 | 46-133 |
| Pyrene | 100 | 83.6 | 84 | 67-120 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS (cont.)
Project: 131259

| Surrogates | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| 2-Fluorophenol | 200 | 96.2 | 48 | 21-100 |
| Phenol-d5 | 200 | 68.1 | 34 | 10-94 |
| Nitrobenzene-d5 | 100 | 78.1 | 78 | 34-114 |
| 2-Fluorobiphenyl | 100 | 77.1 | 77 | 43-116 |
| 2,4,6-Tribromophenol | 200 | 169 | 85 | 10-123 |
| Terphenyl-d14 | 100 | 77.5 | 78 | 33-141 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC/MS
Project: 131259

Category: Q8270-S Method SW8270 - Acid, Base and Neutrals by GC/MS.
Matrix: SOLID
Sample: 131262-0005
MS Run: 23 MAR 98-CA
Units ug/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| | Concentration | | | | | | | | |
| Phenol | ND | 4580 | 5120 | 6670 | 69 | 77 | 11 | 39-115 | 39 |
| 2-Chlorophenol | ND | 4240 | 4870 | 6670 | 64 | 73 | 14 | 55-108 | 38 |
| N-Nitroso-di-n-propylamine | ND | 2420 | 2660 | 3330 | 73 | 80 | 9.4 | 14-110 | 41 |
| 4-Chloro-3-methylphenol | ND | 4150 | 4710 | 6670 | 62 | 71 | 13 | 52-120 | 23 |
| Acenaphthene | ND | 2530 | 2670 | 3330 | 76 | 80 | 5.4 | 60-114 | 20 |
| 4-Nitrophenol | ND | 4820 | 4670 | 6670 | 72 | 70 | 3.2 | 56-142 | 42 |
| 2,4-Dinitrotoluene | ND | 2910 | 2790 | 3330 | 87 | 84 | 4.2 | 62-117 | 25 |
| Pentachlorophenol | ND | 6520 | 6790 | 6670 | 98 | 102 | 4.1 | 49-132 | 37 |
| Pyrene | ND | 3290 | 2580 | 3330 | 99 | 77 | 24 | 61-106 | 32 |

| Surrogates | Sample %Recovery | %Recovery MS | %Recovery MSD | Acceptance Limit Recovery |
|---|---|---|---|---|
| 2-Fluorophenol | 75 | 74 | 73 | 25-121 |
| Phenol-d5 | 73 | 74 | 74 | 24-113 |
| Nitrobenzene-d5 | 71 | 58 | 76 | 23-120 |
| 2-Fluorobiphenyl | 45 | 58 | 68 | 30-115 |
| 2,4,6-Tribromophenol | 59 | 78 | 70 | 19-122 |
| Terphenyl-d14 | 66 | 86 | 73 | 18-137 |

Category: Q8270-S-A Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS
Sample: 131262-0003
MS Run: 23 MAR 98-AA
Units: ug/L

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| | Concentration | | | | | | | | |
| Phenol | ND | 64.3 | 69.2 | 200 | 32 | 35 | 7.3 | 10-96 | 57 |
| 2-Chlorophenol | ND | 128 | 139 | 200 | 64 | 70 | 8.7 | 55-105 | 37 |
| N-Nitroso-di-n-propylamine | ND | 69.3 | 72.4 | 100 | 69 | 72 | 4.4 | 58-109 | 30 |
| 4-Chloro-3-methylphenol | ND | 148 | 160 | 200 | 74 | 80 | 7.7 | 67-104 | 36 |
| Acenaphthene | ND | 65.6 | 67.3 | 100 | 66 | 67 | 2.5 | 63-117 | 23 |

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC/MS
Project: 131259 (cont.)

Category: Q8270-S-A Acid, Base and Neutrals by GC/MS. (cont.)
Matrix: AQUEOUS
Sample: 131262-0003
MS Run: 23 MAR 98-AA (cont.)
Units: ug/L

| Analyte | Sample Result | Concentration MS Result | | Concentration MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 4-Nitrophenol | ND | 63.4 | | 66.4 | 200 | 32 | 33 | 4.5 | 10-111 | 49 |
| 2,4-Dinitrotoluene | ND | 82.0 | | 85.1 | 100 | 82 | 85 | 3.7 | 70-110 | 30 |
| Pentachlorophenol | ND | 140 | | 162 | 200 | 70 | 81 | 14 | 46-133 | 39 |
| Pyrene | ND | 62.9 | n | 69.1 | 100 | 63 | 69 | 9.4 | 67-120 | 34 |

| Surrogates | Sample %Recovery | %Recovery MS | %Recovery MSD | Acceptance Limi Recovery |
|---|---|---|---|---|
| 2-Fluorophenol | 50 | 42 | 47 | 21-100 |
| Phenol-d5 | 33 | 30 | 33 | 10-94 |
| Nitrobenzene-d5 | 72 | 67 | 70 | 34-114 |
| 2-Fluorobiphenyl | 66 | 60 | 63 | 43-116 |
| 2,4,6-Tribromophenol | 75 | 62 | 72 | 10-123 |
| Terphenyl-d14 | 72 | 58 | 64 | 33-141 |

n = Spiked analyte out of matrix spike acceptance limits; refer to lab control sample results.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

# Metals

METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG09-01
LAB ID: 131259-0001-SA
Matrix: SOIL
Authorized: 20 MAR 98

Sampled: 19 MAR 98
Prepared: See Below

Received: 19 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.51 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 3.2 | q | 1.0 | 0.27 | mg/kg | 7060A | 25 MAR 98 | 26 MAR 98 |
| Barium | 56.4 | B | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.44 | | 1.0 | 0.11 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.23 | J | 1.0 | 0.54 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 26.2 | | 1.0 | 0.54 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 6.3 | | 1.0 | 5.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 14.8 | | 1.0 | 2.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 5.8 | | 1.0 | 0.54 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | ND | | 1.0 | 0.11 | mg/kg | SW7471 | 27 MAR 98 | 30 MAR 98 |
| Molybdenum | 1.5 | J | 1.0 | 4.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 16.4 | | 1.0 | 4.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.54 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.54 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 0.89 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 35.4 | | 1.0 | 5.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 48.5 | | 1.0 | 2.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 7.9%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40 and 85% due to matrix interference.
ND = Not Detected

## METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG09-02
LAB ID: 131259-0002-SA
Matrix: SOIL — Sampled: 19 MAR 98 — Received: 19 MAR 98
Authorized: 20 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.47 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 2.8 | q | 1.0 | 0.29 | mg/kg | 7060A | 25 MAR 98 | 27 MAR 98 |
| Barium | 42.0 | B | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.31 | | 1.0 | 0.12 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.28 | J | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 19.0 | | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 4.7 | J | 1.0 | 5.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 10.4 | | 1.0 | 2.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 3.9 | | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | ND | | 1.0 | 0.12 | mg/kg | SW7471 | 27 MAR 98 | 30 MAR 98 |
| Molybdenum | 1.0 | J | 1.0 | 4.6 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 12.1 | | 1.0 | 4.6 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 0.99 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 26.5 | | 1.0 | 5.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 36.0 | | 1.0 | 2.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 13.8%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40 and 85% due to matrix interference.
ND = Not Detected

METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG05-01
LAB ID: 131259-0007-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.40 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 2.8 | q | 1.0 | 0.29 | mg/kg | 7060A | 25 MAR 98 | 26 MAR 98 |
| Barium | 36.8 | B | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.30 | | 1.0 | 0.12 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.10 | J | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 19.0 | | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 4.1 | J | 1.0 | 5.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 8.8 | | 1.0 | 2.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 3.9 | | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | ND | | 1.0 | 0.12 | mg/kg | SW7471 | 27 MAR 98 | 30 MAR 98 |
| Molybdenum | 1.2 | J | 1.0 | 4.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 11.1 | | 1.0 | 4.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 0.77 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 23.3 | | 1.0 | 5.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 34.7 | | 1.0 | 2.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 14.5%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40 and 85% due to matrix interference.
ND = Not Detected

## METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG05-02
LAB ID: 131259-0008-SA
Matrix: SOIL
Authorized: 20 MAR 98

Sampled: 19 MAR 98
Prepared: See Below

Received: 19 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.40 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 2.4 | | 1.0 | 0.29 | mg/kg | 7060A | 25 MAR 98 | 26 MAR 98 |
| Barium | 12.1 | B | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.10 | J | 1.0 | 0.11 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | ND | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 34.4 | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 1.6 | J | 1.0 | 5.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 2.7 | J | 1.0 | 2.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 0.89 | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | ND | | 1.0 | 0.11 | mg/kg | SW7471 | 27 MAR 98 | 30 MAR 98 |
| Molybdenum | 1.2 | J | 1.0 | 4.6 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 17.3 | | 1.0 | 4.6 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | ND | | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 10.7 | | 1.0 | 5.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 10.8 | | 1.0 | 2.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 13.0%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG08-01
LAB ID: 131259-0009-SA
Matrix: SOIL
Authorized: 20 MAR 98

Sampled: 19 MAR 98
Prepared: See Below

Received: 19 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.40 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 1.4 | | 1.0 | 0.30 | mg/kg | 7060A | 25 MAR 98 | 26 MAR 98 |
| Barium | 35.7 | B | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.27 | | 1.0 | 0.12 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.066 | J | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 21.8 | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 3.7 | J | 1.0 | 5.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 4.5 | | 1.0 | 3.0 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 2.2 | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | ND | | 1.0 | 0.12 | mg/kg | SW7471 | 27 MAR 98 | 30 MAR 98 |
| Molybdenum | 0.50 | J | 1.0 | 4.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 12.2 | | 1.0 | 4.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | ND | | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 20.6 | | 1.0 | 5.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 21.1 | | 1.0 | 2.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 15.5%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG08-02
LAB ID: 131259-0010-SA
Matrix: SOIL
Authorized: 20 MAR 98

Sampled: 19 MAR 98
Prepared: See Below

Received: 19 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.73 | GJ | 2.0 | 2.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 3.4 | p | 5.0 | 1.4 | mg/kg | 7060A | 25 MAR 98 | 27 MAR 98 |
| Barium | 90.7 | GB | 2.0 | 2.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.45 | G | 2.0 | 0.23 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | ND | G | 2.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 22.7 | G | 2.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 8.4 | GJ | 2.0 | 11.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 15.6 | G | 2.0 | 5.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 4.3 | G | 2.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | ND | | 1.0 | 0.11 | mg/kg | SW7471 | 27 MAR 98 | 30 MAR 98 |
| Molybdenum | 0.87 | GJ | 2.0 | 9.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 14.8 | G | 2.0 | 9.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | G | 2.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | G | 2.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 1.4 | GJ | 2.0 | 2.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 42.7 | G | 2.0 | 11.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 58.5 | G | 2.0 | 4.6 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 12.2%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
G = Reporting limit(s) raised due to matrix interference.
J = Result is detected below the reporting limit or is an estimated concentration.
p = Reporting limit was raised due to a dilution necessitated by initial post-digestion spike recovery of less than 40% due to matrix interference.
ND = Not Detected

METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG08-03
LAB ID: 131259-0011-SA
Matrix: SOIL
Authorized: 20 MAR 98

Sampled: 19 MAR 98
Prepared: See Below

Received: 19 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.42 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 1.3 | | 1.0 | 0.30 | mg/kg | 7060A | 25 MAR 98 | 26 MAR 98 |
| Barium | 28.8 | B | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.20 | | 1.0 | 0.12 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | ND | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 20.0 | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 2.7 | J | 1.0 | 5.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 3.8 | | 1.0 | 3.0 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 1.3 | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Mercury | ND | | 1.0 | 0.12 | mg/kg | SW7471 | 27 MAR 98 | 30 MAR 98 |
| Molybdenum | 0.52 | J | 1.0 | 4.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 10.6 | | 1.0 | 4.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | ND | | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 17.2 | | 1.0 | 5.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 18.6 | | 1.0 | 2.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |

Percent moisture is 15.4%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS
(Water - Dissolved)

Client Name: Woodward-Clyde Consultants
Client ID: HG09-10-W
LAB ID: 131259-0012-SA
Matrix: WATER — Sampled: 19 MAR 98 — Received: 19 MAR 98
Authorized: 20 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.0 | 0.060 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Arsenic | 0.022 | J | 1.0 | 0.30 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Barium | 0.045 | J | 1.0 | 0.20 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Beryllium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Cadmium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Chromium | ND | | 1.0 | 0.010 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Cobalt | 0.0068 | J | 1.0 | 0.050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Copper | 0.0065 | J | 1.0 | 0.025 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Lead | ND | | 1.0 | 0.10 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Mercury | ND | | 1.0 | 0.00020 | mg/L | 7470A | 24 MAR 98 | 25 MAR 98 |
| Molybdenum | 0.033 | J | 1.0 | 0.040 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Nickel | 0.028 | J | 1.0 | 0.040 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Selenium | ND | | 1.0 | 0.25 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Silver | ND | | 1.0 | 0.010 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Thallium | 0.084 | J | 1.0 | 2.0 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Vanadium | ND | | 1.0 | 0.050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Zinc | 0.0093 | J | 1.0 | 0.020 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS
(Water - Dissolved)

Client Name: Woodward-Clyde Consultants
Client ID: FB0319
LAB ID: 131259-0014-FB
Matrix: WATER
Authorized: 20 MAR 98

Sampled: 19 MAR 98
Prepared: See Below

Received: 19 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.0 | 0.060 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Arsenic | ND | | 1.0 | 0.30 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Barium | ND | | 1.0 | 0.20 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Beryllium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Cadmium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Chromium | ND | | 1.0 | 0.010 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Cobalt | ND | | 1.0 | 0.050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Copper | ND | | 1.0 | 0.025 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Lead | ND | | 1.0 | 0.10 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Mercury | ND | | 1.0 | 0.00020 | mg/L | 7470A | 24 MAR 98 | 25 MAR 98 |
| Molybdenum | ND | | 1.0 | 0.040 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Nickel | 0.0052 | J | 1.0 | 0.040 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Selenium | ND | | 1.0 | 0.25 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Silver | ND | | 1.0 | 0.010 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Thallium | ND | | 1.0 | 2.0 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Vanadium | ND | | 1.0 | 0.050 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |
| Zinc | ND | | 1.0 | 0.020 | mg/L | 6010A | 26 MAR 98 | 27 MAR 98 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

QC LOT ASSIGNMENT REPORT - MS QC
Metals Analysis and Preparation

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK/LCS) | MS QC Run Number (SA,MS,SD,DU) |
|---|---|---|---|---|---|
| 131259-0001-SA | SOLID | QHG-S | | 27 MAR 98-HX | 27 MAR 98-HA |
| 131259-0002-SA | SOLID | QHG-S | | 27 MAR 98-HX | 27 MAR 98-HA |
| 131259-0007-SA | SOLID | QHG-S | | 27 MAR 98-HX | 27 MAR 98-HA |
| 131259-0008-SA | SOLID | QHG-S | | 27 MAR 98-HX | 27 MAR 98-HA |
| 131259-0009-SA | SOLID | QHG-S | | 27 MAR 98-HX | 27 MAR 98-HA |
| 131259-0010-SA | SOLID | QHG-S | | 27 MAR 98-HX | 27 MAR 98-HA |
| 131259-0011-SA | SOLID | QHG-S | | 27 MAR 98-HX | 27 MAR 98-HA |
| 131259-0001-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131259-0002-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131259-0007-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131259-0008-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131259-0009-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131259-0010-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131259-0011-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131259-0001-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131259-0002-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131259-0007-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131259-0008-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131259-0009-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131259-0010-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131259-0011-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131259-0012-SA | AQUEOUS | QICP-A | | 26 MAR 98-PTX | 26 MAR 98-PA |
| 131259-0014-FB | AQUEOUS | QICP-A | | 26 MAR 98-PTX | 26 MAR 98-PA |
| 131259-0012-SA | AQUEOUS | QHG-A | | 24 MAR 98-JX | 24 MAR 98-JA |
| 131259-0014-FB | AQUEOUS | QHG-A | | 24 MAR 98-JX | 24 MAR 98-JA |

METHOD BLANK REPORT
Metals Analysis and Preparation
Project: 131259

Test: Q-HG-CVAA-S Method SW7471A - Mercury, Cold Vapor AA
Matrix: SOLID
QC Run: 27 MAR 98-HX Date Analyzed: 30 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Mercury | ND | mg/kg | 0.10 |

Test: Q-AS-GFAA-S Method 7060A - Arsenic, Graphite Furnace AA
Matrix: SOLID
QC Run: 25 MAR 98-PX Date Analyzed: 26 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Arsenic | ND | mg/kg | 0.25 |

Test: ICPT-CAM-S Method 6010A - CAM TTLC Metals
Matrix: SOLID
QC Run: 25 MAR 98-BX Date Analyzed: 26 MAR 98

| Analyte | Result | | Units | Reporting Limit |
|---|---|---|---|---|
| Antimony | ND | | mg/kg | 1.0 |
| Barium | 0.11 | J | mg/kg | 1.0 |
| Beryllium | ND | | mg/kg | 0.10 |
| Cadmium | ND | | mg/kg | 0.50 |
| Chromium | ND | | mg/kg | 0.50 |
| Cobalt | ND | | mg/kg | 5.0 |
| Copper | ND | | mg/kg | 2.5 |
| Lead | ND | | mg/kg | 0.50 |
| Molybdenum | ND | | mg/kg | 4.0 |
| Nickel | ND | | mg/kg | 4.0 |
| Selenium | ND | | mg/kg | 0.50 |
| Silver | ND | | mg/kg | 0.50 |
| Thallium | ND | | mg/kg | 1.0 |
| Vanadium | ND | | mg/kg | 5.0 |
| Zinc | ND | | mg/kg | 2.0 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METHOD BLANK REPORT (cont.)
Metals Analysis and Preparation
Project: 131259

Test: Q-ICP-ADD Method 6010A - ICP Metals, Dissolved
Matrix: AQUEOUS
QC Run: 26 MAR 98-PTX Date Analyzed: 27 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Antimony | ND | mg/L | 0.060 |
| Arsenic | ND | mg/L | 0.30 |
| Barium | ND | mg/L | 0.20 |
| Beryllium | ND | mg/L | 0.0050 |
| Cadmium | ND | mg/L | 0.0050 |
| Chromium | ND | mg/L | 0.010 |
| Cobalt | ND | mg/L | 0.050 |
| Copper | ND | mg/L | 0.025 |
| Lead | ND | mg/L | 0.10 |
| Molybdenum | ND | mg/L | 0.040 |
| Nickel | ND | mg/L | 0.040 |
| Selenium | ND | mg/L | 0.25 |
| Silver | ND | mg/L | 0.010 |
| Thallium | ND | mg/L | 2.0 |
| Vanadium | ND | mg/L | 0.050 |
| Zinc | ND | mg/L | 0.020 |

Test: Q-HG-CVAA-AD Method SW7470A - Mercury, Cold Vapor AA, Dissolved
Matrix: AQUEOUS
QC Run: 24 MAR 98-JX Date Analyzed: 25 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Mercury | ND | mg/L | 0.00020 |

ND = Not Detected

LABORATORY CONTROL SAMPLE REPORT
Metals Analysis and Preparation
Project: 131259

Category: QHG-S Mercury by CVAA
Matrix: SOLID
Date Analyzed: 30 MAR 98
QC Run: 27 MAR 98-HX
Concentration Units: mg/kg

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Mercury | 0.833 | 0.845 | 101 | 85-115 |

Category: QAS-GF-S Arsenic, Graphite Furnace AA
Matrix: SOLID
Date Analyzed: 26 MAR 98
QC Run: 25 MAR 98-PX
Concentration Units: mg/kg

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Arsenic | 4.00 | 3.89 | 97 | 80-120 |

Category: ICP-S ICP Metals
Matrix: SOLID
Date Analyzed: 26 MAR 98
QC Run: 25 MAR 98-BX
Concentration Units: mg/kg

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Antimony | 50.0 | 45.9 | 92 | 70-110 |
| Barium | 200 | 209 | 104 | 85-115 |
| Beryllium | 5.00 | 5.41 | 108 | 80-115 |
| Cadmium | 5.00 | 5.22 | 104 | 80-115 |
| Chromium | 20.0 | 21.5 | 107 | 85-120 |
| Cobalt | 50.0 | 51.0 | 102 | 85-120 |
| Copper | 25.0 | 25.4 | 101 | 85-115 |
| Lead | 50.0 | 50.5 | 101 | 80-110 |
| Molybdenum | 100 | 103 | 103 | 80-115 |
| Nickel | 50.0 | 52.5 | 105 | 85-115 |
| Selenium | 200 | 193 | 96 | 70-105 |
| Silver | 5.00 | 4.52 | 90 | 80-110 |
| Thallium | 200 | 193 | 97 | 80-110 |
| Vanadium | 50.0 | 52.2 | 104 | 85-115 |
| Zinc | 50.0 | 52.5 | 105 | 80-115 |

Category: QICP-A Method 6010A - ICP Metals
Matrix: AQUEOUS
Date Analyzed: 27 MAR 98
QC Run: 26 MAR 98-PTX
Concentration Units: mg/L

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)
Project: 131259

Category: QICP-A Method 6010A - ICP Metals
Matrix: AQUEOUS Date Analyzed: 27 MAR 98
QC Run: 26 MAR 98-PTX (cont.)
Concentration Units: mg/L

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Antimony | 0.500 | 0.468 | 94 | 80-115 |
| Arsenic | 2.00 | 2.07 | 103 | 85-115 |
| Barium | 2.00 | 1.96 | 98 | 85-115 |
| Beryllium | 0.0500 | 0.0493 | 99 | 85-120 |
| Cadmium | 0.0500 | 0.0467 | 93 | 80-120 |
| Chromium | 0.200 | 0.198 | 99 | 80-115 |
| Cobalt | 0.500 | 0.491 | 98 | 85-120 |
| Copper | 0.250 | 0.248 | 99 | 85-115 |
| Lead | 0.500 | 0.463 | 93 | 85-120 |
| Molybdenum | 1.00 | 1.01 | 101 | 85-115 |
| Nickel | 0.500 | 0.503 | 101 | 85-115 |
| Selenium | 2.00 | 1.97 | 98 | 85-125 |
| Silver | 0.0500 | 0.0446 | 89 | 85-115 |
| Thallium | 2.00 | 1.80 | 90 | 85-120 |
| Vanadium | 0.500 | 0.500 | 100 | 85-120 |
| Zinc | 0.500 | 0.502 | 100 | 85-120 |

Category: QHG-A Mercury by CVAA
Matrix: AQUEOUS Date Analyzed: 25 MAR 98
QC Run: 24 MAR 98-JX
Concentration Units: mg/L

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Mercury | 0.00500 | 0.00489 | 98 | 85-115 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 131259

Category: QHG-S Mercury by CVAA
Matrix: SOLID
Sample: 131259-0001
MS Run: 27 MAR 98-HA
Units mg/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.173 | 0.180 | 0.167 | 104 | 108 | 4.0 | 85-115 | 20 |

Category: QAS-GF-S Arsenic, Graphite Furnace AA
Matrix: SOLID
Sample: 131259-0001
MS Run: 25 MAR 98-PA
Units mg/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 2.92 | 4.56 | 4.46 n | 2.00 | 82 | 77 | 2.2 | 80-120 | 20 |

Category: ICP-S ICP Metals
Matrix: SOLID
Sample: 131259-0001
MS Run: 25 MAR 98-BA
Units mg/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | 0.470 J | 5.47 n | 4.63 n | 25.0 | 20 | 17 | 17 | 70-110 | 20 |
| Barium | 52.0 | 141 | 139 | 100 | 89 | 87 | 1.6 | 85-115 | 20 |
| Beryllium | 0.406 | 2.79 | 2.75 | 2.50 | 95 | 94 | 1.2 | 80-115 | 20 |
| Cadmium | 0.208 J | 2.51 | 2.50 | 2.50 | 92 | 92 | 0.5 | 80-115 | 20 |
| Chromium | 24.2 | 32.9 | 40.2 n | 10.0 | 87 | 161 | 20 | 85-120 | 20 |
| Cobalt | 5.84 | 28.2 | 28.0 | 25.0 | 89 | 89 | 0.5 | 85-120 | 20 |
| Copper | 13.7 | 23.8 n | 23.9 n | 12.5 | 81 | 82 | 0.3 | 85-115 | 20 |
| Lead | 5.38 | 27.5 | 27.0 | 25.0 | 88 | 87 | 1.7 | 80-110 | 20 |

J = Result is detected below the reporting limit or is an estimated concentration.
n = Spiked analyte out of matrix spike acceptance limits; refer to lab control sample results.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 131259 (cont.)

Category: ICP-S ICP Metals (cont.)
Matrix: SOLID
Sample: 131259-0001
MS Run: 25 MAR 98-BA (cont.)
Units mg/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| | Concentration | | | | | | | | |
| Molybdenum | 1.34 J | 46.3 | 45.8 | 50.0 | 90 | 89 | 1.2 | 80-115 | 20 |
| Nickel | 15.1 | 37.8 | 45.1 n | 25.0 | 91 | 120 | 18 | 85-115 | 20 |
| Selenium | ND | 90.1 | 89.2 | 100 | 90 | 89 | 1.0 | 70-105 | 20 |
| Silver | ND | 2.18 | 2.17 | 2.50 | 87 | 87 | 0.6 | 80-110 | 20 |
| Thallium | 0.819 J | 88.0 | 86.9 | 100 | 87 | 86 | 1.2 | 80-110 | 20 |
| Vanadium | 32.6 | 52.9 n | 55.4 | 25.0 | 81 | 91 | 4.7 | 85-115 | 20 |
| Zinc | 44.7 | 64.2 n | 63.2 n | 25.0 | 78 | 74 | 1.6 | 80-115 | 20 |

Category: QICP-A Method 6010A - ICP Metals
Matrix: AQUEOUS
Sample: 131262-0003
MS Run: 26 MAR 98-PA
Units: mg/L

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| | Concentration | | | | | | | | |
| Antimony | ND | 0.493 | 0.486 | 0.500 | 99 | 97 | 1.4 | 80-115 | 20 |
| Arsenic | ND | 2.10 | 2.07 | 2.00 | 105 | 103 | 1.8 | 85-115 | 20 |
| Barium | 0.0132 J | 1.99 | 1.97 | 2.00 | 99 | 98 | 1.1 | 85-115 | 20 |
| Beryllium | ND | 0.0510 | 0.0500 | 0.0500 | 102 | 100 | 2.1 | 85-120 | 20 |
| Cadmium | ND | 0.0477 | 0.0439 | 0.0500 | 95 | 88 | 8.3 | 80-120 | 20 |
| Chromium | ND | 0.203 | 0.200 | 0.200 | 102 | 100 | 1.5 | 80-115 | 20 |
| Cobalt | ND | 0.493 | 0.487 | 0.500 | 99 | 97 | 1.3 | 85-120 | 20 |
| Copper | ND | 0.254 | 0.251 | 0.250 | 102 | 100 | 1.2 | 85-115 | 20 |
| Lead | ND | 0.474 | 0.460 | 0.500 | 95 | 92 | 3.0 | 80-120 | 20 |
| Molybdenum | 0.0151 J | 1.03 | 1.01 | 1.00 | 101 | 100 | 1.5 | 85-115 | 20 |
| Nickel | ND | 0.507 | 0.505 | 0.500 | 101 | 101 | 0.3 | 85-115 | 20 |
| Selenium | ND | 2.01 | 1.99 | 2.00 | 100 | 99 | 1.1 | 85-125 | 20 |
| Silver | ND | 0.0447 | 0.0460 | 0.0500 | 89 | 92 | 2.8 | 85-115 | 20 |
| Thallium | ND | 1.77 | 1.75 | 2.00 | 88 | 87 | 1.0 | 85-120 | 20 |
| Vanadium | 0.0163 J | 0.522 | 0.512 | 0.500 | 101 | 99 | 1.9 | 85-120 | 20 |
| Zinc | ND | 0.502 | 0.496 | 0.500 | 100 | 99 | 1.1 | 85-120 | 20 |

J = Result is detected below the reporting limit or is an estimated concentration.
n = Spiked analyte out of matrix spike acceptance limits; refer to lab control sample results.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 131259 (cont.)

Category: QHG-A Mercury by CVAA
Matrix: AQUEOUS
Sample: 131262-0003
MS Run: 24 MAR 98-JA
Units: mg/L

| Analyte | Sample Result | Concentration MS Result | Concentration MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.00104 | 0.00104 | 0.00100 | 104 | 104 | 0.0 | 85-115 | 20 |

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

# Moisture

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG09-01
LAB ID: 131259-0001-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 7.9 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

## GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG09-02
LAB ID: 131259-0002-SA
Matrix: SOIL — Sampled: 19 MAR 98 — Received: 19 MAR 98
Authorized: 20 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 14 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG06B-01
LAB ID: 131259-0003-SA
Matrix: SOIL
Authorized: 20 MAR 98

Sampled: 19 MAR 98
Prepared: See Below

Received: 19 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 17 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG06B-02
LAB ID: 131259-0004-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 16 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG06A-01
LAB ID: 131259-0005-SA
Matrix: SOIL
Authorized: 20 MAR 98

Sampled: 19 MAR 98
Prepared: See Below

Received: 19 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 17 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG06A-02
LAB ID: 131259-0006-SA
Matrix: SOIL
Authorized: 20 MAR 98

Sampled: 19 MAR 98
Prepared: See Below

Received: 19 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 11 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG05-01
LAB ID: 131259-0007-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 14 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG05-02
LAB ID: 131259-0008-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 13 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG08-01
LAB ID: 131259-0009-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 16 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG08-02
LAB ID: 131259-0010-SA
Matrix: SOIL
Authorized: 20 MAR 98

Sampled: 19 MAR 98
Prepared: See Below

Received: 19 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 12 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

# ANALYTICAL METHODS SUMMARY

**A8C250182**

| PARAMETER | ANALYTICAL METHOD |
|---|---|
| Total Residue as Percent Solids | MCAWW 160.3 MOD |
| Volatile Organics by GC/MS | SW846 8260A |

**References:**

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

# SAMPLE SUMMARY

**A8C250182**

| WO # | SAMPLE# | CLIENT SAMPLE ID | DATE | TIME |
|---|---|---|---|---|
| CG3DN | 001 | HG09-01 131259-0001 SA | 03/19/98 | 00:0 |
| CG3DQ | 002 | HG09-02 131259-0002 SA | 03/19/98 | 00:0 |
| CG3DR | 003 | HG05-01 131259-0007 SA | 03/19/98 | 00:0 |
| CG3DT | 004 | HG05-02 131259-0008 SA | 03/19/98 | 00:0 |
| CG3DV | 005 | HG08-01 131259-0009 SA | 03/19/98 | 00:0 |
| CG3DW | 006 | HG08-02 131259-0010 SA | 03/19/98 | 00:0 |
| CG3DX | 007 | HG08-03 131259-0011 SA | 03/19/98 | 00:0 |
| CG3E0 | 008 | HG09-10-W 131259-0012 SA | 03/19/98 | 00:0 |
| CG3E1 | 009 | FB0319 131259-0014 FB | 03/19/98 | 00:0 |

**NOTE(S):**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG08-03
LAB ID: 131259-0011-SA
Matrix: SOIL Sampled: 19 MAR 98 Received: 19 MAR 98
Authorized: 20 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 15 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

QC LOT ASSIGNMENT REPORT - MS QC
GC/MS Preparation

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK/LCS) | MS QC Run Number (SA,MS,SD,DU) |
|---|---|---|---|---|---|
| 131259-0001-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131259-0002-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131259-0003-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131259-0004-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131259-0005-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131259-0006-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131259-0007-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131259-0008-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131259-0009-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131259-0010-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |
| 131259-0011-SA | SOLID | MOISTURE-S | | | 23 MAR 98-AA |

MATRIX DUPLICATE QC REPORT
GC/MS Preparation
Project: 131259

Category: MOISTURE-S Method ASTM D2216 - Percent Moisture
Matrix: SOLID
Sample: 131262-0005
MS Run: 23 MAR 98-AA
Units: %

| Analyte | Concentration Sample | Concentration Duplicate | %RPD SA-DU | Acceptance Limit |
|---|---|---|---|---|
| Percent Water | 7.60 | 7.60 | 0.0 | 10 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

# VOCs

Quanterra Incorporated
4101 Shuffel Drive, NW
North Canton, Ohio 44720

330 497-9396 Telephone
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Quanterra
Environmental Services

# ANALYTICAL REPORT

PROJECT NO. 131259

WWC/131259

Lot #: A8C250182

SHARON MEVES

Quanterra Inc - Santa Ana CA L

QUANTERRA INCORPORATED

Alesia M. Danford
Project Manager

April 1, 1998

# CASE NARRATIVE

The following report contains the analytical results for seven solid and two water samples submitted to Quanterra-North Canton by Quanterra-Santa Ana from the WWC/131259 Site, project number 131259. The samples were received March 25, 1998, according to documented sample acceptance procedures.

Quanterra-North Canton utilizes only USEPA approved methods and instrumentation in all analytical work. The samples presented in this report were analyzed for the parameters listed on the method reference page in accordance with the methods indicated.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

The samples were received at the laboratory at a temperature of 3.5° C.

## SUPPLEMENTAL QC INFORMATION

### GC/MS VOLATILES

Sample(s) which contain results between the MDL and the RL are flagged with "J". There is the possibility of false positive or misidentification at these quantitation levels. In analytical methods requiring confirmation of the analyte reported, confirmation will be performed only down to the standard reporting limit (SRL). The acceptance criteria for quality control criteria may not be met at these quantitation levels.

Acid preservation causes 2-Chloroethyl vinyl ether to decompose. When detected, the concentration found will be reported; however, a true reporting limit cannot be reported when the compound is not detected.

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: BG09-01 131259-0001 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-001 Work Order #...: CG3DN102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1
% Moisture.....: 8.7

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

(Continued on next page)

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG09-01 131259-0001 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-001 Work Order #...: CG3DN102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 92 | (61 - 115) |
| Toluene-d8 | 100 | (82 - 129) |
| Bromofluorobenzene | 95 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: BG09-02 131259-0002 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-002 Work Order #...: CG3DQ102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1
% Moisture.....: 13

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG09-02 131259-0002 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-002 Work Order #...: CG3DQ102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 94 | (61 - 115) |
| Toluene-d8 | 101 | (82 - 129) |
| Bromofluorobenzene | 94 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: BG05-01 L31259-0007 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-003 Work Order #...: CG3DR102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1
% Moisture.....: 14

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethane | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

(Continued on next page)

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: BG05-01 131259-0007 SA

GC/MS Volatiles

Lot-Sample #...: ABC250182-003 Work Order #...: CG3DR102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 93 | (61 - 115) |
| Toluene-d8 | 100 | (82 - 129) |
| Bromofluorobenzene | 97 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: BG05-02 131259-0008 SA

GC/MS Volatiles

Lot-Sample #...: ABC250182-004 Work Order #...: CG3DT102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1
% Moisture.....: 11

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG05-02 131259-0008 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-004 Work Order #...: CG3DT102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | (61 - 115) |
| Toluene-d8 | 101 | (82 - 129) |
| Bromofluorobenzene | 95 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: BG08-01 131259-0009 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-005 Work Order #...: CG3DV102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/28/98 Analysis Date..: 03/28/98
Prep Batch #...: 8088132
Dilution Factor: 1
% Moisture.....: 15

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG08-01 131259-0009 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-005 Work Order #...: CG3DV102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | (61 - 115) |
| Toluene-d8 | 101 | (82 - 129) |
| Bromofluorobenzene | 94 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: BG08-02 131259-0010 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-006 Work Order #...: CG3DW102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1
% Moisture.....: 21

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: BG08-02 131259-0010 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-006 Work Order #...: CG3DW102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | (61 - 115) |
| Toluene-d8 | 102 | (82 - 129) |
| Bromofluorobenzene | 97 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG08-03 131259-0011 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-007 Work Order #...: CG3DX102 Matrix.....: SOLID
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1
% Moisture.....: 12

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG08-03 131259-0011 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-007 Work Order #...: CG3DX102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 94 | (61 - 115) |
| Toluene-d8 | 102 | (82 - 129) |
| Bromofluorobenzene | 98 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG09-10-W 131259-0012 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-008 Work Order #...: CG3E0101 Matrix.....: WATER
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/29/98 Analysis Date..: 03/29/98
Prep Batch #...: 8088147
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | 13 | 10 | ug/L | SW846 8260A |
| Benzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | 7.0 J | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | 0.29 J | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | 0.18 J | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | 0.19 J | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG09-10-W 131259-0012 SA

GC/MS Volatiles

Lot-Sample #...: A8C250182-008 Work Order #...: CG3E0101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | 0.30 J | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | 0.086 J | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 87 | (69 - 127) |
| Toluene-d8 | 98 | (90 - 112) |
| Bromofluorobenzene | 100 | (87 - 114) |

NOTE(S):

J Estimated result. Result is less than RL.

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: FB0319 131259-0014 FB

GC/MS Volatiles

Lot-Sample #...: A8C250182-009 Work Order #...: CG3E1101 Matrix.:.....: WATER
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/29/98 Analysis Date..: 03/29/98
Prep Batch #...: 8088147
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 10 | ug/L | SW846 8260A |
| Benzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: FB0319 131259-0014 FB

GC/MS Volatiles

Lot-Sample #...: A8C250182-009 Work Order #...: CG3E1101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | (69 - 127) |
| Toluene-d8 | 95 | (90 - 112) |
| Bromofluorobenzene | 99 | (87 - 114) |

# QUALITY CONTROL SECTION

## QUALITY CONTROL ELEMENTS OF SW-846 METHODS

Quanterra® Incorporated conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data.

### QC BATCH

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. Quanterra requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples. These QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

### LABORATORY CONTROL SAMPLE

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. Failure to meet the established recovery guidelines requires the repreparation and reanalysis of all samples in the QC batch. The only exception is that if the LCS recoveries are biased high and the associated sample is ND for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). Failure of the RPDs to fall within the laboratory-generated acceptance windows requires the repreparation and reanalysis of all samples in the QC batch. The only exception is that if the MS/MSD RPDs are within acceptance criteria, the batch is acceptable.

### METHOD BLANK

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except for the common laboratory contaminants indicated below.

| Volatile (GC or GC/MS) | Semivolatile (GC/MS) | Metals |
|---|---|---|
| Methylene chloride | Phthalate Esters | Copper |
| Acetone | | Iron |
| 2-Butanone | | Zinc |
| | | Lead* |

** for analyses run on TJA Trace ICP or GFAA only*

## QUALITY CONTROL ELEMENTS OF SW-846 METHODS (continued)

**METHOD BLANK (continued)**
The listed volatile and semivolatile compounds may be present in concentrations up to 5 times the reporting limits. The listed metals may be present in concentrations up to 2 times the reporting limit or must be twenty fold less than the results of the environmental samples. Failure to meet these Method Blank criteria requires the repreparation and reanalysis of all samples in the QC batch.

**MATRIX SPIKE/MATRIX SPIKE DUPLICATE**
A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. When these values fail to meet acceptance criteria, the data is reviewed to determine the cause. If, in the analyst's judgment, sample matrix effects are indicated, no corrective action is performed. Otherwise, the MS/MSD and the environmental sample used to prepare them are reprepared and reanalyzed.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch.

**SURROGATE COMPOUNDS**
In addition to these batch-related QC indicators, each organic environmental and QC sample are spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

The acceptance criteria do not apply to samples that are diluted. If the dilution is more than 5X, the recoveries will be reported as diluted out. All other surrogate recoveries will be reported. If the LCS, LCSD, or the Method Blank surrogates fail to meet recovery criteria (exception for dilutions), the entire batch of samples is reprepared and reanalyzed.

If the surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank and the associated sample(s) are ND, the batch is acceptable. If the surrogate recoveries are outside criteria for environmental or MS/MSD samples, the batch may be acceptable based on the analyst's judgment that sample matrix effects are indicated.

For the GC/MS BNA methods, the surrogate criteria is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide/PCB, PAH, TPH, and Herbicide methods, the surrogate criteria is that one of two surrogate compounds meet acceptance criteria.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C250182 Work Order #...: CG5EN102 Matrix.....: SOLID
LCS Lot-Sample#: A8C280000-123
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| 1,1-Dichloroethene | 105 | (60 - 119) | SW846 8260A |
| Trichloroethene | 95 | (74 - 115) | SW846 8260A |
| Chlorobenzene | 98 | (85 - 116) | SW846 8260A |
| Toluene | 102 | (87 - 118) | SW846 8260A |
| Benzene | 105 | (83 - 118) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 86 | (61 - 115) |
| Toluene-d8 | 101 | (82 - 129) |
| Bromofluorobenzene | 98 | (64 - 112) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C250182 Work Order #...: CG5MD102 Matrix.....: SOLID
LCS Lot-Sample#: A8C290000-132
Prep Date.....: 03/28/98 Analysis Date..: 03/28/98
Prep Batch #...: 8088132
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| 1,1-Dichloroethene | 97 | (60 - 119) | SW846 8260A |
| Trichloroethene | 97 | (74 - 115) | SW846 8260A |
| Chlorobenzene | 98 | (85 - 116) | SW846 8260A |
| Toluene | 97 | (87 - 118) | SW846 8260A |
| Benzene | 99 | (83 - 118) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 94 | (61 - 115) |
| Toluene-d8 | 98 | (82 - 129) |
| Bromofluorobenzene | 95 | (64 - 112) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C250182 Work Order #...: CG5MX102 Matrix.....: WATER
LCS Lot-Sample#: A8C290000-147
Prep Date.....: 03/29/98 Analysis Date..: 03/29/98
Prep Batch #...: 8088147
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| 1,1-Dichloroethene | 106 | (87 - 113) | SW846 8260A |
| Trichloroethene | 100 | (89 - 115) | SW846 8260A |
| Chlorobenzene | 93 | (89 - 119) | SW846 8260A |
| Toluene | 92 | (81 - 117) | SW846 8260A |
| Benzene | 98 | (77 - 126) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 87 | (69 - 127) |
| Toluene-d8 | 97 | (90 - 112) |
| Bromofluorobenzene | 99 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C250182 Work Order #...: CG5EN101 Matrix.....: SOLID
MB Lot-Sample #: A8C280000-123

Prep Date.....: 03/27/98
Analysis Date..: 03/27/98 Prep Batch #...: 8087123
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C250182 Work Order #...: CG5EN101 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 85 | (61 - 115) |
| Toluene-d8 | 100 | (82 - 129) |
| Bromofluorobenzene | 96 | (64 - 112) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C250182
MB Lot-Sample #: A8C290000-132

Work Order #...: CG5MD101

Matrix.....: SOLID

Prep Date.....: 03/28/98
Prep Batch #...: 8088132

Analysis Date..: 03/28/98
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C250182 Work Order #...: CG5MD101 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 93 | (61 - 115) |
| Toluene-d8 | 97 | (82 - 129) |
| Bromofluorobenzene | 94 | (64 - 112) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## CASE NARRATIVE

## QUANTERRA INCORPORATED PROJECT NUMBER 131273

All applicable internal quality control analyses including calibrations and calibration verifications, calibration (instrument) and method blanks, laboratory control samples (LCS), matrix spikes (MS) and matrix spike duplicates (MSD), and other QC met method-specified acceptance criteria. Any matrix-related anomalies are indicated using footnotes within the report. Any other anomalies are reported within the narrative.

**General:** MS/MSD analyses were performed on aqueous samples as designated on the COC (with the exception of TVPH and TEPH, for which no QC analyses were performed, as discussed with Woodward Clyde personnel). MS/MSD analyses for soil samples were performed as sample volume allowed. (Only 2 small sleeves were submitted to the laboratory. One sleeve was shipped to the Quanterra-North Canton facility for volatiles analysis, so only one sleeve was available for the remaining analyses. Volume concerns were discussed with Woodward Clyde personnel immediately after the first sample shipment arrived.) Where MS/MSD analyses could not be performed, duplicate laboratory control standards were reported.

Sample HG08-11-W was received, but was not listed on the COC. Partha Bora was informed of the anomaly on 3/23/98. The sample was logged for TEPH analysis per the sample label.

The field blank was identified as sample FB0320 on the COC; the sample was identified as FB0301-W on the label. The sample was logged per the label ID.

**PCBs:** The recoveries of decachlorobiphenyl in samples HG06A-10-W and FB03201-W were outside control limits. The recoveries of tetrachloro-m-xylene were within control for these samples, meeting method criteria, therefore, no corrective action was taken.

**SVOCs:** Samples HG19-01 and HG19-02 were analyzed diluted due to matrix interferences. Reporting limits are elevated accordingly.

The recovery of pyrene in the MS analysis of MS Run 23 MAR 98-AA was slightly low. The recovery of this compound in the associated LCS was acceptable, therefore, no corrective action was taken.

**Metals:** All samples requiring ICP and ICP Trace analysis were analyzed by method 6010B, the newly promulgated version of the ICP method in SW846, rather than method 6010A, as specified in the PRG tables.

The recoveries of arsenic in MS Run 25 MAR 98-PA, and the recoveries of antimony, chromium, copper, nickel, vanadium and zinc in MS Run 27 MAR 98-AA were outside control limits. The recoveries of these metals in the associated LCSs were acceptable, therefore, matrix interference is suspected, and no corrective action was taken.

## CASE NARRATIVE

## QUANTERRA INCORPORATED PROJECT NUMBER 131273

**VOCs:** Analyses were performed by the Quanterra-North Canton facility. Please refer to the attached report.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C250182 Work Order #...: CG5MX101 Matrix.....: WATER
MB Lot-Sample #: A8C290000-147

Prep Date.....: 03/29/98
Analysis Date..: 03/29/98 Prep Batch #...: 8088147
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 10 | ug/L | SW846 8260A |
| Benzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C250182 Work Order #...: CG5MX101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 88 | (69 - 127) |
| Toluene-d8 | 98 | (90 - 112) |
| Bromofluorobenzene | 97 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C250182 Work Order #...: CG3DN103-MS Matrix.....: SOLID
MS Lot-Sample #: A8C250182-001 CG3DN104-MSD
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1 % Moisture.....: 8.7

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| Benzene | 103 | (78 - 117) | | | SW846 8260A |
| | 99 | (78 - 117) | 4.8 | (0-17) | SW846 8260A |
| Chlorobenzene | 103 | (81 - 115) | | | SW846 8260A |
| | 95 | (81 - 115) | 7.7 | (0-18) | SW846 8260A |
| 1,1-Dichloroethene | 103 | (75 - 113) | | | SW846 8260A |
| | 102 | (75 - 113) | 0.97 | (0-20) | SW846 8260A |
| Toluene | 101 | (78 - 126) | | | SW846 8260A |
| | 95 | (78 - 126) | 5.9 | (0-24) | SW846 8260A |
| Trichloroethene | 98 | (71 - 110) | | | SW846 8260A |
| | 92 | (71 - 110) | 6.6 | (0-22) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 94 | (61 - 115) |
| | 94 | (61 - 115) |
| Toluene-d8 | 100 | (82 - 129) |
| | 100 | (82 - 129) |
| Bromofluorobenzene | 95 | (64 - 112) |
| | 95 | (64 - 112) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C250182 Work Order #...: CG3E0102-MS Matrix.....: WATER
MS Lot-Sample #: A8C250182-008 CG3E0103-MSD
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/29/98 Analysis Date..: 03/29/98
Prep Batch #...: 8088147
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| Benzene | 99 | (78 - 117) | | | SW846 8260A |
| | 97 | (78 - 117) | 1.7 | (0-17) | SW846 8260A |
| Chlorobenzene | 93 | (81 - 115) | | | SW846 8260A |
| | 94 | (81 - 115) | 1.4 | (0-18) | SW846 8260A |
| 1,1-Dichloroethene | 108 | (75 - 113) | | | SW846 8260A |
| | 106 | (75 - 113) | 2.4 | (0-20) | SW846 8260A |
| Toluene | 93 | (78 - 126) | | | SW846 8260A |
| | 93 | (78 - 126) | 0.51 | (0-24) | SW846 8260A |
| Trichloroethene | 98 | (71 - 110) | | | SW846 8260A |
| | 98 | (71 - 110) | 0.65 | (0-22) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 94 | (69 - 127) |
| | 87 | (69 - 127) |
| Toluene-d8 | 96 | (90 - 112) |
| | 98 | (90 - 112) |
| Bromofluorobenzene | 98 | (87 - 114) |
| | 99 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C250182 Work Order #...: CG3E2103-MS Matrix.....: SOLID
MS Lot-Sample #: A8C250183-001 CG3E2104-MSD
Date Sampled...: 03/20/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/28/98 Analysis Date..: 03/28/98
Prep Batch #...: 8088132
Dilution Factor: 1 % Moisture.....: 4.1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 98 | (75 - 113) | | | SW846 8260A |
| | 102 | (75 - 113) | 3.5 | (0-20) | SW846 8260A |
| Trichloroethene | 95 | (71 - 110) | | | SW846 8260A |
| | 95 | (71 - 110) | 0.49 | (0-22) | SW846 8260A |
| Chlorobenzene | 96 | (81 - 115) | | | SW846 8260A |
| | 97 | (81 - 115) | 0.65 | (0-18) | SW846 8260A |
| Toluene | 95 | (78 - 126) | | | SW846 8260A |
| | 97 | (78 - 126) | 1.7 | (0-24) | SW846 8260A |
| Benzene | 99 | (78 - 117) | | | SW846 8260A |
| | 98 | (78 - 117) | 0.54 | (0-17) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 101 | (61 - 115) |
| | 100 | (61 - 115) |
| Toluene-d8 | 100 | (82 - 129) |
| | 99 | (82 - 129) |
| Bromofluorobenzene | 95 | (64 - 112) |
| | 95 | (64 - 112) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

# CHAIN-OF-CUSTODY

PROJECT NAME: WWC
PO NUMBER: 131259
PROJECT MANAGER: Sharon Meves

**QUANTERRA** ENVIRONMENTAL SERVICES
1721 South Grand Avenue
Santa Ana, CA 92705
Phone #: (714) 258-8610

DUE: 01 APR 98
TO: QES, NORTH CANTON
4101 Shuffel Drive N.W.
North Canton, OH 44720

| SAMPLE DESCRIPTION | LAB ID | DATE | TIME | MATRIX | CONTAINERS | ANALYSES: 8260 (SW8260A) | | | | | | | | | REMARKS/ SPCL INSTR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG09-01 | 131259-0001 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG09-02 | 131259-0002 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG05-01 | 131259-0007 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG05-02 | 131259-0008 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG08-01 | 131259-0009 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG08-02 | 131259-0010 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG08-03 | 131259-0011 SA | 19 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG09-10-W | 131259-0012 SA | 19 MAR 98 | | WATER | | X | | | | | | | | | |
| FB0319 | 131259-0014 FB | 19 MAR 98 | | WATER | | X | | | | | | | | | |

| | SIGNATURE | PRINT NAME | COMPANY/TITLE | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | [signature] | Steve Shaver | Quanterra | 3/24/98 | 1600 |
| Received by: | [signature] | Kim Humms | QES N.C. | 3/25/98 | 10:00 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

Comments:

QA373 4/96 CMD

Quanterra Incorporated
1721 South Grand Avenue
Santa Ana, California 92705

714 258-8610 Telephone
714 258-0921 Fax

Quanterra
Environmental Services

April 3, 1998

QUANTERRA INCORPORATED PROJECT NUMBER: 131273
PO/CONTRACT: 97SB044

Partha Bora
Woodward-Clyde Consultants
2020 E. First Street
Santa Ana, CA 92705

Dear Mr. Bora,

This report contains PARTIAL analytical results for the fourteen samples received under chain of custody by Quanterra Incorporated on March 23, 1998. These samples are associated with your AES, Huntington Beach project. The TEPH results will be forwarded under separate package. Disks for the project will be submitted with the TEPH data.

The case narrative is an integral part of this report.

Preliminary results were sent via facsimile on March 31, 1998 for metals and PCBs.

If you have any questions, please feel free to call me at (714) 258-8610.

Sincerely,

Sharon Meves
Project Manager

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## QUANTERRA INCORPORATED PROJECT NUMBER 131273


Case Narrative

Quanterra's Quality Assurance Program

Chain of Custody Documentation

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- Sample Data Sheets
- Method Blank Reports
- Laboratory QC Reports

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- Laboratory QC Reports

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- Laboratory QC Reports

VOCs
Sample(s): 1-5, 7-13
- Sample Data Sheets
- Method Blank Reports
- Laboratory QC Reports

*Quanterra Environmental Services - Western Region*

# Quality Control Definitions

| QC Parameter | Definition |
|---|---|
| QC Batch | A set of up to 20 field samples plus associated laboratory QC samples that are similar in composition (matrix) and that are processed within the same time period with the same reagent and standard lots. |
| Duplicate Control Sample (DCS) | Consist of a pair of LCSs analyzed within the same QC batch to monitor precision and accuracy independent of sample matrix effects. This QC is performed only if required by client or when insufficient sample is available to perform MS/MSD. |
| Duplicate Sample (DU) | A second aliquot of an environmental sample, taken from the same sample container when possible, that is processed independently with the first sample aliquot. The results are used to assess the effect of the sample matrix on the precision of the analytical process. The precision estimated using this sample is not necessarily representative of the precision for other samples in the batch. |
| Laboratory Control Sample (LCS) | A volume of reagent water for aqueous samples or a contaminant-free solid matrix (Ottawa sand) for soil and sediment samples which is spiked with known amounts of representative target analytes and required surrogates. An LCS is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects. |
| Matrix Spike and Matrix Spike Duplicate (MS/MSD) | A field sample fortified with known quantities of target analytes that are also added to the LCS. Matrix spike duplicate is a second matrix spike sample. MSs/MSDs are carried through the entire analytical process and are used to determine sample matrix effect on accuracy of the measurement system. The accuracy and precision estimated using MS/MSD is only representative of the precision of the sample that was spiked. |
| Method Blank (MB) | A sample composed of all the reagents (in the same quantities) in reagent water carried through the entire analytical process. The method blank is used to monitor the level of contamination introduced during sample preparation steps. |
| Surrogate Spike | Organic constituents not expected to be detected in environmental media and are added to every sample and QC at a known concentration. Surrogates are used to determine the efficiency of the sample preparation and the analytical process. |

Source: Quanterra® Quality Control Program, Policy QA-003, Rev. 0, 8/19/96.

**Woodward-Clyde Consultants**

SHIPMENT NO.: 5

PAGE ____ OF ____

DATE 3/20/98

## CHAIN OF CUSTODY RECORD

PROJECT NAME: AES

PROJECT NO.: 97560044

| | Sample Number | Location | Type of Sample: Material | Type of Sample: Method | Type of Container | Type of Preservation: Temp | Type of Preservation: Chemical | Analysis Required* |
|---|---|---|---|---|---|---|---|---|
| 1A | HG19-01 | HG19 | SOIL | PUSH | 2 SS liners | ICED | NONE | metals |
| | | | | | | | | TPH-d |
| | | | | | | | | VOCs |
| | | | | | | | | SVOCs |
| 2A | HG19-02 | HG19 | SOIL | PUSH | 2 SS liners | ICED | NONE | metals |
| | | | | | | | | TPH-d |
| | | | | | | | | VOCs |
| | | | | | | | | SVOCs |
| 3A | HG19-03 | HG19 | SOIL | PUSH | 2 SS liners | ICED | NONE | metals |
| | | | | | | | | TPH-d |
| | | | | | | | | VOCs |
| | | | | | | | | SVOCs |
| 4A | HG20-01 | HG20 | SOIL | PUSH | 2 SS liners | ICED | NONE | metals |
| | | | | | | | | TPH-d |
| | | | | | | | | VOCs |
| | | | | | | | | SVOCs |
| 5A | HG20-02 | HG20 | SOIL | PUSH | 2 SS liners | ICED | NONE | metals |
| | | | | | | | | TPH-d |
| | | | | | | | | VOCs |
| | | | | | | | | SVOCs |

Total Number of Samples Shipped: 5 | Sampler's Signature: [signature]

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: [signature] | Signature: [signature] | Date: 3/20/98 |
| Printed Name: ARTHUR KELLY | Printed Name: R. MARTIN | Time: 1700 |
| Company: WOODWARD-CLYDE | Company: [illegible] | |
| Reason: SHIP TO LAB FOR ANALYSIS | | |
| Relinquished By: | Received By: | Date / Time |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |
| Relinquished By: | Received By: | Date / Time |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |
| Relinquished By: | Received By: | Date / Time |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |

Special Shipment / Handling / Storage Requirements:

Questions - call Partha Bora @ 714-835-6886

* Note — This does not constitute authorization to proceed with analysis

**Woodward-Clyde Consultants**

SHIPMENT NO.: 5

## CHAIN OF CUSTODY RECORD

PAGE ____ OF ____

DATE 3 20 98

PROJECT NAME: AES

PROJECT NO.: 97360044

| | Sample Number | Location | Type of Sample: Material | Type of Sample: Method | Type of Container | Type of Preservation: Temp | Type of Preservation: Chemical | Analysis Required* |
|---|---|---|---|---|---|---|---|---|
| 1 | HG06A-10-W | HG06A | $H_2O$ | GRAB | 1L amberglass | ICED | NONE | TPH-d |
| | | | | | 2(1L) amberglass | | NONE | SVOCs |
| | | | | | 1L amberglass | | NONE | PCBs |
| 2 B | HG5B-10-W | ~~HG06A~~ HG5B | $H_2O$ | GRAB | 500ml poly | ICED | NONE | metals |
| | | | | | 1L amberglass | | NONE | TPH-d |
| | | | | | 3(40ml) vials | | HCL | VOCs |
| | | | | | 2(1L) amberglass | | NONE | SVOCs |
| 3 B | HG5B-11-W | HG5B | $H_2O$ | GRAB | 500ml poly | ICED | NONE | metals |
| | | | | | 1L amberglass | | NONE | TPH-d |
| | | | | | 3(40ml) vials | | HCL | VOCs |
| | | | | | 1L amberglass | | NONE | SVOCs |
| 4 | HG08-10-W | HG08 | $H_2O$ | GRAB | 1L amberglass | ICED | NONE | TPH-d |
| | | | | | 3(40ml) vials | | HCL | VOCs |
| | | | | | 2(1L) amberglass | | NONE | SVOCs |
| 5 B | HG19-10-W | HG19 | $H_2O$ | GRAB | 500ml poly | ICED | NONE | metals |
| | | | | | 1L amberglass | | NONE | TPH-d |
| | | | | | 3(40ml) vials | | HCL | VOCs |
| | | | | | 2(1L) amberglass | | NONE | SVOCs |

Total Number of Samples Shipped: 5 | Sampler's Signature: [signature]

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: [signature] | Signature: [signature] | Date: 3/20/98 |
| Printed Name: [illegible] | Printed Name: [illegible] | Time: 1700 |
| Company: Woodward Clyde | Company: [illegible] | |
| Reason: Ship to lab for analysis | | |
| Relinquished By: | Received By: | Date / Time |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |
| Relinquished By: | Received By: | Date / Time |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |
| Relinquished By: | Received By: | Date / Time |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |

Special Shipment / Handling / Storage Requirements:

Metal analysis filter 1st then present.
Questions? - Call Partha Bora @ 714-835-6886

* Note — This does not constitute authorization to proceed with analysis

**Woodward-Clyde Consultants**

SHIPMENT NO.: 5

## CHAIN OF CUSTODY RECORD

PAGE ____ OF ____

DATE 3/20/98

PROJECT NAME: AES

PROJECT NO.: 97sh044

| Sample Number | Location | Type of Sample: Material | Type of Sample: Method | Type of Container | Type of Preservation: Temp | Type of Preservation: Chemical | Analysis Required * |
|---|---|---|---|---|---|---|---|
| HG20-10-W | HG20 | $H_2O$ | GRAB | 500ml poly | ICED | NONE | metals |
| | | | " | 1L amber glass | " | NONE | TPH-d |
| | | | " | 3(40ml) vials | " | HCL | VOCs |
| | | | " | 2(1L) amber glass | " | NONE | SVOCs |
| HG20-11-W | HG20 | $H_2O$ | GRAB | 500ml poly | " | NONE | metals |
| | | | " | 1L amber glass | " | NONE | TPH-d |
| | | | " | 3(40ml) vials | " | HCL | VOCs |
| | | | " | 2(1L) amber glass | " | NONE | SVOCs |

END OF RECORD

Total Number of Samples Shipped: 2 | Sampler's Signature: [signature]

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: [signature] | Signature: [signature] | Date: 3/20/98 |
| Printed Name: [illegible] | Printed Name: [illegible] | Time: 1700 |
| Company: Woodward Clyde | Company: [illegible] | |
| Reason: Ship to lab for analysis | | |

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |

Special Shipment / Handling / Storage Requirements:

For metal analysis filter 1st then preserve
Questions? - Call Partha Bora @ 714-835-6886

* Note – This does not constitute authorization to proceed with analysis

**Woodward-Clyde Consultants**

SHIPMENT NO.: 5

CHAIN OF CUSTODY RECORD

PAGE ____ OF ____

DATE 3/20/98

PROJECT NAME: AES

PROJECT NO.: 9786044

| Sample Number | Location | Type of Sample: Material | Type of Sample: Method | Type of Container | Type of Preservation: Temp | Type of Preservation: Chemical | Analysis Required* |
|---|---|---|---|---|---|---|---|
| FB0320 | — | $H_2O$ | GRAB | 500ml poly | ICED | NONE | METALS |
| | | | | 1L amberglass | | NONE | TPH-d |
| | | | | 3/40ml vials | | ~~NONE~~ TOL | VOCs |
| | | | | 2/1L amberglass | | NONE | SVOCs |
| | | | | 1L amberglass | | NONE | PCBs |
| 46-08-11-10 | — | $H_2O$ | | | | | TPH-D |

Total Number of Samples Shipped: 2 Sampler's Signature: [signature]

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: [signature] | Signature: [signature] | Date: 3/20/98 |
| Printed Name: Anthonia King | Printed Name: R. MARTIN | Time: 1700 |
| Company: WCC | Company: [illegible] | |
| Reason: Ship to lab for analysis | | |
| Relinquished By: | Received By: | Date / / |
| Signature: | Signature: | Time |
| Printed Name: | Printed Name: | |
| Company: | Company: | |
| Reason: | | |
| Relinquished By: | Received By: | Date / / |
| Signature: | Signature: | Time |
| Printed Name: | Printed Name: | |
| Company: | Company: | |
| Reason: | | |
| Relinquished By: | Received By: | Date / / |
| Signature: | Signature: | Time |
| Printed Name: | Printed Name: | |
| Company: | Company: | |
| Reason: | | |

Special Shipment / Handling / Storage Requirements: Questions call Partha Bera @ 714-835-6886, Metals filter first then preserve

* Note — This does not constitute authorization to proceed with analysis

SAMPLE DESCRIPTION INFORMATION
for
Woodward-Clyde Consultants

| Lab ID | Client ID | Matrix | Sampled Date | Sampled Time | Received Date |
|---|---|---|---|---|---|
| 131273-0001-SA | HG19-01 | SOIL | 20 MAR 98 | | 20 MAR 98 |
| 131273-0002-SA | HG19-02 | SOIL | 20 MAR 98 | | 20 MAR 98 |
| 131273-0003-SA | HG19-03 | SOIL | 20 MAR 98 | | 20 MAR 98 |
| 131273-0004-SA | HG20-01 | SOIL | 20 MAR 98 | | 20 MAR 98 |
| 131273-0005-SA | HG20-02 | SOIL | 20 MAR 98 | | 20 MAR 98 |
| 131273-0006-SA | HG06A-10-W | WATER | 20 MAR 98 | | 20 MAR 98 |
| 131273-0007-SA | HG5B-10-W | WATER | 20 MAR 98 | | 20 MAR 98 |
| 131273-0008-SA | HG5B-11-W | WATER | 20 MAR 98 | | 20 MAR 98 |
| 131273-0009-SA | HG08-10-W | WATER | 20 MAR 98 | | 20 MAR 98 |
| 131273-0010-SA | HG19-10-W | WATER | 20 MAR 98 | | 20 MAR 98 |
| 131273-0011-SA | HG20-10-W | WATER | 20 MAR 98 | | 20 MAR 98 |
| 131273-0012-SA | HG20-11-W | WATER | 20 MAR 98 | | 20 MAR 98 |
| 131273-0013-FB | FB03201-W | WATER | 20 MAR 98 | | 20 MAR 98 |
| 131273-0014-SA | HG08-11-W | WATER | 20 MAR 98 | | 20 MAR 98 |

# PCBs

Polychlorinated Biphenyls
Method 8081

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG06A-10-W | | |
| LAB ID: | 131273-0006-SA | | |
| Matrix: | WATER | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 25 MAR 98 |
| Instrument: | GC/ECD-PXA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Aroclor 1016 | ND | | 1.0 | ug/L |
| Aroclor 1221 | ND | | 1.0 | ug/L |
| Aroclor 1232 | ND | | 1.0 | ug/L |
| Aroclor 1242 | ND | | 1.0 | ug/L |
| Aroclor 1248 | ND | | 1.0 | ug/L |
| Aroclor 1254 | ND | | 1.0 | ug/L |
| Aroclor 1260 | ND | | 1.0 | ug/L |

| Surrogate | Recovery | | Acceptable Range | |
|---|---|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 82 | % | 60 - 150 | |
| Decachlorobiphenyl | 42 | % | 60 - 150 | I |

I = Surrogate recovery outside of limits due to sample matrix interference.
ND = Not Detected

Polychlorinated Biphenyls
Method 8081

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | FB03201-W | | |
| LAB ID: | 131273-0013-FB | | |
| Matrix: | WATER | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 24 MAR 98 | Analyzed: 25 MAR 98 |
| Instrument: | GC/ECD-PXA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Aroclor 1016 | ND | | 1.0 | ug/L |
| Aroclor 1221 | ND | | 1.0 | ug/L |
| Aroclor 1232 | ND | | 1.0 | ug/L |
| Aroclor 1242 | ND | | 1.0 | ug/L |
| Aroclor 1248 | ND | | 1.0 | ug/L |
| Aroclor 1254 | ND | | 1.0 | ug/L |
| Aroclor 1260 | ND | | 1.0 | ug/L |

| Surrogate | Recovery | | Acceptable Range | |
|---|---|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 92 | % | 60 - 150 | |
| Decachlorobiphenyl | 56 | % | 60 - 150 | I |

I = Surrogate recovery outside of limits due to sample matrix interference.
ND = Not Detected

QC LOT ASSIGNMENT REPORT - MS QC
Semivolatile Organics by GC

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK/LCS) | MS QC Run Number (SA,MS,SD,DU) |
|---|---|---|---|---|---|
| 131273-0006-SA | AQUEOUS | PCB1PAC10A | 24 MAR 98-B | 24 MAR 98-B | |
| 131273-0013-FB | AQUEOUS | PCB1PAC10A | 24 MAR 98-B | 24 MAR 98-B | |

METHOD BLANK REPORT
Semivolatile Organics by GC
Project: 131273

Test: 8081-PCB-3510-PAC-A Method 8081 - PCBs
Matrix: AQUEOUS
QC Run: 24 MAR 98-B

Date Analyzed: 25 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Aroclor 1016 | ND | ug/L | 1.0 |
| Aroclor 1221 | ND | ug/L | 1.0 |
| Aroclor 1232 | ND | ug/L | 1.0 |
| Aroclor 1242 | ND | ug/L | 1.0 |
| Aroclor 1248 | ND | ug/L | 1.0 |
| Aroclor 1254 | ND | ug/L | 1.0 |
| Aroclor 1260 | ND | ug/L | 1.0 |

| Surrogate | Recovery | Acceptable Range |
|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 120 | 60 -150 |
| Decachlorobiphenyl | 136 | 60 -150 |

ND = Not Detected

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC
Project: 131273

Category: PCBIPAC10A Method 8081 - PCBs
Matrix: AQUEOUS
QC Lot: 24 MAR 98-B
Concentration Units: ug/L

Date Analyzed: 25 MAR 98

| Analyte | Concentration Spiked | Measured DCS1 | Measured DCS2 | %Recovery DCS1 | %Recovery DCS2 | RPD | Acceptance Limits Recov. | Acceptance Limits RPD |
|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | 5.00 | 5.09 | 5.40 | 102 | 108 | 5.9 | 50-114 | 30 |
| Aroclor 1260 | 5.00 | 5.20 | 5.53 | 104 | 111 | 6.2 | 8-127 | 30 |

| Surrogate | Concentration Spiked | Measured DCS1 | Measured DCS2 | %Recovery DCS1 | %Recovery DCS2 | Acceptance Limits Recovery |
|---|---|---|---|---|---|---|
| 2,4,5,6-Tetrachloro-m-xylene | 0.200 | 0.224 | 0.240 | 112 | 120 | 60-150 |
| Decachlorobiphenyl | 0.200 | 0.260 | 0.272 | 130 | 136 | 60-150 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

# SVOCs

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG19-01
LAB ID: 131273-0001-SA
Matrix: SOIL Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 29 MAR 98
Instrument: GC/MS-MI Dilution: 2.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 3500 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 720 | ug/kg |
| 2,4-Dichlorophenol | ND | | 720 | ug/kg |
| 2,4-Dimethylphenol | ND | | 720 | ug/kg |
| 2,4-Dinitrophenol | ND | | 3500 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 720 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 720 | ug/kg |
| 2-Chloronaphthalene | ND | | 720 | ug/kg |
| 2-Chlorophenol | ND | | 720 | ug/kg |
| 2-Methylnaphthalene | ND | | 720 | ug/kg |
| 2-Methylphenol | ND | | 720 | ug/kg |
| 2-Nitroaniline | ND | | 3500 | ug/kg |
| 2-Nitrophenol | ND | | 720 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 1400 | ug/kg |
| 3-Nitroaniline | ND | | 3500 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 3500 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 720 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 1400 | ug/kg |
| 4-Chloroaniline | ND | | 720 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 720 | ug/kg |
| 4-Methylphenol | ND | | 720 | ug/kg |
| 4-Nitroaniline | ND | | 3500 | ug/kg |
| 4-Nitrophenol | ND | | 3500 | ug/kg |
| Acenaphthene | ND | | 720 | ug/kg |
| Acenaphthylene | ND | | 720 | ug/kg |
| Anthracene | ND | | 720 | ug/kg |
| Benzo(a)anthracene | 280 | J | 720 | ug/kg |
| Benzo(a)pyrene | 310 | J | 720 | ug/kg |
| Benzo(b)fluoranthene | 600 | Jf | 720 | ug/kg |
| Benzo(g,h,i)perylene | 240 | J | 720 | ug/kg |
| Benzo(k)fluoranthene | ND | | 720 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 720 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 720 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | 54 | J | 720 | ug/kg |
| Butyl benzyl phthalate | ND | | 720 | ug/kg |
| Carbazole | ND | | 720 | ug/kg |
| Chrysene | 420 | J | 720 | ug/kg |
| Di-n-butyl phthalate | ND | | 720 | ug/kg |
| Di-n-octyl phthalate | ND | | 720 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 720 | ug/kg |
| Dibenzofuran | ND | | 720 | ug/kg |
| Diethyl phthalate | ND | | 720 | ug/kg |
| Dimethyl phthalate | ND | | 720 | ug/kg |

Percent moisture is 8.8%. All results and limits are reported on a dry weight basis.

f = Benzo(b) and Benzo(k) quantitated as an isomeric pair.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG19-01
LAB ID: 131273-0001-SA
Matrix: SOIL Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 29 MAR 98
Instrument: GC/MS-MI Dilution: 2.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluoranthene | 640 | J | 720 | ug/kg |
| Fluorene | ND | | 720 | ug/kg |
| Hexachlorobenzene | ND | | 720 | ug/kg |
| Hexachlorobutadiene | ND | | 720 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 3500 | ug/kg |
| Hexachloroethane | ND | | 720 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | 160 | J | 720 | ug/kg |
| Isophorone | ND | | 720 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 720 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 720 | ug/kg |
| Naphthalene | ND | | 720 | ug/kg |
| Nitrobenzene | ND | | 720 | ug/kg |
| Pentachlorophenol | ND | | 3500 | ug/kg |
| Phenanthrene | 380 | J | 720 | ug/kg |
| Pyrene | 1000 | | 720 | ug/kg |
| Phenol | ND | | 720 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 64 | % | 25 - 121 |
| Phenol-d5 | 74 | % | 24 - 113 |
| Nitrobenzene-d5 | 67 | % | 23 - 120 |
| 2-Fluorobiphenyl | 79 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 87 | % | 19 - 122 |
| Terphenyl-d14 | 116 | % | 18 - 137 |

Percent moisture is 8.8%. All results and limits are reported on a dry weight basis.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG19-02
LAB ID: 131273-0002-SA
Matrix: SOIL Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 29 MAR 98
Instrument: GC/MS-MI Dilution: 2.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 3800 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 780 | ug/kg |
| 2,4-Dichlorophenol | ND | | 780 | ug/kg |
| 2,4-Dimethylphenol | ND | | 780 | ug/kg |
| 2,4-Dinitrophenol | ND | | 3800 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 780 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 780 | ug/kg |
| 2-Chloronaphthalene | ND | | 780 | ug/kg |
| 2-Chlorophenol | ND | | 780 | ug/kg |
| 2-Methylnaphthalene | ND | | 780 | ug/kg |
| 2-Methylphenol | ND | | 780 | ug/kg |
| 2-Nitroaniline | ND | | 3800 | ug/kg |
| 2-Nitrophenol | ND | | 780 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 1600 | ug/kg |
| 3-Nitroaniline | ND | | 3800 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 3800 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 780 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 1500 | ug/kg |
| 4-Chloroaniline | ND | | 780 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 780 | ug/kg |
| 4-Methylphenol | ND | | 780 | ug/kg |
| 4-Nitroaniline | ND | | 3800 | ug/kg |
| 4-Nitrophenol | ND | | 3800 | ug/kg |
| Acenaphthene | ND | | 780 | ug/kg |
| Acenaphthylene | ND | | 780 | ug/kg |
| Anthracene | ND | | 780 | ug/kg |
| Benzo(a)anthracene | ND | | 780 | ug/kg |
| Benzo(a)pyrene | 84 | J | 780 | ug/kg |
| Benzo(b)fluoranthene | ND | f | 780 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 780 | ug/kg |
| Benzo(k)fluoranthene | ND | | 780 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 780 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 780 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 780 | ug/kg |
| Butyl benzyl phthalate | ND | | 780 | ug/kg |
| Carbazole | ND | | 780 | ug/kg |
| Chrysene | 58 | J | 780 | ug/kg |
| Di-n-butyl phthalate | ND | | 780 | ug/kg |
| Di-n-octyl phthalate | ND | | 780 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 780 | ug/kg |
| Dibenzofuran | ND | | 780 | ug/kg |
| Diethyl phthalate | ND | | 780 | ug/kg |
| Dimethyl phthalate | ND | | 780 | ug/kg |

Percent moisture is 15.2%. All results and limits are reported on a dry weight basis.

f = Benzo(b) and Benzo(k) quantitated as an isomeric pair.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG19-02
LAB ID: 131273-0002-SA
Matrix: SOIL Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 29 MAR 98
Instrument: GC/MS-MI Dilution: 2.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluoranthene | ND | | 780 | ug/kg |
| Fluorene | ND | | 780 | ug/kg |
| Hexachlorobenzene | ND | | 780 | ug/kg |
| Hexachlorobutadiene | ND | | 780 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 3800 | ug/kg |
| Hexachloroethane | ND | | 780 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 780 | ug/kg |
| Isophorone | ND | | 780 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 780 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 780 | ug/kg |
| Naphthalene | ND | | 780 | ug/kg |
| Nitrobenzene | ND | | 780 | ug/kg |
| Pentachlorophenol | ND | | 3800 | ug/kg |
| Phenanthrene | ND | | 780 | ug/kg |
| Pyrene | 100 | J | 780 | ug/kg |
| Phenol | ND | | 780 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 70 | % | 25 - 121 |
| Phenol-d5 | 83 | % | 24 - 113 |
| Nitrobenzene-d5 | 64 | % | 23 - 120 |
| 2-Fluorobiphenyl | 82 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 97 | % | 19 - 122 |
| Terphenyl-d14 | 126 | % | 18 - 137 |

Percent moisture is 15.2%. All results and limits are reported on a dry weight basis.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG19-03
LAB ID: 131273-0003-SA
Matrix: SOIL Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 29 MAR 98
Instrument: GC/MS-MI Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1800 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 370 | ug/kg |
| 2,4-Dichlorophenol | ND | | 370 | ug/kg |
| 2,4-Dimethylphenol | ND | | 370 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1800 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 370 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 370 | ug/kg |
| 2-Chloronaphthalene | ND | | 370 | ug/kg |
| 2-Chlorophenol | ND | | 370 | ug/kg |
| 2-Methylnaphthalene | ND | | 370 | ug/kg |
| 2-Methylphenol | ND | | 370 | ug/kg |
| 2-Nitroaniline | ND | | 1800 | ug/kg |
| 2-Nitrophenol | ND | | 370 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 730 | ug/kg |
| 3-Nitroaniline | ND | | 1800 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1800 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 370 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 720 | ug/kg |
| 4-Chloroaniline | ND | | 370 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 370 | ug/kg |
| 4-Methylphenol | ND | | 370 | ug/kg |
| 4-Nitroaniline | ND | | 1800 | ug/kg |
| 4-Nitrophenol | ND | | 1800 | ug/kg |
| Acenaphthene | ND | | 370 | ug/kg |
| Acenaphthylene | ND | | 370 | ug/kg |
| Anthracene | ND | | 370 | ug/kg |
| Benzo(a)anthracene | ND | | 370 | ug/kg |
| Benzo(a)pyrene | ND | | 370 | ug/kg |
| Benzo(b)fluoranthene | ND | | 370 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 370 | ug/kg |
| Benzo(k)fluoranthene | ND | | 370 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 370 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 370 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 370 | ug/kg |
| Butyl benzyl phthalate | ND | | 370 | ug/kg |
| Carbazole | ND | | 370 | ug/kg |
| Chrysene | ND | | 370 | ug/kg |
| Di-n-butyl phthalate | ND | | 370 | ug/kg |
| Di-n-octyl phthalate | ND | | 370 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 370 | ug/kg |
| Dibenzofuran | ND | | 370 | ug/kg |
| Diethyl phthalate | ND | | 370 | ug/kg |
| Dimethyl phthalate | ND | | 370 | ug/kg |
| Fluoranthene | ND | | 370 | ug/kg |
| Fluorene | ND | | 370 | ug/kg |

Percent moisture is 9.9%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG19-03
LAB ID: 131273-0003-SA
Matrix: SOIL Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 29 MAR 98
Instrument: GC/MS-MI Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 370 | ug/kg |
| Hexachlorobutadiene | ND | | 370 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1800 | ug/kg |
| Hexachloroethane | ND | | 370 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 370 | ug/kg |
| Isophorone | ND | | 370 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 370 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 370 | ug/kg |
| Naphthalene | ND | | 370 | ug/kg |
| Nitrobenzene | ND | | 370 | ug/kg |
| Pentachlorophenol | ND | | 1800 | ug/kg |
| Phenanthrene | ND | | 370 | ug/kg |
| Pyrene | ND | | 370 | ug/kg |
| Phenol | ND | | 370 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 44 | % | 25 - 121 |
| Phenol-d5 | 53 | % | 24 - 113 |
| Nitrobenzene-d5 | 52 | % | 23 - 120 |
| 2-Fluorobiphenyl | 56 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 25 | % | 19 - 122 |
| Terphenyl-d14 | 70 | % | 18 - 137 |

Percent moisture is 9.9%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG20-01
LAB ID: 131273-0004-SA
Matrix: SOIL Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 29 MAR 98
Instrument: GC/MS-MI Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1800 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 370 | ug/kg |
| 2,4-Dichlorophenol | ND | | 370 | ug/kg |
| 2,4-Dimethylphenol | ND | | 370 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1800 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 370 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 370 | ug/kg |
| 2-Chloronaphthalene | ND | | 370 | ug/kg |
| 2-Chlorophenol | ND | | 370 | ug/kg |
| 2-Methylnaphthalene | ND | | 370 | ug/kg |
| 2-Methylphenol | ND | | 370 | ug/kg |
| 2-Nitroaniline | ND | | 1800 | ug/kg |
| 2-Nitrophenol | ND | | 370 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 750 | ug/kg |
| 3-Nitroaniline | ND | | 1800 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1800 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 370 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 740 | ug/kg |
| 4-Chloroaniline | ND | | 370 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 370 | ug/kg |
| 4-Methylphenol | ND | | 370 | ug/kg |
| 4-Nitroaniline | ND | | 1800 | ug/kg |
| 4-Nitrophenol | ND | | 1800 | ug/kg |
| Acenaphthene | ND | | 370 | ug/kg |
| Acenaphthylene | ND | | 370 | ug/kg |
| Anthracene | ND | | 370 | ug/kg |
| Benzo(a)anthracene | ND | | 370 | ug/kg |
| Benzo(a)pyrene | ND | | 370 | ug/kg |
| Benzo(b)fluoranthene | ND | | 370 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 370 | ug/kg |
| Benzo(k)fluoranthene | ND | | 370 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 370 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 370 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 370 | ug/kg |
| Butyl benzyl phthalate | ND | | 370 | ug/kg |
| Carbazole | ND | | 370 | ug/kg |
| Chrysene | ND | | 370 | ug/kg |
| Di-n-butyl phthalate | ND | | 370 | ug/kg |
| Di-n-octyl phthalate | ND | | 370 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 370 | ug/kg |
| Dibenzofuran | ND | | 370 | ug/kg |
| Diethyl phthalate | ND | | 370 | ug/kg |
| Dimethyl phthalate | ND | | 370 | ug/kg |
| Fluoranthene | ND | | 370 | ug/kg |
| Fluorene | ND | | 370 | ug/kg |

Percent moisture is 11.8%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG20-01
LAB ID: 131273-0004-SA
Matrix: SOIL Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 29 MAR 98
Instrument: GC/MS-MI Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 370 | ug/kg |
| Hexachlorobutadiene | ND | | 370 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1800 | ug/kg |
| Hexachloroethane | ND | | 370 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 370 | ug/kg |
| Isophorone | ND | | 370 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 370 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 370 | ug/kg |
| Naphthalene | ND | | 370 | ug/kg |
| Nitrobenzene | ND | | 370 | ug/kg |
| Pentachlorophenol | ND | | 1800 | ug/kg |
| Phenanthrene | ND | | 370 | ug/kg |
| Pyrene | ND | | 370 | ug/kg |
| Phenol | ND | | 370 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 58 | % | 25 - 121 |
| Phenol-d5 | 64 | % | 24 - 113 |
| Nitrobenzene-d5 | 54 | % | 23 - 120 |
| 2-Fluorobiphenyl | 60 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 75 | % | 19 - 122 |
| Terphenyl-d14 | 87 | % | 18 - 137 |

Percent moisture is 11.8%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG20-02
LAB ID: 131273-0005-SA
Matrix: SOIL Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 29 MAR 98
Instrument: GC/MS-MI Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 1900 | ug/kg |
| 2,4,6-Trichlorophenol | ND | | 380 | ug/kg |
| 2,4-Dichlorophenol | ND | | 380 | ug/kg |
| 2,4-Dimethylphenol | ND | | 380 | ug/kg |
| 2,4-Dinitrophenol | ND | | 1900 | ug/kg |
| 2,4-Dinitrotoluene | ND | | 380 | ug/kg |
| 2,6-Dinitrotoluene | ND | | 380 | ug/kg |
| 2-Chloronaphthalene | ND | | 380 | ug/kg |
| 2-Chlorophenol | ND | | 380 | ug/kg |
| 2-Methylnaphthalene | ND | | 380 | ug/kg |
| 2-Methylphenol | ND | | 380 | ug/kg |
| 2-Nitroaniline | ND | | 1900 | ug/kg |
| 2-Nitrophenol | ND | | 380 | ug/kg |
| 3,3'-Dichlorobenzidine | ND | | 770 | ug/kg |
| 3-Nitroaniline | ND | | 1900 | ug/kg |
| 4,6-Dinitro-2-methylphenol | ND | | 1900 | ug/kg |
| 4-Bromophenyl phenyl ether | ND | | 380 | ug/kg |
| 4-Chloro-3-methylphenol | ND | | 760 | ug/kg |
| 4-Chloroaniline | ND | | 380 | ug/kg |
| 4-Chlorophenyl phenyl ether | ND | | 380 | ug/kg |
| 4-Methylphenol | ND | | 380 | ug/kg |
| 4-Nitroaniline | ND | | 1900 | ug/kg |
| 4-Nitrophenol | ND | | 1900 | ug/kg |
| Acenaphthene | ND | | 380 | ug/kg |
| Acenaphthylene | ND | | 380 | ug/kg |
| Anthracene | ND | | 380 | ug/kg |
| Benzo(a)anthracene | ND | | 380 | ug/kg |
| Benzo(a)pyrene | ND | | 380 | ug/kg |
| Benzo(b)fluoranthene | ND | | 380 | ug/kg |
| Benzo(g,h,i)perylene | ND | | 380 | ug/kg |
| Benzo(k)fluoranthene | ND | | 380 | ug/kg |
| bis(2-Chloroethoxy)-methane | ND | | 380 | ug/kg |
| bis(2-Chloroethyl) ether | ND | | 380 | ug/kg |
| bis(2-Ethylhexyl)-phthalate | ND | | 380 | ug/kg |
| Butyl benzyl phthalate | ND | | 380 | ug/kg |
| Carbazole | ND | | 380 | ug/kg |
| Chrysene | ND | | 380 | ug/kg |
| Di-n-butyl phthalate | ND | | 380 | ug/kg |
| Di-n-octyl phthalate | ND | | 380 | ug/kg |
| Dibenz(a,h)anthracene | ND | | 380 | ug/kg |
| Dibenzofuran | ND | | 380 | ug/kg |
| Diethyl phthalate | ND | | 380 | ug/kg |
| Dimethyl phthalate | ND | | 380 | ug/kg |
| Fluoranthene | ND | | 380 | ug/kg |
| Fluorene | ND | | 380 | ug/kg |

Percent moisture is 14.2%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG20-02
LAB ID: 131273-0005-SA
Matrix: SOIL Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 29 MAR 98
Instrument: GC/MS-MI Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 380 | ug/kg |
| Hexachlorobutadiene | ND | | 380 | ug/kg |
| Hexachlorocyclopentadiene | ND | | 1900 | ug/kg |
| Hexachloroethane | ND | | 380 | ug/kg |
| Indeno(1,2,3-c,d)pyrene | ND | | 380 | ug/kg |
| Isophorone | ND | | 380 | ug/kg |
| N-Nitroso-di-n-propylamine | ND | | 380 | ug/kg |
| N-Nitrosodiphenylamine | ND | | 380 | ug/kg |
| Naphthalene | ND | | 380 | ug/kg |
| Nitrobenzene | ND | | 380 | ug/kg |
| Pentachlorophenol | ND | | 1900 | ug/kg |
| Phenanthrene | ND | | 380 | ug/kg |
| Pyrene | ND | | 380 | ug/kg |
| Phenol | ND | | 380 | ug/kg |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 58 | % | 25 - 121 |
| Phenol-d5 | 62 | % | 24 - 113 |
| Nitrobenzene-d5 | 46 | % | 23 - 120 |
| 2-Fluorobiphenyl | 52 | % | 30 - 115 |
| 2,4,6-Tribromophenol | 69 | % | 19 - 122 |
| Terphenyl-d14 | 78 | % | 18 - 137 |

Percent moisture is 14.2%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG06A-10-W
LAB ID: 131273-0006-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | 1.1 | J | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | 1.2 | J | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | ND | | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

(cont.)

Client Name: Woodward-Clyde Consultants
Client ID: HG06A-10-W
LAB ID: 131273-0006-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluorene | ND | | 10 | ug/L |
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | ND | | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 47 | % | 21 - 100 |
| Phenol-d5 | 31 | % | 10 - 94 |
| Nitrobenzene-d5 | 74 | % | 34 - 114 |
| 2-Fluorobiphenyl | 74 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 76 | % | 10 - 123 |
| Terphenyl-d14 | 83 | % | 33 - 141 |

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG5B-10-W
LAB ID: 131273-0007-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | 2.0 | J | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | 1.0 | J | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | 1.1 | J | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG5B-10-W
LAB ID: 131273-0007-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluorene | ND | | 10 | ug/L |
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | ND | | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 47 | % | 21 - 100 |
| Phenol-d5 | 31 | % | 10 - 94 |
| Nitrobenzene-d5 | 82 | % | 34 - 114 |
| 2-Fluorobiphenyl | 82 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 75 | % | 10 - 123 |
| Terphenyl-d14 | 85 | % | 33 - 141 |

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG5B-11-W
LAB ID: 131273-0008-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | ND | | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | ND | | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | ND | | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |
| Fluorene | ND | | 10 | ug/L |

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG5B-11-W
LAB ID: 131273-0008-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | ND | | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 50 | % | 21 - 100 |
| Phenol-d5 | 34 | % | 10 - 94 |
| Nitrobenzene-d5 | 82 | % | 34 - 114 |
| 2-Fluorobiphenyl | 85 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 78 | % | 10 - 123 |
| Terphenyl-d14 | 91 | % | 33 - 141 |

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG08-10-W
LAB ID: 131273-0009-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | 1.0 | J | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | ND | | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | ND | | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG08-10-W
LAB ID: 131273-0009-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluorene | ND | | 10 | ug/L |
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | 1.4 | J | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 49 | % | 21 - 100 |
| Phenol-d5 | 33 | % | 10 - 94 |
| Nitrobenzene-d5 | 81 | % | 34 - 114 |
| 2-Fluorobiphenyl | 82 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 77 | % | 10 - 123 |
| Terphenyl-d14 | 79 | % | 33 - 141 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG19-10-W
LAB ID: 131273-0010-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | 1.3 | J | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | ND | | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | ND | | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG19-10-W
LAB ID: 131273-0010-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Fluorene | ND | | 10 | ug/L |
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | ND | | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 51 | % | 21 - 100 |
| Phenol-d5 | 33 | % | 10 - 94 |
| Nitrobenzene-d5 | 86 | % | 34 - 114 |
| 2-Fluorobiphenyl | 87 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 80 | % | 10 - 123 |
| Terphenyl-d14 | 81 | % | 33 - 141 |

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG20-10-W
LAB ID: 131273-0011-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | ND | | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | ND | | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | ND | | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |
| Fluorene | ND | | 10 | ug/L |

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG20-10-W
LAB ID: 131273-0011-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | ND | | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 44 | % | 21 - 100 |
| Phenol-d5 | 29 | % | 10 - 94 |
| Nitrobenzene-d5 | 73 | % | 34 - 114 |
| 2-Fluorobiphenyl | 74 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 73 | % | 10 - 123 |
| Terphenyl-d14 | 80 | % | 33 - 141 |

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG20-11-W
LAB ID: 131273-0012-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | ND | | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | ND | | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | ND | | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |
| Fluorene | ND | | 10 | ug/L |

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: HG20-11-W
LAB ID: 131273-0012-SA
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | ND | | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 50 | % | 21 - 100 |
| Phenol-d5 | 31 | % | 10 - 94 |
| Nitrobenzene-d5 | 81 | % | 34 - 114 |
| 2-Fluorobiphenyl | 80 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 80 | % | 10 - 123 |
| Terphenyl-d14 | 88 | % | 33 - 141 |

ND = Not Detected

Semivolatile Organic Compounds
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: FB03201-W
LAB ID: 131273-0013-FB
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | | 10 | ug/L |
| 2,4,6-Trichlorophenol | ND | | 10 | ug/L |
| 2,4-Dichlorophenol | ND | | 10 | ug/L |
| 2,4-Dimethylphenol | ND | | 10 | ug/L |
| 2,4-Dinitrophenol | ND | | 50 | ug/L |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L |
| 2-Chloronaphthalene | ND | | 10 | ug/L |
| 2-Chlorophenol | ND | | 10 | ug/L |
| 2-Methylnaphthalene | ND | | 10 | ug/L |
| 2-Methylphenol | ND | | 10 | ug/L |
| 2-Nitroaniline | ND | | 50 | ug/L |
| 2-Nitrophenol | ND | | 10 | ug/L |
| 3,3'-Dichlorobenzidine | ND | | 50 | ug/L |
| 3-Nitroaniline | ND | | 50 | ug/L |
| 4,6-Dinitro-2-methylphenol | ND | | 50 | ug/L |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Chloro-3-methylphenol | ND | | 10 | ug/L |
| 4-Chloroaniline | ND | | 10 | ug/L |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L |
| 4-Methylphenol | ND | | 10 | ug/L |
| 4-Nitroaniline | ND | | 50 | ug/L |
| 4-Nitrophenol | ND | | 50 | ug/L |
| Acenaphthene | ND | | 10 | ug/L |
| Acenaphthylene | ND | | 10 | ug/L |
| Anthracene | ND | | 10 | ug/L |
| Benzo(a)anthracene | ND | | 10 | ug/L |
| Benzo(a)pyrene | ND | | 10 | ug/L |
| Benzo(b)fluoranthene | ND | | 10 | ug/L |
| Benzo(g,h,i)perylene | ND | | 10 | ug/L |
| Benzo(k)fluoranthene | ND | | 10 | ug/L |
| bis(2-Chloroethoxy)-methane | ND | | 10 | ug/L |
| bis(2-Chloroethyl) ether | ND | | 10 | ug/L |
| bis(2-Ethylhexyl)-phthalate | ND | | 10 | ug/L |
| Butyl benzyl phthalate | ND | | 10 | ug/L |
| Carbazole | ND | | 10 | ug/L |
| Chrysene | ND | | 10 | ug/L |
| Di-n-butyl phthalate | ND | | 10 | ug/L |
| Di-n-octyl phthalate | ND | | 10 | ug/L |
| Dibenz(a,h)anthracene | ND | | 10 | ug/L |
| Dibenzofuran | ND | | 10 | ug/L |
| Diethyl phthalate | ND | | 10 | ug/L |
| Dimethyl phthalate | ND | | 10 | ug/L |
| Fluoranthene | ND | | 10 | ug/L |
| Fluorene | ND | | 10 | ug/L |

ND = Not Detected

Semivolatile Organic Compounds (cont.)
Method 8270B

Client Name: Woodward-Clyde Consultants
Client ID: FB03201-W
LAB ID: 131273-0013-FB
Matrix: WATER Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: 23 MAR 98 Analyzed: 28 MAR 98
Instrument: GC/MS-ME Dilution: 1.0

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Hexachlorobenzene | ND | | 1.0 | ug/L |
| Hexachlorobutadiene | ND | | 10 | ug/L |
| Hexachlorocyclopentadiene | ND | | 50 | ug/L |
| Hexachloroethane | ND | | 10 | ug/L |
| Indeno(1,2,3-c,d)pyrene | ND | | 10 | ug/L |
| Isophorone | ND | | 10 | ug/L |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L |
| N-Nitroso-di-n-propylamine | ND | | 10 | ug/L |
| Naphthalene | ND | | 10 | ug/L |
| Nitrobenzene | ND | | 10 | ug/L |
| Pentachlorophenol | ND | | 50 | ug/L |
| Phenanthrene | ND | | 10 | ug/L |
| Pyrene | ND | | 10 | ug/L |
| Phenol | ND | | 10 | ug/L |

| Surrogate | Recovery | | Acceptable Range |
|---|---|---|---|
| 2-Fluorophenol | 41 | % | 21 - 100 |
| Phenol-d5 | 28 | % | 10 - 94 |
| Nitrobenzene-d5 | 80 | % | 34 - 114 |
| 2-Fluorobiphenyl | 75 | % | 43 - 116 |
| 2,4,6-Tribromophenol | 66 | % | 10 - 123 |
| Terphenyl-d14 | 89 | % | 33 - 141 |

ND = Not Detected

QC LOT ASSIGNMENT REPORT - MS QC
Semivolatile Organics by GC/MS

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK/LCS) | MS QC Run Number (SA,MS,SD,DU) |
|---|---|---|---|---|---|
| 131273-0001-SA | SOLID | Q8270-S | 23 MAR 98-D | 23 MAR 98-D | |
| 131273-0002-SA | SOLID | Q8270-S | 23 MAR 98-D | 23 MAR 98-D | |
| 131273-0003-SA | SOLID | Q8270-S | 23 MAR 98-D | 23 MAR 98-D | |
| 131273-0004-SA | SOLID | Q8270-S | 23 MAR 98-D | 23 MAR 98-D | |
| 131273-0005-SA | SOLID | Q8270-S | 23 MAR 98-D | 23 MAR 98-D | |
| 131273-0006-SA | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131273-0007-SA | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131273-0008-SA | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131273-0009-SA | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131273-0010-SA | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131273-0011-SA | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131273-0012-SA | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |
| 131273-0013-FB | AQUEOUS | Q8270-S-A | | 23 MAR 98-AX | 23 MAR 98-AA |

METHOD BLANK REPORT
Semivolatile Organics by GC/MS
Project: 131273

Test: Q8270-TCL-L-S Method 8270B - TCL Semivolatile Organics
Matrix: SOLID
QC Run: 23 MAR 98-D Date Analyzed: 28 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | ug/kg | 1600 |
| 2,4,6-Trichlorophenol | ND | ug/kg | 330 |
| 2,4-Dichlorophenol | ND | ug/kg | 330 |
| 2,4-Dimethylphenol | ND | ug/kg | 330 |
| 2,4-Dinitrophenol | ND | ug/kg | 1600 |
| 2,4-Dinitrotoluene | ND | ug/kg | 330 |
| 2,6-Dinitrotoluene | ND | ug/kg | 330 |
| 2-Chloronaphthalene | ND | ug/kg | 330 |
| 2-Chlorophenol | ND | ug/kg | 330 |
| 2-Methylnaphthalene | ND | ug/kg | 330 |
| 2-Methylphenol | ND | ug/kg | 330 |
| 2-Nitroaniline | ND | ug/kg | 1600 |
| 2-Nitrophenol | ND | ug/kg | 330 |
| 3,3'-Dichlorobenzidine | ND | ug/kg | 660 |
| 3-Nitroaniline | ND | ug/kg | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ug/kg | 1600 |
| 4-Bromophenyl phenyl ether | ND | ug/kg | 330 |
| 4-Chloro-3-methylphenol | ND | ug/kg | 650 |
| 4-Chloroaniline | ND | ug/kg | 330 |
| 4-Chlorophenyl phenyl ether | ND | ug/kg | 330 |
| 4-Methylphenol | ND | ug/kg | 330 |
| 4-Nitroaniline | ND | ug/kg | 1600 |
| 4-Nitrophenol | ND | ug/kg | 1600 |
| Acenaphthene | ND | ug/kg | 330 |
| Acenaphthylene | ND | ug/kg | 330 |
| Anthracene | ND | ug/kg | 330 |
| Benzo(a)anthracene | ND | ug/kg | 330 |
| Benzo(a)pyrene | ND | ug/kg | 330 |
| Benzo(b)fluoranthene | ND | ug/kg | 330 |
| Benzo(g,h,i)perylene | ND | ug/kg | 330 |
| Benzo(k)fluoranthene | ND | ug/kg | 330 |
| bis(2-Chloroethoxy)-methane | ND | ug/kg | 330 |
| bis(2-Chloroethyl) ether | ND | ug/kg | 330 |
| bis(2-Ethylhexyl)-phthalate | ND | ug/kg | 330 |
| Butyl benzyl phthalate | ND | ug/kg | 330 |
| Carbazole | ND | ug/kg | 330 |
| Chrysene | ND | ug/kg | 330 |
| Di-n-butyl phthalate | ND | ug/kg | 330 |
| Di-n-octyl phthalate | ND | ug/kg | 330 |
| Dibenz(a,h)anthracene | ND | ug/kg | 330 |
| Dibenzofuran | ND | ug/kg | 330 |
| Diethyl phthalate | ND | ug/kg | 330 |
| Dimethyl phthalate | ND | ug/kg | 330 |
| Fluoranthene | ND | ug/kg | 330 |
| Fluorene | ND | ug/kg | 330 |
| Hexachlorobenzene | ND | ug/kg | 330 |
| Hexachlorobutadiene | ND | ug/kg | 330 |

ND = Not Detected

METHOD BLANK REPORT (cont.)
Semivolatile Organics by GC/MS
Project: 131273

Test: Q8270-TCL-L-S Method 8270B - TCL Semivolatile Organics (cont.)
Matrix: SOLID
QC Run: 23 MAR 98-D Date Analyzed: 28 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Hexachlorocyclopentadiene | ND | ug/kg | 1600 |
| Hexachloroethane | ND | ug/kg | 330 |
| Indeno(1,2,3-c,d)pyrene | ND | ug/kg | 330 |
| Isophorone | ND | ug/kg | 330 |
| N-Nitroso-di-n-propylamine | ND | ug/kg | 330 |
| N-Nitrosodiphenylamine | ND | ug/kg | 330 |
| Naphthalene | ND | ug/kg | 330 |
| Nitrobenzene | ND | ug/kg | 330 |
| Pentachlorophenol | ND | ug/kg | 1600 |
| Phenanthrene | ND | ug/kg | 330 |
| Pyrene | ND | ug/kg | 330 |
| Phenol | ND | ug/kg | 330 |

| Surrogate | Recovery | Acceptable Range |
|---|---|---|
| 2-Fluorophenol | 116 | 25 -121 |
| Phenol-d5 | 90 | 24 -113 |
| Nitrobenzene-d5 | 83 | 23 -120 |
| 2-Fluorobiphenyl | 94 | 30 -115 |
| 2,4,6-Tribromophenol | 100 | 19 -122 |
| Terphenyl-d14 | 121 | 18 -137 |

ND = Not Detected

METHOD BLANK REPORT (cont.)
Semivolatile Organics by GC/MS
Project: 131273

Test: Q8270-TCL-3510-A Method SW8270B - TCL Semivolatile Organics
Matrix: AQUEOUS
QC Run: 23 MAR 98-AX Date Analyzed: 27 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| 2,4,5-Trichlorophenol | ND | ug/L | 10 |
| 2,4,6-Trichlorophenol | ND | ug/L | 10 |
| 2,4-Dichlorophenol | ND | ug/L | 10 |
| 2,4-Dimethylphenol | ND | ug/L | 10 |
| 2,4-Dinitrophenol | ND | ug/L | 50 |
| 2,4-Dinitrotoluene | ND | ug/L | 10 |
| 2,6-Dinitrotoluene | ND | ug/L | 10 |
| 2-Chloronaphthalene | ND | ug/L | 10 |
| 2-Chlorophenol | ND | ug/L | 10 |
| 2-Methylnaphthalene | ND | ug/L | 10 |
| 2-Methylphenol | ND | ug/L | 10 |
| 2-Nitroaniline | ND | ug/L | 50 |
| 2-Nitrophenol | ND | ug/L | 10 |
| 3,3'-Dichlorobenzidine | ND | ug/L | 50 |
| 3-Nitroaniline | ND | ug/L | 50 |
| 4,6-Dinitro-2-methylphenol | ND | ug/L | 50 |
| 4-Bromophenyl phenyl ether | ND | ug/L | 10 |
| 4-Chloro-3-methylphenol | ND | ug/L | 10 |
| 4-Chloroaniline | ND | ug/L | 10 |
| 4-Chlorophenyl phenyl ether | ND | ug/L | 10 |
| 4-Methylphenol | ND | ug/L | 10 |
| 4-Nitroaniline | ND | ug/L | 50 |
| 4-Nitrophenol | ND | ug/L | 50 |
| Acenaphthene | ND | ug/L | 10 |
| Acenaphthylene | ND | ug/L | 10 |
| Anthracene | ND | ug/L | 10 |
| Benzo(a)anthracene | ND | ug/L | 10 |
| Benzo(a)pyrene | ND | ug/L | 10 |
| Benzo(b)fluoranthene | ND | ug/L | 10 |
| Benzo(g,h,i)perylene | ND | ug/L | 10 |
| Benzo(k)fluoranthene | ND | ug/L | 10 |
| bis(2-Chloroethoxy)-methane | ND | ug/L | 10 |
| bis(2-Chloroethyl) ether | ND | ug/L | 10 |
| bis(2-Ethylhexyl)-phthalate | ND | ug/L | 10 |
| Butyl benzyl phthalate | ND | ug/L | 10 |
| Carbazole | ND | ug/L | 10 |
| Chrysene | ND | ug/L | 10 |
| Di-n-butyl phthalate | ND | ug/L | 10 |
| Di-n-octyl phthalate | ND | ug/L | 10 |
| Dibenz(a,h)anthracene | ND | ug/L | 10 |
| Dibenzofuran | ND | ug/L | 10 |
| Diethyl phthalate | ND | ug/L | 10 |
| Dimethyl phthalate | ND | ug/L | 10 |
| Fluoranthene | ND | ug/L | 10 |
| Fluorene | ND | ug/L | 10 |
| Hexachlorobenzene | ND | ug/L | 1.0 |

ND = Not Detected

METHOD BLANK REPORT (cont.)
Semivolatile Organics by GC/MS
Project: 131273

Test: Q8270-TCL-3510-A Method SW8270B - TCL Semivolatile Organics (cont.)
Matrix: AQUEOUS
QC Run: 23 MAR 98-AX

Date Analyzed: 27 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Hexachlorobutadiene | ND | ug/L | 10 |
| Hexachlorocyclopentadiene | ND | ug/L | 50 |
| Hexachloroethane | ND | ug/L | 10 |
| Indeno(1,2,3-c,d)pyrene | ND | ug/L | 10 |
| Isophorone | ND | ug/L | 10 |
| N-Nitroso-di-n-propylamine | ND | ug/L | 10 |
| N-Nitrosodiphenylamine | ND | ug/L | 10 |
| Naphthalene | ND | ug/L | 10 |
| Nitrobenzene | ND | ug/L | 10 |
| Pentachlorophenol | ND | ug/L | 50 |
| Phenanthrene | ND | ug/L | 10 |
| Pyrene | ND | ug/L | 10 |
| Phenol | ND | ug/L | 10 |

| Surrogate | Recovery | Acceptable Range |
|---|---|---|
| 2-Fluorophenol | 61 | 21 -100 |
| Phenol-d5 | 41 | 10 -94 |
| Nitrobenzene-d5 | 89 | 34 -114 |
| 2-Fluorobiphenyl | 89 | 43 -116 |
| 2,4,6-Tribromophenol | 90 | 10 -123 |
| Terphenyl-d14 | 99 | 33 -141 |

ND = Not Detected

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS
Project: 131273

Category: Q8270-S Method SW8270 - Acid, Base and Neutrals by GC/MS.
Matrix: SOLID
QC Lot: 23 MAR 98-D Date Analyzed: 31 MAR 98
Concentration Units: ug/kg

| Analyte | Concentration Spiked | Measured DCS1 | Measured DCS2 | %Recovery DCS1 | %Recovery DCS2 | RPD | Acceptance Limits Recov. | Acceptance Limits RPD |
|---|---|---|---|---|---|---|---|---|
| Phenol | 6670 | 4570 | 4600 | 68 | 69 | 0.6 | 39-115 | 39 |
| 2-Chlorophenol | 6670 | 5350 | 4790 | 80 | 72 | 11 | 55-108 | 38 |
| 1,4-Dichlorobenzene | 3330 | 2840 | 2530 | 85 | 76 | 11 | 56-107 | 37 |
| N-Nitroso-di-n-propylamine | 3330 | 2030 | 1780 | 61 | 54 | 13 | 14-110 | 41 |
| 1,2,4-Trichlorobenzene | 3330 | 2880 | 2550 | 87 | 77 | 12 | 54-104 | 32 |
| 4-Chloro-3-methylphenol | 6670 | 5310 | 4690 | 80 | 70 | 12 | 52-120 | 23 |
| Acenaphthene | 3330 | 2800 | 2600 | 84 | 78 | 7.2 | 60-114 | 20 |
| 4-Nitrophenol | 6670 | 5330 | 5520 | 80 | 83 | 3.6 | 56-142 | 42 |
| 2,4-Dinitrotoluene | 3330 | 3850 | 3910 | 116 | 117 | 1.5 | 62-117 | 25 |
| Pentachlorophenol | 6670 | 5900 | 5860 | 89 | 88 | 0.7 | 49-132 | 37 |
| Pyrene | 3330 | 2750 | 2550 | 82 | 77 | 7.5 | 61-106 | 32 |

| Surrogate | Concentration Spiked | Measured DCS1 | Measured DCS2 | %Recovery DCS1 | %Recovery DCS2 | Acceptance Limits Recovery |
|---|---|---|---|---|---|---|
| 2-Fluorophenol | 6670 | 5910 | 4950 | 89 | 74 | 25-121 |
| Phenol-d5 | 6670 | 4720 | 4740 | 71 | 71 | 24-113 |
| Nitrobenzene-d5 | 3330 | 2820 | 2450 | 85 | 74 | 23-120 |
| 2-Fluorobiphenyl | 3330 | 2870 | 2640 | 86 | 79 | 30-115 |
| 2,4,6-Tribromophenol | 6670 | 5580 | 5360 | 84 | 80 | 19-122 |
| Terphenyl-d14 | 3330 | 2580 | 2390 | 78 | 72 | 18-137 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS
Project: 131273

Category: Q8270-S-A Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS
Date Analyzed: 27 MAR 98
QC Run: 23 MAR 98-AX
Concentration Units: ug/L

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Phenol | 200 | 72.6 | 36 | 10-96 |
| 2-Chlorophenol | 200 | 141 | 71 | 55-105 |
| 1,4-Dichlorobenzene | 100 | 69.3 | 69 | 56-103 |
| N-Nitroso-di-n-propylamine | 100 | 80.9 | 81 | 58-109 |
| 1,2,4-Trichlorobenzene | 100 | 72.9 | 73 | 55-106 |
| 4-Chloro-3-methylphenol | 200 | 165 | 83 | 67-104 |
| Acenaphthene | 100 | 81.8 | 82 | 63-117 |
| 4-Nitrophenol | 200 | 79.7 | 40 | 10-111 |
| 2,4-Dinitrotoluene | 100 | 93.8 | 94 | 70-110 |
| Pentachlorophenol | 200 | 190 | 95 | 46-133 |
| Pyrene | 100 | 83.6 | 84 | 67-120 |

| Surrogates | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| 2-Fluorophenol | 200 | 96.2 | 48 | 21-100 |
| Phenol-d5 | 200 | 68.1 | 34 | 10-94 |
| Nitrobenzene-d5 | 100 | 78.1 | 78 | 34-114 |
| 2-Fluorobiphenyl | 100 | 77.1 | 77 | 43-116 |
| 2,4,6-Tribromophenol | 200 | 169 | 85 | 10-123 |
| Terphenyl-d14 | 100 | 77.5 | 78 | 33-141 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC/MS
Project: 131273

Category: Q8270-S-A Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS
Sample: 131262-0003
MS Run: 23 MAR 98-AA
Units: ug/L

| Analyte | Sample Result | Concentration MS Result | Concentration MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| Phenol | ND | 64.3 | 69.2 | 200 | 32 | 35 | 7.3 | 10-96 | 57 |
| 2-Chlorophenol | ND | 128 | 139 | 200 | 64 | 70 | 8.7 | 55-105 | 37 |
| N-Nitroso-di-n-propylamine | ND | 69.3 | 72.4 | 100 | 69 | 72 | 4.4 | 58-109 | 30 |
| 4-Chloro-3-methylphenol | ND | 148 | 160 | 200 | 74 | 80 | 7.7 | 67-104 | 36 |
| Acenaphthene | ND | 65.6 | 67.3 | 100 | 66 | 67 | 2.5 | 63-117 | 23 |
| 4-Nitrophenol | ND | 63.4 | 66.4 | 200 | 32 | 33 | 4.5 | 10-111 | 49 |
| 2,4-Dinitrotoluene | ND | 82.0 | 85.1 | 100 | 82 | 85 | 3.7 | 70-110 | 30 |
| Pentachlorophenol | ND | 140 | 162 | 200 | 70 | 81 | 14 | 46-133 | 39 |
| Pyrene | ND | 62.9 | n 69.1 | 100 | 63 | 69 | 9.4 | 67-120 | 34 |

| Surrogates | Sample %Recovery | %Recovery MS | %Recovery MSD | Acceptance Limit Recovery |
|---|---|---|---|---|
| 2-Fluorophenol | 50 | 42 | 47 | 21-100 |
| Phenol-d5 | 33 | 30 | 33 | 10-94 |
| Nitrobenzene-d5 | 72 | 67 | 70 | 34-114 |
| 2-Fluorobiphenyl | 66 | 60 | 63 | 43-116 |
| 2,4,6-Tribromophenol | 75 | 62 | 72 | 10-123 |
| Terphenyl-d14 | 72 | 58 | 64 | 33-141 |

n = Spiked analyte out of matrix spike acceptance limits; refer to lab control sample results.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

# Metals

METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG19-01
LAB ID: 131273-0001-SA
Matrix: SOIL
Authorized: 21 MAR 98

Sampled: 20 MAR 98
Prepared: See Below

Received: 20 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.50 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Barium | 57.8 | B | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.28 | | 1.0 | 0.11 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.17 | J | 1.0 | 0.55 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 18.5 | | 1.0 | 0.55 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 4.8 | J | 1.0 | 5.5 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 12.6 | | 1.0 | 2.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 8.5 | | 1.0 | 0.55 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Molybdenum | 1.7 | J | 1.0 | 4.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 31.8 | | 1.0 | 4.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.55 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.55 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 0.91 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 60.4 | | 1.0 | 5.5 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 40.8 | | 1.0 | 2.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 2.7 | | 1.0 | 0.27 | mg/kg | 7060A | 25 MAR 98 | 26 MAR 98 |
| Mercury | 0.046 | J | 1.0 | 0.11 | mg/kg | SW7471 | 27 MAR 98 | 30 MAR 98 |

Percent moisture is 8.8%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

## METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG19-02
LAB ID: 131273-0002-SA
Matrix: SOIL — Sampled: 20 MAR 98 — Received: 20 MAR 98
Authorized: 21 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.43 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Barium | 44.3 | B | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.18 | | 1.0 | 0.12 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.081 | J | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 13.5 | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 3.8 | J | 1.0 | 5.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 9.9 | | 1.0 | 2.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 5.2 | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Molybdenum | 0.86 | J | 1.0 | 4.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 23.2 | | 1.0 | 4.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.59 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 0.67 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 44.0 | | 1.0 | 5.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 30.4 | | 1.0 | 2.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 1.2 | | 1.0 | 0.29 | mg/kg | 7060A | 25 MAR 98 | 27 MAR 98 |
| Mercury | ND | | 1.0 | 0.12 | mg/kg | SW7471 | 27 MAR 98 | 30 MAR 98 |

Percent moisture is 15.2%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG19-03
LAB ID: 131273-0003-SA
Matrix: SOIL
Authorized: 21 MAR 98

Sampled: 20 MAR 98
Prepared: See Below

Received: 20 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.55 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Barium | 73.8 | B | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.31 | | 1.0 | 0.11 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.17 | J | 1.0 | 0.55 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 20.6 | | 1.0 | 0.55 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 6.0 | | 1.0 | 5.5 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 12.1 | | 1.0 | 2.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 7.2 | | 1.0 | 0.55 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Molybdenum | 0.87 | J | 1.0 | 4.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 19.1 | | 1.0 | 4.4 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.55 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.55 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | ND | | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 34.9 | | 1.0 | 5.5 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 46.5 | | 1.0 | 2.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 2.8 | q | 1.0 | 0.28 | mg/kg | 7060A | 25 MAR 98 | 27 MAR 98 |
| Mercury | 0.092 | J | 1.0 | 0.11 | mg/kg | SW7471 | 27 MAR 98 | 30 MAR 98 |

Percent moisture is 9.9%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40 and 85% due to matrix interference.
ND = Not Detected

METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG20-01
LAB ID: 131273-0004-SA
Matrix: SOIL
Authorized: 21 MAR 98

Sampled: 20 MAR 98
Prepared: See Below

Received: 20 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.42 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Barium | 101 | B | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.24 | | 1.0 | 0.11 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.50 | J | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 20.2 | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 3.2 | J | 1.0 | 5.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 4.5 | | 1.0 | 2.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 2.2 | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Molybdenum | 1.7 | J | 1.0 | 4.5 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 12.3 | | 1.0 | 4.5 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.57 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 0.60 | J | 1.0 | 1.1 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 32.9 | | 1.0 | 5.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 28.8 | | 1.0 | 2.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 3.6 | | 1.0 | 0.28 | mg/kg | 7060A | 25 MAR 98 | 27 MAR 98 |
| Mercury | ND | | 1.0 | 0.11 | mg/kg | SW7471 | 27 MAR 98 | 30 MAR 98 |

Percent moisture is 11.8%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS

Client Name: Woodward-Clyde Consultants
Client ID: HG20-02
LAB ID: 131273-0005-SA
Matrix: SOIL — Sampled: 20 MAR 98 — Received: 20 MAR 98
Authorized: 21 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | 0.48 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Barium | 34.6 | B | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Beryllium | 0.21 | | 1.0 | 0.12 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cadmium | 0.091 | J | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Chromium | 14.6 | | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Cobalt | 3.7 | J | 1.0 | 5.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Copper | 5.3 | | 1.0 | 2.9 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Lead | 1.7 | | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Molybdenum | 1.0 | J | 1.0 | 4.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Nickel | 8.9 | | 1.0 | 4.7 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Selenium | ND | | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Silver | ND | | 1.0 | 0.58 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Thallium | 0.65 | J | 1.0 | 1.2 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Vanadium | 21.8 | | 1.0 | 5.8 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Zinc | 29.1 | | 1.0 | 2.3 | mg/kg | 6010A | 25 MAR 98 | 26 MAR 98 |
| Arsenic | 2.3 | | 1.0 | 0.29 | mg/kg | 7060A | 25 MAR 98 | 27 MAR 98 |
| Mercury | ND | | 1.0 | 0.12 | mg/kg | SW7471 | 27 MAR 98 | 30 MAR 98 |

Percent moisture is 14.2%. All results and limits are reported on a dry weight basis.

B = Compound is also detected in the blank.
J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS
(Water - Dissolved)

Client Name: Woodward-Clyde Consultants
Client ID: HGSB-10-W
LAB ID: 131273-0007-SA
Matrix: WATER — Sampled: 20 MAR 98 — Received: 20 MAR 98
Authorized: 21 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.0 | 0.060 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Arsenic | ND | | 1.0 | 0.30 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Barium | 0.030 | J | 1.0 | 0.20 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Beryllium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Cadmium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Chromium | ND | | 1.0 | 0.010 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Cobalt | ND | | 1.0 | 0.050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Copper | ND | | 1.0 | 0.025 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Lead | ND | | 1.0 | 0.10 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Mercury | ND | | 1.0 | 0.00020 | mg/L | 7470A | 24 MAR 98 | 25 MAR 98 |
| Molybdenum | 0.041 | | 1.0 | 0.040 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Nickel | 0.0076 | J | 1.0 | 0.040 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Selenium | ND | | 1.0 | 0.25 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Silver | ND | | 1.0 | 0.010 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Thallium | ND | | 1.0 | 2.0 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Vanadium | ND | | 1.0 | 0.050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Zinc | 0.010 | J | 1.0 | 0.020 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS
(Water - Dissolved)

Client Name: Woodward-Clyde Consultants
Client ID: HG5B-11-W
LAB ID: 131273-0008-SA
Matrix: WATER — Sampled: 20 MAR 98 — Received: 20 MAR 98
Authorized: 21 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.0 | 0.060 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Arsenic | ND | | 1.0 | 0.30 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Barium | 0.019 | J | 1.0 | 0.20 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Beryllium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Cadmium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Chromium | ND | | 1.0 | 0.010 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Cobalt | ND | | 1.0 | 0.050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Copper | ND | | 1.0 | 0.025 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Lead | ND | | 1.0 | 0.10 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Mercury | ND | | 1.0 | 0.00020 | mg/L | 7470A | 24 MAR 98 | 25 MAR 98 |
| Molybdenum | 0.030 | J | 1.0 | 0.040 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Nickel | 0.0053 | J | 1.0 | 0.040 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Selenium | ND | | 1.0 | 0.25 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Silver | ND | | 1.0 | 0.010 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Thallium | ND | | 1.0 | 2.0 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Vanadium | ND | | 1.0 | 0.050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Zinc | 0.0065 | J | 1.0 | 0.020 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS
(Water - Dissolved)

Client Name: Woodward-Clyde Consultants
Client ID: HG19-10-W
LAB ID: 131273-0010-SA
Matrix: WATER — Sampled: 20 MAR 98 — Received: 20 MAR 98
Authorized: 21 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.0 | 0.060 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Arsenic | ND | | 1.0 | 0.30 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Barium | 0.030 | J | 1.0 | 0.20 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Beryllium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Cadmium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Chromium | ND | | 1.0 | 0.010 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Cobalt | ND | | 1.0 | 0.050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Copper | ND | | 1.0 | 0.025 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Lead | ND | | 1.0 | 0.10 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Mercury | ND | | 1.0 | 0.00020 | mg/L | 7470A | 24 MAR 98 | 25 MAR 98 |
| Molybdenum | 0.090 | | 1.0 | 0.040 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Nickel | ND | | 1.0 | 0.040 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Selenium | ND | | 1.0 | 0.25 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Silver | ND | | 1.0 | 0.010 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Thallium | ND | | 1.0 | 2.0 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Vanadium | ND | | 1.0 | 0.050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Zinc | ND | | 1.0 | 0.020 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS
(Water - Dissolved)

Client Name: Woodward-Clyde Consultants
Client ID: HG20-10-W
LAB ID: 131273-0011-SA
Matrix: WATER
Authorized: 21 MAR 98

Sampled: 20 MAR 98
Prepared: See Below

Received: 20 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.0 | 0.060 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Arsenic | 0.022 | J | 1.0 | 0.30 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Barium | 0.040 | J | 1.0 | 0.20 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Beryllium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Cadmium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Chromium | ND | | 1.0 | 0.010 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Cobalt | ND | | 1.0 | 0.050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Copper | ND | | 1.0 | 0.025 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Lead | ND | | 1.0 | 0.10 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Mercury | ND | | 1.0 | 0.00020 | mg/L | 7470A | 24 MAR 98 | 25 MAR 98 |
| Molybdenum | 0.015 | J | 1.0 | 0.040 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Nickel | ND | | 1.0 | 0.040 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Selenium | ND | | 1.0 | 0.25 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Silver | ND | | 1.0 | 0.010 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Thallium | ND | | 1.0 | 2.0 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Vanadium | ND | | 1.0 | 0.050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Zinc | 0.013 | J | 1.0 | 0.020 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS
(Water - Dissolved)

Client Name: Woodward-Clyde Consultants
Client ID: HG20-11-W
LAB ID: 131273-0012-SA
Matrix: WATER — Sampled: 20 MAR 98 — Received: 20 MAR 98
Authorized: 21 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.0 | 0.060 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Arsenic | ND | | 1.0 | 0.30 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Barium | 0.033 | J | 1.0 | 0.20 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Beryllium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Cadmium | 0.0049 | J | 1.0 | 0.0050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Chromium | ND | | 1.0 | 0.010 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Cobalt | ND | | 1.0 | 0.050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Copper | ND | | 1.0 | 0.025 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Lead | ND | | 1.0 | 0.10 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Mercury | ND | | 1.0 | 0.00020 | mg/L | 7470A | 24 MAR 98 | 25 MAR 98 |
| Molybdenum | 0.011 | J | 1.0 | 0.040 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Nickel | ND | | 1.0 | 0.040 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Selenium | ND | | 1.0 | 0.25 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Silver | ND | | 1.0 | 0.010 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Thallium | ND | | 1.0 | 2.0 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Vanadium | ND | | 1.0 | 0.050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Zinc | 0.0091 | J | 1.0 | 0.020 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METALS
(Water - Dissolved)

Client Name: Woodward-Clyde Consultants
Client ID: FB03201-W
LAB ID: 131273-0013-FB
Matrix: WATER — Sampled: 20 MAR 98 — Received: 20 MAR 98
Authorized: 21 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 1.0 | 0.060 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Arsenic | ND | | 1.0 | 0.30 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Barium | ND | | 1.0 | 0.20 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Beryllium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Cadmium | ND | | 1.0 | 0.0050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Chromium | ND | | 1.0 | 0.010 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Cobalt | ND | | 1.0 | 0.050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Copper | ND | | 1.0 | 0.025 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Lead | ND | | 1.0 | 0.10 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Mercury | ND | | 1.0 | 0.00020 | mg/L | 7470A | 24 MAR 98 | 25 MAR 98 |
| Molybdenum | ND | | 1.0 | 0.040 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Nickel | ND | | 1.0 | 0.040 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Selenium | ND | | 1.0 | 0.25 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Silver | ND | | 1.0 | 0.010 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Thallium | ND | | 1.0 | 2.0 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Vanadium | ND | | 1.0 | 0.050 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |
| Zinc | 0.023 | | 1.0 | 0.020 | mg/L | 6010A | 27 MAR 98 | 28 MAR 98 |

ND = Not Detected

QC LOT ASSIGNMENT REPORT - MS QC
Metals Analysis and Preparation

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK/LCS) | MS QC Run Number (SA,MS,SD,DU) |
|---|---|---|---|---|---|
| 131273-0001-SA | SOLID | QHG-S | | 27 MAR 98-HX | 27 MAR 98-HA |
| 131273-0002-SA | SOLID | QHG-S | | 27 MAR 98-HX | 27 MAR 98-HA |
| 131273-0003-SA | SOLID | QHG-S | | 27 MAR 98-HX | 27 MAR 98-HA |
| 131273-0004-SA | SOLID | QHG-S | | 27 MAR 98-HX | 27 MAR 98-HA |
| 131273-0005-SA | SOLID | QHG-S | | 27 MAR 98-HX | 27 MAR 98-HA |
| 131273-0001-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131273-0002-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131273-0003-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131273-0004-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131273-0005-SA | SOLID | QAS-GF-S | | 25 MAR 98-PX | 25 MAR 98-PA |
| 131273-0001-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131273-0002-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131273-0003-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131273-0004-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131273-0005-SA | SOLID | ICP-S | | 25 MAR 98-BX | 25 MAR 98-BA |
| 131273-0007-SA | AQUEOUS | QICP-A | | 27 MAR 98-CQX | 27 MAR 98-CA |
| 131273-0008-SA | AQUEOUS | QICP-A | | 27 MAR 98-CQX | 27 MAR 98-CA |
| 131273-0010-SA | AQUEOUS | QICP-A | | 27 MAR 98-CQX | 27 MAR 98-CA |
| 131273-0011-SA | AQUEOUS | QICP-A | | 27 MAR 98-CQX | 27 MAR 98-CA |
| 131273-0012-SA | AQUEOUS | QICP-A | | 27 MAR 98-CQX | 27 MAR 98-CA |
| 131273-0013-FB | AQUEOUS | QICP-A | | 27 MAR 98-CQX | 27 MAR 98-CA |
| 131273-0007-SA | AQUEOUS | QHG-A | | 24 MAR 98-JQX | 24 MAR 98-JA |
| 131273-0008-SA | AQUEOUS | QHG-A | | 24 MAR 98-JQX | 24 MAR 98-JA |
| 131273-0010-SA | AQUEOUS | QHG-A | | 24 MAR 98-JQX | 24 MAR 98-JA |
| 131273-0011-SA | AQUEOUS | QHG-A | | 24 MAR 98-JQX | 24 MAR 98-JA |
| 131273-0012-SA | AQUEOUS | QHG-A | | 24 MAR 98-JQX | 24 MAR 98-JA |
| 131273-0013-FB | AQUEOUS | QHG-A | | 24 MAR 98-JQX | 24 MAR 98-JA |

METHOD BLANK REPORT
Metals Analysis and Preparation
Project: 131273

Test: Q-HG-CVAA-S Method SW7471A - Mercury, Cold Vapor AA
Matrix: SOLID
QC Run: 27 MAR 98-HX Date Analyzed: 30 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Mercury | ND | mg/kg | 0.10 |

Test: Q-AS-GFAA-S Method 7060A - Arsenic, Graphite Furnace AA
Matrix: SOLID
QC Run: 25 MAR 98-PX Date Analyzed: 26 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Arsenic | ND | mg/kg | 0.25 |

Test: ICPT-CAM-S Method 6010A - CAM TTLC Metals
Matrix: SOLID
QC Run: 25 MAR 98-BX Date Analyzed: 26 MAR 98

| Analyte | Result | | Units | Reporting Limit |
|---|---|---|---|---|
| Antimony | ND | | mg/kg | 1.0 |
| Barium | 0.11 | J | mg/kg | 1.0 |
| Beryllium | ND | | mg/kg | 0.10 |
| Cadmium | ND | | mg/kg | 0.50 |
| Chromium | ND | | mg/kg | 0.50 |
| Cobalt | ND | | mg/kg | 5.0 |
| Copper | ND | | mg/kg | 2.5 |
| Lead | ND | | mg/kg | 0.50 |
| Molybdenum | ND | | mg/kg | 4.0 |
| Nickel | ND | | mg/kg | 4.0 |
| Selenium | ND | | mg/kg | 0.50 |
| Silver | ND | | mg/kg | 0.50 |
| Thallium | ND | | mg/kg | 1.0 |
| Vanadium | ND | | mg/kg | 5.0 |
| Zinc | ND | | mg/kg | 2.0 |

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

METHOD BLANK REPORT (cont.)
Metals Analysis and Preparation
Project: 131273

Test: Q-ICP-ADD Method 6010A - ICP Metals, Dissolved
Matrix: AQUEOUS
QC Run: 27 MAR 98-CQX Date Analyzed: 28 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Antimony | ND | mg/L | 0.060 |
| Arsenic | ND | mg/L | 0.30 |
| Barium | ND | mg/L | 0.20 |
| Beryllium | ND | mg/L | 0.0050 |
| Cadmium | ND | mg/L | 0.0050 |
| Chromium | ND | mg/L | 0.010 |
| Cobalt | ND | mg/L | 0.050 |
| Copper | ND | mg/L | 0.025 |
| Lead | ND | mg/L | 0.10 |
| Molybdenum | ND | mg/L | 0.040 |
| Nickel | ND | mg/L | 0.040 |
| Selenium | ND | mg/L | 0.25 |
| Silver | ND | mg/L | 0.010 |
| Thallium | ND | mg/L | 2.0 |
| Vanadium | ND | mg/L | 0.050 |
| Zinc | ND | mg/L | 0.020 |

Test: Q-HG-CVAA-AD Method SW7470A - Mercury, Cold Vapor AA, Dissolved
Matrix: AQUEOUS
QC Run: 24 MAR 98-JQX Date Analyzed: 25 MAR 98

| Analyte | Result | Units | Reporting Limit |
|---|---|---|---|
| Mercury | ND | mg/L | 0.00020 |

ND = Not Detected

LABORATORY CONTROL SAMPLE REPORT
Metals Analysis and Preparation
Project: 131273

Category: QHG-S Mercury by CVAA
Matrix: SOLID
Date Analyzed: 30 MAR 98
QC Run: 27 MAR 98-HX
Concentration Units: mg/kg

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Mercury | 0.833 | 0.845 | 101 | 85-115 |

Category: QAS-GF-S Arsenic, Graphite Furnace AA
Matrix: SOLID
Date Analyzed: 26 MAR 98
QC Run: 25 MAR 98-PX
Concentration Units: mg/kg

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Arsenic | 4.00 | 3.89 | 97 | 80-120 |

Category: ICP-S ICP Metals
Matrix: SOLID
Date Analyzed: 26 MAR 98
QC Run: 25 MAR 98-BX
Concentration Units: mg/kg

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Antimony | 50.0 | 45.9 | 92 | 70-110 |
| Barium | 200 | 209 | 104 | 85-115 |
| Beryllium | 5.00 | 5.41 | 108 | 80-115 |
| Cadmium | 5.00 | 5.22 | 104 | 80-115 |
| Chromium | 20.0 | 21.5 | 107 | 85-120 |
| Cobalt | 50.0 | 51.0 | 102 | 85-120 |
| Copper | 25.0 | 25.4 | 101 | 85-115 |
| Lead | 50.0 | 50.5 | 101 | 80-110 |
| Molybdenum | 100 | 103 | 103 | 80-115 |
| Nickel | 50.0 | 52.5 | 105 | 85-115 |
| Selenium | 200 | 193 | 96 | 70-105 |
| Silver | 5.00 | 4.52 | 90 | 80-110 |
| Thallium | 200 | 193 | 97 | 80-110 |
| Vanadium | 50.0 | 52.2 | 104 | 85-115 |
| Zinc | 50.0 | 52.5 | 105 | 80-115 |

Category: QICP-A Method 6010A - ICP Metals
Matrix: AQUEOUS
Date Analyzed: 27 MAR 98
QC Run: 27 MAR 98-CQX
Concentration Units: mg/L

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)
Project: 131273

Category: QICP-A Method 6010A - ICP Metals
Matrix: AQUEOUS Date Analyzed: 27 MAR 98
QC Run: 27 MAR 98-CQX (cont.)
Concentration Units: mg/L

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Antimony | 0.500 | 0.491 | 98 | 80-115 |
| Arsenic | 2.00 | 2.07 | 104 | 85-115 |
| Barium | 2.00 | 2.03 | 102 | 85-115 |
| Beryllium | 0.0500 | 0.0503 | 101 | 85-120 |
| Cadmium | 0.0500 | 0.0479 | 96 | 80-120 |
| Chromium | 0.200 | 0.205 | 103 | 80-115 |
| Cobalt | 0.500 | 0.498 | 100 | 85-120 |
| Copper | 0.250 | 0.256 | 103 | 85-115 |
| Lead | 0.500 | 0.475 | 95 | 85-120 |
| Molybdenum | 1.00 | 1.01 | 101 | 85-115 |
| Nickel | 0.500 | 0.509 | 102 | 85-115 |
| Selenium | 2.00 | 1.99 | 99 | 85-125 |
| Silver | 0.0500 | 0.0473 | 95 | 85-115 |
| Thallium | 2.00 | 1.74 | 87 | 85-120 |
| Vanadium | 0.500 | 0.509 | 102 | 85-120 |
| Zinc | 0.500 | 0.500 | 100 | 85-120 |

Category: QHG-A Mercury by CVAA
Matrix: AQUEOUS Date Analyzed: 25 MAR 98
QC Run: 24 MAR 98-JQX
Concentration Units: mg/L

| Analyte | Concentration Spiked | Concentration Measured | Accuracy(%) LCS | Accuracy(%) Limits |
|---|---|---|---|---|
| Mercury | 0.00500 | 0.00489 | 98 | 85-115 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 131273

Category: QHG-S Mercury by CVAA
Matrix: SOLID
Sample: 131259-0001
MS Run: 27 MAR 98-HA
Units mg/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| | Concentration | | | | | | | | |
| Mercury | ND | 0.173 | 0.180 | 0.167 | 104 | 108 | 4.0 | 85-115 | 20 |

Category: QAS-GF-S Arsenic, Graphite Furnace AA
Matrix: SOLID
Sample: 131259-0001
MS Run: 25 MAR 98-PA
Units mg/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| | Concentration | | | | | | | | |
| Arsenic | 2.92 | 4.56 | 4.46 n | 2.00 | 82 | 77 | 2.2 | 80-120 | 20 |

Category: ICP-S ICP Metals
Matrix: SOLID
Sample: 131259-0001
MS Run: 25 MAR 98-BA
Units mg/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| | Concentration | | | | | | | | |
| Antimony | 0.470 J | 5.47 n | 4.63 n | 25.0 | 20 | 17 | 17 | 70-110 | 20 |
| Barium | 52.0 | 141 | 139 | 100 | 89 | 87 | 1.6 | 85-115 | 20 |
| Beryllium | 0.406 | 2.79 | 2.75 | 2.50 | 95 | 94 | 1.2 | 80-115 | 20 |
| Cadmium | 0.208 J | 2.51 | 2.50 | 2.50 | 92 | 92 | 0.5 | 80-115 | 20 |
| Chromium | 24.2 | 32.9 | 40.2 n | 10.0 | 87 | 161 | 20 | 85-120 | 20 |
| Cobalt | 5.84 | 28.2 | 28.0 | 25.0 | 89 | 89 | 0.5 | 85-120 | 20 |
| Copper | 13.7 | 23.8 n | 23.9 n | 12.5 | 81 | 82 | 0.3 | 85-115 | 20 |
| Lead | 5.38 | 27.5 | 27.0 | 25.0 | 88 | 87 | 1.7 | 80-110 | 20 |

J = Result is detected below the reporting limit or is an estimated concentration.
n = Spiked analyte out of matrix spike acceptance limits; refer to lab control sample results.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 131273 (cont.)

Category: ICP-S ICP Metals (cont.)
Matrix: SOLID
Sample: 131259-0001
MS Run: 25 MAR 98-BA (cont.)
Units mg/kg Units Qualifier: Wet weight

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| | | Concentration | | | | | | | |
| Molybdenum | 1.34 J | 46.3 | 45.8 | 50.0 | 90 | 89 | 1.2 | 80-115 | 20 |
| Nickel | 15.1 | 37.8 | 45.1 n | 25.0 | 91 | 120 | 18 | 85-115 | 20 |
| Selenium | ND | 90.1 | 89.2 | 100 | 90 | 89 | 1.0 | 70-105 | 20 |
| Silver | ND | 2.18 | 2.17 | 2.50 | 87 | 87 | 0.6 | 80-110 | 20 |
| Thallium | 0.819 J | 88.0 | 86.9 | 100 | 87 | 86 | 1.2 | 80-110 | 20 |
| Vanadium | 32.6 | 52.9 n | 55.4 | 25.0 | 81 | 91 | 4.7 | 85-115 | 20 |
| Zinc | 44.7 | 64.2 n | 63.2 n | 25.0 | 78 | 74 | 1.6 | 80-115 | 20 |

Category: QICP-A Method 6010A - ICP Metals
Matrix: AQUEOUS
Sample: 131313-0001
MS Run: 27 MAR 98-CA
Units: mg/L

| Analyte | Sample Result | MS Result | MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| | | Concentration | | | | | | | |
| Antimony | ND | 0.486 | 0.488 | 0.500 | 97 | 98 | 0.3 | 80-115 | 20 |
| Arsenic | ND | 2.08 | 2.06 | 2.00 | 104 | 103 | 1.1 | 85-115 | 20 |
| Barium | 0.0286 J | 2.01 | 2.02 | 2.00 | 99 | 99 | 0.3 | 85-115 | 20 |
| Beryllium | ND | 0.0493 | 0.0493 | 0.0500 | 99 | 99 | 0.0 | 85-120 | 20 |
| Cadmium | ND | 0.0424 | 0.0457 | 0.0500 | 85 | 91 | 7.5 | 80-120 | 20 |
| Chromium | ND | 0.197 | 0.200 | 0.200 | 98 | 100 | 1.8 | 80-115 | 20 |
| Cobalt | ND | 0.481 | 0.481 | 0.500 | 96 | 96 | 0.0 | 85-120 | 20 |
| Copper | 0.00507 J | 0.256 | 0.255 | 0.250 | 100 | 100 | 0.3 | 85-115 | 20 |
| Lead | ND | 0.462 | 0.462 | 0.500 | 92 | 92 | 0.1 | 80-120 | 20 |
| Molybdenum | 0.0109 J | 0.996 | 0.999 | 1.00 | 99 | 99 | 0.2 | 85-115 | 20 |
| Nickel | ND | 0.491 | 0.492 | 0.500 | 98 | 98 | 0.0 | 85-115 | 20 |
| Selenium | ND | 1.96 | 1.97 | 2.00 | 98 | 99 | 0.7 | 85-125 | 20 |
| Silver | ND | 0.0457 | 0.0470 | 0.0500 | 91 | 94 | 2.8 | 85-115 | 20 |
| Thallium | ND | 1.70 | 1.72 | 2.00 | 85 | 86 | 0.8 | 85-120 | 20 |
| Vanadium | 0.0329 J | 0.530 | 0.530 | 0.500 | 99 | 99 | 0.0 | 85-120 | 20 |
| Zinc | ND | 0.492 | 0.495 | 0.500 | 98 | 99 | 0.6 | 85-120 | 20 |

J = Result is detected below the reporting limit or is an estimated concentration.
n = Spiked analyte out of matrix spike acceptance limits; refer to lab control sample results.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 131273 (cont.)

Category: QHG-A Mercury by CVAA
Matrix: AQUEOUS
Sample: 131262-0003
MS Run: 24 MAR 98-JA
Units: mg/L

| Analyte | Sample Result | Concentration MS Result | Concentration MSD Result | Amount Spiked MS/MSD | %Recovery MS | %Recovery MSD | %RPD | Acceptance Limit Recov. | Acceptance Limit RPD |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | ND | 0.00104 | 0.00104 | 0.00100 | 104 | 104 | 0.0 | 85-115 | 20 |

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

# Moisture

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG19-01
LAB ID: 131273-0001-SA
Matrix: SOIL
Authorized: 21 MAR 98

Sampled: 20 MAR 98
Prepared: See Below

Received: 20 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 8.8 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG19-02
LAB ID: 131273-0002-SA
Matrix: SOIL Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 15 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG19-03
LAB ID: 131273-0003-SA
Matrix: SOIL — Sampled: 20 MAR 98 — Received: 20 MAR 98
Authorized: 21 MAR 98 — Prepared: See Below — Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 9.9 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG20-01
LAB ID: 131273-0004-SA
Matrix: SOIL Sampled: 20 MAR 98 Received: 20 MAR 98
Authorized: 21 MAR 98 Prepared: See Below Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 12 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

GENERAL INORGANICS

Client Name: Woodward-Clyde Consultants
Client ID: HG20-02
LAB ID: 131273-0005-SA
Matrix: SOIL
Authorized: 21 MAR 98

Sampled: 20 MAR 98
Prepared: See Below

Received: 20 MAR 98
Analyzed: See Below

| Parameter | Result | Qual | DIL | RL | Units | Method | Prep Date | Analyzed Date |
|---|---|---|---|---|---|---|---|---|
| Percent Water | 14 | | 1.0 | 0.10 | % | D2216 | NA | 24 MAR 98 |

QC LOT ASSIGNMENT REPORT - MS QC
GC/MS Preparation

| Laboratory Sample Number | QC Matrix | QC Category | QC Lot Number (DCS) | QC Run Number (SCS/BLANK/LCS) | MS QC Run Number (SA,MS,SD,DU) |
|---|---|---|---|---|---|
| 131273-0001-SA | SOLID | MOISTURE-S | | | 23 MAR 98-DB |
| 131273-0002-SA | SOLID | MOISTURE-S | | | 23 MAR 98-DB |
| 131273-0003-SA | SOLID | MOISTURE-S | | | 23 MAR 98-DB |
| 131273-0004-SA | SOLID | MOISTURE-S | | | 23 MAR 98-DB |
| 131273-0005-SA | SOLID | MOISTURE-S | | | 23 MAR 98-DB |

MATRIX DUPLICATE QC REPORT
GC/MS Preparation
Project: 131273

Category: MOISTURE-S Method ASTM D2216 - Percent Moisture
Matrix: SOLID
Sample: 131273-0001
MS Run: 23 MAR 98-DB
Units: %

| Analyte | Concentration Sample | Concentration Duplicate | %RPD SA-DU | Acceptance Limit |
|---|---|---|---|---|
| Percent Water | 8.80 | 8.60 | 2.3 | 10 |

Calculations are performed before rounding to avoid round-off errors in calculated results.

# VOCs

Quanterra Incorporated
4101 Shuffel Drive, NW
North Canton, Ohio 44720

330 497-9396 Telephone
330 497-0772 Fax

Quanterra
Environmental Services

# ANALYTICAL REPORT

PROJECT NO. 131273

WWC/131273

Lot #: A8C240141

SHARON MEYERS

Quanterra Inc - Santa Ana CA L

QUANTERRA INCORPORATED

Alesia M. Danford
Project Manager

April 2, 1998

# CASE NARRATIVE

The following report contains the analytical results for five solid and seven water samples submitted to Quanterra-North Canton by Quanterra-Santa Ana from the WWC/131273 Site, project number 131273. The samples were received March 24, 1998, according to documented sample acceptance procedures.

Quanterra-North Canton utilizes only USEPA approved methods and instrumentation in all analytical work. The samples presented in this report were analyzed for the parameters listed on the method reference page in accordance with the methods indicated.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

The samples were received at the laboratory at a temperature of 4.6° C.

## SUPPLEMENTAL QC INFORMATION

### SAMPLE RECEIVING

One 40ml Volatile vial for samples HG19-10-W 131273-0010 SA and FB03201-W 131273-0013 FB were received with headspace.

### GC/MS VOLATILES

Sample(s) which contain results between the MDL and the RL are flagged with "J". There is the possibility of false positive or misidentification at these quantitation levels. In analytical methods requiring confirmation of the analyte reported, confirmation will be performed only down to the standard reporting limit (SRL). The acceptance criteria for quality control criteria may not be met at these quantitation levels.

Acid preservation causes 2-Chloroethyl vinyl ether to decompose. When detected, the concentration found will be reported; however, a true reporting limit cannot be reported when the compound is not detected.

The matrix spike/matrix spike duplicate associated with batch 8091166 failed recovery criteria. The laboratory control sample associated with this batch was in control. This is believed to be a matrix effect; therefore, no further corrective action was taken.

The matrix spike/matrix spike duplicate associated with batch 8089213 on sample HG5B-10-W 131273-0007 SA failed, due to a power failure and insufficient sample. The laboratory control sample associated with this batch was in control.

# ANALYTICAL METHODS SUMMARY

**A8C240141**

| PARAMETER | ANALYTICAL METHOD |
|---|---|
| Total Residue as Percent Solids | MCAWW 160.3 MOD |
| Volatile Organics by GC/MS | SW846 8260A |

**References:**

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

# SAMPLE SUMMARY

**A8C240141**

| WO # | SAMPLE# | CLIENT SAMPLE ID | DATE | TIME |
|---|---|---|---|---|
| CG2AK | 001 | HG19-01 131273-0001 SA | 03/20/98 | 00:0 |
| CG2AP | 002 | HG19-02 131273-0002 SA | 03/20/98 | 00:0 |
| CG2AV | 003 | HG19-03 131273-0003 SA | 03/20/98 | 00:0 |
| CG2AX | 004 | HG20-01 131273-0004 SA | 03/20/98 | 00:0 |
| CG2C1 | 005 | HG20-02 131273-0005 SA | 03/20/98 | 00:0 |
| CG2C3 | 006 | HG5B-10-W 131273-0007 SA | 03/20/98 | 00:0 |
| CG2C4 | 007 | HG5B-11-W 131273-0008 SA | 03/20/98 | 00:0 |
| CG2C7 | 008 | HG08-10-W 131273-0009 SA | 03/20/98 | 00:0 |
| CG2CA | 009 | HG19-10-W 131273-0010 SA | 03/20/98 | 00:0 |
| CG2CD | 010 | HG20-10-W 131273-0011 SA | 03/20/98 | 00:0 |
| CG2CF | 011 | HG20-11-W 131273-0012 SA | 03/20/98 | 00:0 |
| CG2CH | 012 | FB03201-W 131273-0013 FB | 03/20/98 | 00:0 |

**NOTE(S):**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

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Client Sample ID: HG19-01 131273-0001 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-001 Work Order #...: CG2AK102 Matrix.....: SOLID
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1
% Moisture.....: 11

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Client Sample ID: BG19-01 131273-0001 SA

GC/MS Volatiles

Lot-Sample #...: ABC240141-001 Work Order #...: CG2AK102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING-LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | 0.41 J | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 91 | (61 - 115) |
| Toluene-d8 | 100 | (82 - 129) |
| Bromofluorobenzene | 95 | (64 - 112) |

NOTE(S):

J Estimated result. Result is less than RL.

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Client Sample ID: HG19-02 131273-0002 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-002 Work Order #...: CG2AP102 Matrix.....: SOLID
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1
% Moisture.....: 15

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: BG19-02 131273-0002 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-002 Work Order #...: CG2AP102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 92 | (61 - 115) |
| Toluene-d8 | 99 | (82 - 129) |
| Bromofluorobenzene | 96 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG19-03 131273-0003 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-003 Work Order #...: CG2AV102 Matrix.....: SOLID
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1
% Moisture.....: 10

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG19-03 131273-0003 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-003 Work Order #...: CG2AV102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 94 | (61 - 115) |
| Toluene-d8 | 99 | (82 - 129) |
| Bromofluorobenzene | 97 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG20-01 131273-0004 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-004 Work Order #...: CG2AX102 Matrix.....: SOLID
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1
% Moisture.....: 12

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG20-01 131273-0004 SA

GC/MS Volatiles

Lot-Sample #...: ABC240141-004 Work Order #...: CG2AX102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 93 | (61 - 115) |
| Toluene-d8 | 100 | (82 - 129) |
| Bromofluorobenzene | 98 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG20-02 131273-0005 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-005 Work Order #...: CG2C1102 Matrix.....: SOLID
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1
% Moisture.....: 15

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG20-02 131273-0005 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-005 Work Order #...: CG2C1102 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 92 | (61 - 115) |
| Toluene-d8 | 100 | (82 - 129) |
| Bromofluorobenzene | 97 | (64 - 112) |

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: BGSB-10-W 131273-0007 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-006 Work Order #...: CG2C3101 Matrix.....: WATER
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089213
Dilution Factor: 2.08

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 21 | ug/L | SW846 8260A |
| Benzene | ND | 2.1 | ug/L | SW846 8260A |
| Bromobenzene | ND | 2.1 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 2.1 | ug/L | SW846 8260A |
| Bromoform | ND | 2.1 | ug/L | SW846 8260A |
| Bromomethane | ND | 4.2 | ug/L | SW846 8260A |
| 2-Butanone | ND | 21 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 2.1 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 2.1 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 2.1 | ug/L | SW846 8260A |
| Chloroethane | ND | 4.2 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 2.1 | ug/L | SW846 8260A |
| Chloromethane | ND | 4.2 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 2.1 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 2.1 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 2.1 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 2.1 | ug/L | SW846 8260A |
| Dibromomethane | ND | 2.1 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 2.1 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 2.1 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 2.1 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 4.2 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | 8.1 | 2.1 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 2.1 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | 40 | 1.0 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | 10 | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | 1.8 J | 2.1 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 4.2 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 2.1 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 2.1 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 2.1 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 2.1 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 2.1 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 2.1 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 2.1 | ug/L | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HGSB-10-W 131273-0007 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-006 Work Order #...: CG2C3101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING-LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Hexachlorobutadiene | ND | 2.1 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 2.1 | ug/L | SW846 8260A |
| 2-Hexanone | ND | 21 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 2.1 | ug/L | SW846 8260A |
| Methylene chloride | ND | 2.1 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 21 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 2.1 | ug/L | SW846 8260A |
| Naphthalene | ND | 2.1 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 4.2 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| Styrene | ND | 2.1 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 2.1 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 2.1 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 2.1 | ug/L | SW846 8260A |
| Toluene | ND | 2.1 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 2.1 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 2.1 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 2.1 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 2.1 | ug/L | SW846 8260A |
| Trichloroethene | 1.9 J | 2.1 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 2.1 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 2.1 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 4.2 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 4.2 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 1.0 | ug/L | SW846 8260A |
| o-Xylene | ND | 1.0 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | (69 - 127) |
| Toluene-d8 | 98 | (90 - 112) |
| Bromofluorobenzene | 99 | (87 - 114) |

NOTE(S):

J Estimated result. Result is less than RL.

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG5B-11-W 131273-0008 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-007 Work Order #...: CG2C4101 Matrix.....: WATER
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089213
Dilution Factor: 2.08

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 21 | ug/L | SW846 8260A |
| Benzene | ND | 2.1 | ug/L | SW846 8260A |
| Bromobenzene | ND | 2.1 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 2.1 | ug/L | SW846 8260A |
| Bromoform | ND | 2.1 | ug/L | SW846 8260A |
| Bromomethane | ND | 4.2 | ug/L | SW846 8260A |
| 2-Butanone | ND | 21 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 2.1 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 2.1 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 2.1 | ug/L | SW846 8260A |
| Chloroethane | ND | 4.2 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 2.1 | ug/L | SW846 8260A |
| Chloromethane | ND | 4.2 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 2.1 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 2.1 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 2.1 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 2.1 | ug/L | SW846 8260A |
| Dibromomethane | ND | 2.1 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 2.1 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 2.1 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 2.1 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 4.2 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | 8.0 | 2.1 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 2.1 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | 38 | 1.0 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | 10 | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | 1.6 J | 2.1 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 4.2 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 2.1 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 2.1 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 2.1 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 2.1 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 2.1 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 2.1 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 2.1 | ug/L | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG5B-11-W 131273-0008 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-007 Work Order #...: CG2C4101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Hexachlorobutadiene | ND | 2.1 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 2.1 | ug/L | SW846 8260A |
| 2-Hexanone | ND | 21 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 2.1 | ug/L | SW846 8260A |
| Methylene chloride | ND | 2.1 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 21 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 2.1 | ug/L | SW846 8260A |
| Naphthalene | ND | 2.1 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 4.2 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| Styrene | ND | 2.1 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 2.1 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 2.1 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 2.1 | ug/L | SW846 8260A |
| Toluene | ND | 2.1 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 2.1 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 2.1 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 2.1 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 2.1 | ug/L | SW846 8260A |
| Trichloroethene | 2.0 J | 2.1 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 2.1 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 2.1 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 2.1 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 4.2 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 4.2 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 1.0 | ug/L | SW846 8260A |
| o-Xylene | ND | 1.0 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 94 | (69 - 127) |
| Toluene-d8 | 96 | (90 - 112) |
| Bromofluorobenzene | 97 | (87 - 114) |

NOTE(S):

J Estimated result. Result is less than RL.

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG08-10-W 131273-0009 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-008 Work Order #...: CG2C7101 Matrix.....: WATER
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089160
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | 33 | 10 | ug/L | SW846 8260A |
| Benzene | 0.11 J | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | 0.32 J | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG08-10-W 131273-0009 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-008 Work Order #...: CG2C7101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | 1.0 | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | 0.29 J | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 91 | (69 - 127) |
| Toluene-d8 | 97 | (90 - 112) |
| Bromofluorobenzene | 95 | (87 - 114) |

NOTE(S):

J Estimated result. Result is less than RL.

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG19-10-W 131273-0010 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-009 Work Order #...: CG2CA101 Matrix.....: WATER
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089160
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | 80 | 10 | ug/L | SW846 8260A |
| Benzene | 0.35 J | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | 9.2 J | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | 1.6 | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | 0.54 J | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | 1.4 | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | 0.15 J | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: BG19-10-W 131273-0010 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-009 Work Order #...: CG2CA101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| **Toluene** | **0.39 J** | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| **Vinyl chloride** | **0.98 J** | 2.0 | ug/L | SW846 8260A |
| **m-Xylene & p-Xylene** | **0.31 J** | 0.50 | ug/L | SW846 8260A |
| **o-Xylene** | **0.19 J** | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | (69 - 127) |
| Toluene-d8 | 95 | (90 - 112) |
| Bromofluorobenzene | 103 | (87 - 114) |

NOTE(S):

J Estimated result. Result is less than RL.

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG20-10-W 131273-0011 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-010 Work Order #...: CG2CD101 Matrix.....: WATER
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089160
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 10 | ug/L | SW846 8260A |
| Benzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | 0.30 J | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | 0.65 J | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | 1.1 | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: HG20-10-W 131273-0011 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-010 Work Order #...: CG2CD101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | 0.14 J | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | (69 - 127) |
| Toluene-d8 | 98 | (90 - 112) |
| Bromofluorobenzene | 96 | (87 - 114) |

NOTE(S):

J Estimated result. Result is less than RL.

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: BG20-11-W 131273-0012 SA

GC/MS Volatiles

Lot-Sample #...: A8C240141-011 Work Order #...: CG2CF101 Matrix.....: WATER
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089160
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 10 | ug/L | SW846 8260A |
| Benzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | 0.28 J | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | 0.63 J | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | 1.2 | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: BG20-11-W 131273-0012 SA

GC/MS Volatiles

Lot-Sample #...: ABC240141-011 Work Order #...: CG2CF101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | 0.11 J | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 92 | (69 - 127) |
| Toluene-d8 | 98 | (90 - 112) |
| Bromofluorobenzene | 95 | (87 - 114) |

NOTE(S):

J Estimated result. Result is less than RL.

Quanterra Inc - Santa Ana CA Lab

Client Sample ID: FB03201-W 131273-0013 FB

GC/MS Volatiles

Lot-Sample #...: A8C240141-012 Work Order #...: CG2CH101 Matrix.....: WATER
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089160
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | 12 | 10 | ug/L | SW846 8260A |
| Benzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |

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Quanterra Inc - Santa Ana CA Lab

Client Sample ID: FB03201-W 131273-0013 FB

GC/MS Volatiles

Lot-Sample #...: A8C240141-012 Work Order #...: CG2CM101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING-LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | (69 - 127) |
| Toluene-d8 | 95 | (90 - 112) |
| Bromofluorobenzene | 97 | (87 - 114) |

# QUALITY CONTROL SECTION

## QUALITY CONTROL ELEMENTS OF SW-846 METHODS

Quanterra® Incorporated conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data. Toward this end, several types of quality control indicators are incorporated into the QA/QC program. These indicators are introduced into the sample testing process to provide a mechanism for the assessment of the analytical data.

**QC BATCH**

Environmental samples are taken through the testing process in groups called QUALITY CONTROL BATCHES (QC batches). A QC batch contains up to twenty environmental samples of a similar matrix (water, soil) that are processed using the same reagents and standards. Quanterra requires that each environmental sample be associated with a QC batch.

Several quality control samples are included in each QC batch and are processed identically to the twenty environmental samples. These QC samples include a METHOD BLANK (MB), a LABORATORY CONTROL SAMPLE (LCS) and, where appropriate, a MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) pair or a MATRIX SPIKE/SAMPLE DUPLICATE (MS/DU) pair. If there is insufficient sample to perform an MS/MSD or an MS/DU, then a LABORATORY CONTROL SAMPLE DUPLICATE (LCSD) is included in the QC batch.

**LABORATORY CONTROL SAMPLE**

The Laboratory Control Sample is a QC sample that is created by adding known concentrations of a full or partial set of target analytes to a matrix similar to that of the environmental samples in the QC batch. The LCS analyte recovery results are used to monitor the analytical process and provide evidence that the laboratory is performing the method within acceptable guidelines. Failure to meet the established recovery guidelines requires the repreparation and reanalysis of all samples in the QC batch. The only exception is that if the LCS recoveries are biased high and the associated sample is ND for the parameter(s) of interest, the batch is acceptable.

At times, a Laboratory Control Sample Duplicate (LCSD) is also included in the QC batch. An LCSD is a QC sample that is created and handled identically to the LCS. Analyte recovery data from the LCSD is assessed in the same way as that of the LCS. The LCSD recoveries, together with the LCS recoveries, are used to determine the reproducibility (precision) of the analytical system. Precision data are expressed as relative percent differences (RPDs). Failure of the RPDs to fall within the laboratory-generated acceptance windows requires the repreparation and reanalysis of all samples in the QC batch. The only exception is that if the MS/MSD RPDs are within acceptance criteria, the batch is acceptable.

**METHOD BLANK**

The Method Blank is a QC sample consisting of all the reagents used in analyzing the environmental samples contained in the QC batch. Method Blank results are used to determine if interference or contamination in the analytical system could lead to the reporting of false positive data or elevated analyte concentrations. All target analytes must be below the reporting limits (RL) or the associated sample(s) must be ND except for the common laboratory contaminants indicated below.

| Volatile (GC or GC/MS) | Semivolatile (GC/MS) | Metals |
|---|---|---|
| Methylene chloride | Phthalate Esters | Copper |
| Acetone | | Iron |
| 2-Butanone | | Zinc |
| | | Lead* |

* *for analyses run on TJA Trace ICP or GFAA only*

## QUALITY CONTROL ELEMENTS OF SW-846 METHODS (continued)

**METHOD BLANK (continued)**
The listed volatile and semivolatile compounds may be present in concentrations up to 5 times the reporting limits. The listed metals may be present in concentrations up to 2 times the reporting limit or must be twenty fold less than the results of the environmental samples. Failure to meet these Method Blank criteria requires the repreparation and reanalysis of all samples in the QC batch.

**MATRIX SPIKE/MATRIX SPIKE DUPLICATE**
A Matrix Spike and a Matrix Spike Duplicate are a pair of environmental samples to which known concentrations of a full or partial set of target analytes are added. The MS/MSD results are determined in the same manner as the results of the environmental sample used to prepare the MS/MSD. The analyte recoveries and the relative percent differences (RPDs) of the recoveries are calculated and used to evaluate the effect of the sample matrix on the analytical results. When these values fail to meet acceptance criteria, the data is reviewed to determine the cause. If, in the analyst's judgment, sample matrix effects are indicated, no corrective action is performed. Otherwise, the MS/MSD and the environmental sample used to prepare them are reprepared and reanalyzed.

For certain methods, a Matrix Spike/Sample Duplicate (MS/DU) may be included in the QC batch in place of the MS/MSD. For the parameters (i.e. pH, ignitability) where it is not possible to prepare a spiked sample, a Sample Duplicate may be included in the QC batch.

**SURROGATE COMPOUNDS**
In addition to these batch-related QC indicators, each organic environmental and QC sample are spiked with surrogate compounds. Surrogates are organic chemicals that behave similarly to the analytes of interest and that are rarely present in the environment. Surrogate recoveries are used to monitor the individual performance of a sample in the analytical system.

The acceptance criteria do not apply to samples that are diluted. If the dilution is more than 5X, the recoveries will be reported as diluted out. All other surrogate recoveries will be reported. If the LCS, LCSD, or the Method Blank surrogates fail to meet recovery criteria (exception for dilutions), the entire batch of samples is reprepared and reanalyzed.

If the surrogate recoveries are biased high in the LCS, LCSD, or the Method Blank and the associated sample(s) are ND, the batch is acceptable. If the surrogate recoveries are outside criteria for environmental or MS/MSD samples, the batch may be acceptable based on the analyst's judgment that sample matrix effects are indicated.

For the GC/MS BNA methods, the surrogate criteria is that two of the three surrogates for each fraction must meet acceptance criteria. The third surrogate must have a recovery of ten percent or greater.

For the Pesticide/PCB, PAH, TPH, and Herbicide methods, the surrogate criteria is that one of two surrogate compounds meet acceptance criteria.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C240141 Work Order #...: CG5EN102 Matrix.....: SOLID
LCS Lot-Sample#: A8C280000-123
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| 1,1-Dichloroethene | 105 | (60 - 119) | SW846 8260A |
| Trichloroethene | 95 | (74 - 115) | SW846 8260A |
| Chlorobenzene | 98 | (85 - 116) | SW846 8260A |
| Toluene | 102 | (87 - 118) | SW846 8260A |
| Benzene | 105 | (83 - 118) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 86 | (61 - 115) |
| Toluene-d8 | 101 | (82 - 129) |
| Bromofluorobenzene | 98 | (64 - 112) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C240141 Work Order #...: CG5QM102 Matrix.....: WATER
LCS Lot-Sample#: A8C300000-160
Prep Date.....: 03/29/98 Analysis Date..: 03/29/98
Prep Batch #...: 8089160
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| 1,1-Dichloroethene | 108 | (87 - 113) | SW846 8260A |
| Trichloroethene | 100 | (89 - 115) | SW846 8260A |
| Chlorobenzene | 95 | (89 - 119) | SW846 8260A |
| Toluene | 94 | (81 - 117) | SW846 8260A |
| Benzene | 99 | (77 - 126) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 88 | (69 - 127) |
| Toluene-d8 | 98 | (90 - 112) |
| Bromofluorobenzene | 97 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C240141 Work Order #...: CG5XD102 Matrix.....: WATER
LCS Lot-Sample#: A8C300000-213
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089213
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| 1,1-Dichloroethene | 112 | (87 - 113) | SW846 8260A |
| Trichloroethene | 100 | (89 - 115) | SW846 8260A |
| Chlorobenzene | 96 | (89 - 119) | SW846 8260A |
| Toluene | 94 | (81 - 117) | SW846 8260A |
| Benzene | 99 | (77 - 126) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 89 | (69 - 127) |
| Toluene-d8 | 98 | (90 - 112) |
| Bromofluorobenzene | 96 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C240141 Work Order #...: CG6WX102 Matrix.....: WATER
LCS Lot-Sample#: A8D010000-166
Prep Date.....: 03/31/98 Analysis Date..: 03/31/98
Prep Batch #...: 8091166
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| 1,1-Dichloroethene | 108 | (87 - 113) | SW846 8260A |
| Trichloroethene | 100 | (89 - 115) | SW846 8260A |
| Chlorobenzene | 94 | (89 - 119) | SW846 8260A |
| Toluene | 93 | (81 - 117) | SW846 8260A |
| Benzene | 100 | (77 - 126) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 93 | (69 - 127) |
| Toluene-d8 | 96 | (90 - 112) |
| Bromofluorobenzene | 98 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## METHOD BLANK REPORT

### GC/MS Volatiles

Client Lot #...: A8C240141 Work Order #...: CGSEN101 Matrix.....: SOLID
MB Lot-Sample #: A8C280000-123

Prep Date.....: 03/27/98
Analysis Date..: 03/27/98 Prep Batch #...: 8087123
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 20 | ug/kg | SW846 8260A |
| Benzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260A |
| Bromomethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Butanone | ND | 20 | ug/kg | SW846 8260A |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260A |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260A |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Chloroethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260A |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260A |
| Chloromethane | ND | 10 | ug/kg | SW846 8260A |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 5.0 | ug/kg | SW846 8260A |
| Dibromomethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 2.5 | ug/kg | SW846 8260A |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Dichlorofluoromethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260A |
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260A |
| 2-Hexanone | ND | 10 | ug/kg | SW846 8260A |

(Continued on next page)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C240141 Work Order #...: CG5EN101 Matrix.....: SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260A |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/kg | SW846 8260A |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260A |
| Naphthalene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260A |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Styrene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Toluene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260A |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260A |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260A |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260A |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260A |
| m-Xylene & p-Xylene | ND | 2.5 | ug/kg | SW846 8260A |
| o-Xylene | ND | 2.5 | ug/kg | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 85 | (61 - 115) |
| Toluene-d8 | 100 | (82 - 129) |
| Bromofluorobenzene | 96 | (64 - 112) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C240141
MB Lot-Sample #: A8C300000-160

Work Order #...: CGSQM101
Prep Date.....: 03/29/98
Prep Batch #...: 8089160

Matrix.....: WATER

Analysis Date..: 03/29/98
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 10 | ug/L | SW846 8260A |
| Benzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |

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## METHOD BLANK REPORT

### GC/MS Volatiles

Client Lot #...: A8C240141 Work Order #...: CG5QM101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 87 | (69 - 127) |
| Toluene-d8 | 97 | (90 - 112) |
| Bromofluorobenzene | 97 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C240141 Work Order #...: CGSXD101 Matrix.....: WATER
MB Lot-Sample #: A8C300000-213

Prep Date.....: 03/30/98
Analysis Date..: 03/30/98 Prep Batch #...: 8089213
Dilution Factor: 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 10 | ug/L | SW846 8260A |
| Benzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260A |
| Bromoform | ND | 1.0 | ug/L | SW846 8260A |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Butanone | ND | 10 | ug/L | SW846 8260A |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Carbon disulfide | ND | 1.0 | ug/L | SW846 8260A |
| Carbon tetrachloride | ND | 1.0 | ug/L | SW846 8260A |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chloroethyl vinyl ether | ND | -- | ug/L | SW846 8260A |
| Chloroform | ND | 1.0 | ug/L | SW846 8260A |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260A |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260A |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromoethane (EDB) | ND | 1.0 | ug/L | SW846 8260A |
| Dibromomethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorodifluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,1-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| trans-1,2-Dichloroethene | ND | 0.50 | ug/L | SW846 8260A |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Dichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260A |
| 1,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,3-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| cis-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| trans-1,3-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260A |
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260A |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260A |

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METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: A8C240141 Work Order #...: CG5XD101 Matrix.....: WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| 2-Hexanone | ND | 10 | ug/L | SW846 8260A |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260A |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260A |
| 4-Methyl-2-pentanone | ND | 10 | ug/L | SW846 8260A |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260A |
| Naphthalene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260A |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Styrene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Toluene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260A |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260A |
| Trichlorofluoromethane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260A |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260A |
| Vinyl acetate | ND | 2.0 | ug/L | SW846 8260A |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260A |
| m-Xylene & p-Xylene | ND | 0.50 | ug/L | SW846 8260A |
| o-Xylene | ND | 0.50 | ug/L | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 89 | (69 - 127) |
| Toluene-d8 | 97 | (90 - 112) |
| Bromofluorobenzene | 96 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C240141 Work Order #...: CG2AK103-MS Matrix.....: SOLID
MS Lot-Sample #: A8C240141-001 CG2AK104-MSD
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/27/98 Analysis Date..: 03/27/98
Prep Batch #...: 8087123
Dilution Factor: 1 % Moisture.....: 11

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| Benzene | 100 | (78 - 117) | | | SW846 8260A |
| | 101 | (78 - 117) | 0.88 | (0-17) | SW846 8260A |
| Chlorobenzene | 96 | (81 - 115) | | | SW846 8260A |
| | 100 | (81 - 115) | 4.1 | (0-18) | SW846 8260A |
| 1,1-Dichloroethene | 94 | (75 - 113) | | | SW846 8260A |
| | 97 | (75 - 113) | 2.2 | (0-20) | SW846 8260A |
| Toluene | 96 | (78 - 126) | | | SW846 8260A |
| | 97 | (78 - 126) | 0.93 | (0-24) | SW846 8260A |
| Trichloroethene | 92 | (71 - 110) | | | SW846 8260A |
| | 94 | (71 - 110) | 1.7 | (0-22) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 95 | (61 - 115) |
| | 94 | (61 - 115) |
| Toluene-d8 | 99 | (82 - 129) |
| | 98 | (82 - 129) |
| Bromofluorobenzene | 94 | (64 - 112) |
| | 95 | (64 - 112) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C240141 Work Order #...: CG474102-MS Matrix.....: WATER
MS Lot-Sample #: A8C260158-003 CG474103-MSD
Date Sampled...: 03/19/98 00:00 Date Received..: 03/25/98
Prep Date.....: 03/30/98 Analysis Date..: 03/30/98
Prep Batch #...: 8089213
Dilution Factor: 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 110 | (75 - 113) | | | SW846 8260A |
| | 111 | (75 - 113) | 0.63 | (0-20) | SW846 8260A |
| Trichloroethene | 100 | (71 - 110) | | | SW846 8260A |
| | 101 | (71 - 110) | 0.79 | (0-22) | SW846 8260A |
| Chlorobenzene | 93 | (81 - 115) | | | SW846 8260A |
| | 95 | (81 - 115) | 1.9 | (0-18) | SW846 8260A |
| Toluene | 92 | (78 - 126) | | | SW846 8260A |
| | 88 | (78 - 126) | 4.4 | (0-24) | SW846 8260A |
| Benzene | 99 | (78 - 117) | | | SW846 8260A |
| | 100 | (78 - 117) | 0.81 | (0-17) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 90 | (69 - 127) |
| | 103 | (69 - 127) |
| Toluene-d8 | 95 | (90 - 112) |
| | 94 | (90 - 112) |
| Bromofluorobenzene | 95 | (87 - 114) |
| | 97 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

**Client Lot #...:** A8C240141 **Work Order #...:** CG132102-MS **Matrix.....:** WATER
**MS Lot-Sample #:** A8C220104-010 CG132103-MSD
**Date Sampled...:** 03/18/98 00:00 **Date Received..:** 03/21/98
**Prep Date.....:** 03/30/98 **Analysis Date..:** 03/30/98
**Prep Batch #...:** 8089160
**Dilution Factor:** 1

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 106 | (75 - 113) | | | SW846 8260A |
| | 109 | (75 - 113) | 3.5 | (0-20) | SW846 8260A |
| Trichloroethene | 100 | (71 - 110) | | | SW846 8260A |
| | 101 | (71 - 110) | 0.82 | (0-22) | SW846 8260A |
| Chlorobenzene | 91 | (81 - 115) | | | SW846 8260A |
| | 93 | (81 - 115) | 1.7 | (0-18) | SW846 8260A |
| Toluene | 88 | (78 - 126) | | | SW846 8260A |
| | 89 | (78 - 126) | 1.4 | (0-24) | SW846 8260A |
| Benzene | 98 | (78 - 117) | | | SW846 8260A |
| | 100 | (78 - 117) | 1.3 | (0-17) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | (69 - 127) |
| | 99 | (69 - 127) |
| Toluene-d8 | 94 | (90 - 112) |
| | 93 | (90 - 112) |
| Bromofluorobenzene | 95 | (87 - 114) |
| | 96 | (87 - 114) |

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

Client Lot #...: A8C240141 Work Order #...: CG2C4102-MS Matrix.....: WATER
MS Lot-Sample #: A8C240141-007 CG2C4103-MSD
Date Sampled...: 03/20/98 00:00 Date Received..: 03/24/98
Prep Date.....: 03/31/98 Analysis Date..: 03/31/98
Prep Batch #...: 8091166
Dilution Factor: 2.08

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 113 | (75 - 113) | | | SW846 8260A |
| | 116 a | (75 - 113) | 2.0 | (0-20) | SW846 8260A |
| Trichloroethene | 108 | (71 - 110) | | | SW846 8260A |
| | 110 | (71 - 110) | 2.0 | (0-22) | SW846 8260A |
| Chlorobenzene | 95 | (81 - 115) | | | SW846 8260A |
| | 97 | (81 - 115) | 1.8 | (0-18) | SW846 8260A |
| Toluene | 91 | (78 - 126) | | | SW846 8260A |
| | 93 | (78 - 126) | 2.0 | (0-24) | SW846 8260A |
| Benzene | 100 | (78 - 117) | | | SW846 8260A |
| | 101 | (78 - 117) | 1.1 | (0-17) | SW846 8260A |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 99 | (69 - 127) |
| | 97 | (69 - 127) |
| Toluene-d8 | 96 | (90 - 112) |
| | 95 | (90 - 112) |
| Bromofluorobenzene | 97 | (87 - 114) |
| | 98 | (87 - 114) |

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

a Spiked analyte recovery is outside stated control limits.

# CHAIN-OF-CUSTODY

PROJECT NAME: WWC
PO NUMBER: 131273
PROJECT MANAGER: Sharon Meves

**QUANTERRA** ENVIRONMENTAL SERVICES
1721 South Grand Avenue
Santa Ana, CA 92705
Phone #: (714) 258-8610

DUE: 04 APR 98
TO: QES, NORTH CANTON
4101 Shuffel Drive N.W.
North Canton, OH 44720

| SAMPLE DESCRIPTION | LAB ID | DATE | TIME | MATRIX | CONTAINERS | ANALYSES: 8260 (SW8260A) | | | | | | | | | REMARKS/ SPCL INSTR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HG19-01 | 131273-0001 SA | 20 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG19-02 | 131273-0002 SA | 20 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG19-03 | 131273-0003 SA | 20 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG20-01 | 131273-0004 SA | 20 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG20-02 | 131273-0005 SA | 20 MAR 98 | | SOIL | | X | | | | | | | | | |
| HG5B-10-W | 131273-0007 SA | 20 MAR 98 | | WATER | | X | | | | | | | | | |
| HG5B-11-W | 131273-0008 SA | 20 MAR 98 | | WATER | | X | | | | | | | | | |
| HG08-10-W | 131273-0009 SA | 20 MAR 98 | | WATER | | X | | | | | | | | | |
| HG19-10-W | 131273-0010 SA | 20 MAR 98 | | WATER | | X | | | | | | | | | |
| HG20-10-W | 131273-0011 SA | 20 MAR 98 | | WATER | | X | | | | | | | | | |
| HG20-11-W | 131273-0012 SA | 20 MAR 98 | | WATER | | X | | | | | | | | | |
| FB03201-W | 131273-0013 FB | 20 MAR 98 | | WATER | | X | | | | | | | | | |

| | SIGNATURE | PRINT NAME | COMPANY/TITLE | DATE | TIME |
|---|---|---|---|---|---|
| Relinquished by: | [signature] | Quanterra ST | Carlos Millan | 3-23-98 | 1530 |
| Received by: | Doris Herren | DORIS HERREN | Quanterra NC | 3-24-98 | 0945 |
| Relinquished by: | | | | | |
| Received by: | | | | | |

Comments:

QA373 4/96 CMD

Quanterra
Environmental Services

*Quanterra Incorporated*
*1721 South Grand Avenue*
*Santa Ana, California 92705*

*714 258-8610 Telephone*
*714 258-0921 Fax*

April 3, 1998

QUANTERRA INCORPORATED PROJECT NUMBER: 131273
PO/CONTRACT: 97SB044

Partha Bora
Woodward-Clyde Consultants
2020 E. First Street
Santa Ana, CA 92705

Dear Mr. Bora,

This report contains PARTIAL analytical results for the fourteen samples received under chain of custody by Quanterra Incorporated on March 23, 1998. These samples are associated with your AES, Huntington Beach project. This report contains only the TEPH results that were not submitted in the original report.

The case narrative is an integral part of this report.

If you have any questions, please feel free to call me at (714) 258-8610.

Sincerely,

Sharon Meves
Project Manager

## TABLE OF CONTENTS

## QUANTERRA INCORPORATED PROJECT NUMBER 131273

Case Narrative

Quanterra's Quality Assurance Program

Chain of Custody Documentation

Sample Description Information

TEPH
Sample(s): 1-14
- Sample Data Sheets
- Method Blank Reports
- Laboratory QC Reports

## CASE NARRATIVE

## QUANTERRA INCORPORATED PROJECT NUMBER 131273

All applicable internal quality control analyses including calibrations and calibration verifications, calibration (instrument) and method blanks, laboratory control samples (LCS), matrix spikes (MS) and matrix spike duplicates (MSD), and other QC met method-specified acceptance criteria. Any matrix-related anomalies are indicated using footnotes within the report. Any other anomalies are reported within the narrative.

**General:** MS/MSD analyses were performed on aqueous samples as designated on the COC (with the exception of TVPH and TEPH, for which no QC analyses were performed, as discussed with Woodward Clyde personnel). MS/MSD analyses for soil samples were performed as sample volume allowed. (Only 2 small sleeves were submitted to the laboratory. One sleeve was shipped to the Quanterra-North Canton facility for volatiles analysis, so only one sleeve was available for the remaining analyses. Volume concerns were discussed with Woodward Clyde personnel immediately after the first sample shipment arrived.) Where MS/MSD analyses could not be performed, duplicate laboratory control standards were reported.

There were no anomalies associated with this report.

*Quanterra Environmental Services - Western Region*

## Quality Control Definitions

| QC Parameter | Definition |
|---|---|
| QC Batch | A set of up to 20 field samples plus associated laboratory QC samples that are similar in composition (matrix) and that are processed within the same time period with the same reagent and standard lots. |
| Duplicate Control Sample (DCS) | Consist of a pair of LCSs analyzed within the same QC batch to monitor precision and accuracy independent of sample matrix effects. This QC is performed only if required by client or when insufficient sample is available to perform MS/MSD. |
| Duplicate Sample (DU) | A second aliquot of an environmental sample, taken from the same sample container when possible, that is processed independently with the first sample aliquot. The results are used to assess the effect of the sample matrix on the precision of the analytical process. The precision estimated using this sample is not necessarily representative of the precision for other samples in the batch. |
| Laboratory Control Sample (LCS) | A volume of reagent water for aqueous samples or a contaminant-free solid matrix (Ottawa sand) for soil and sediment samples which is spiked with known amounts of representative target analytes and required surrogates. An LCS is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects. |
| Matrix Spike and Matrix Spike Duplicate (MS/MSD) | A field sample fortified with known quantities of target analytes that are also added to the LCS. Matrix spike duplicate is a second matrix spike sample. MSs/MSDs are carried through the entire analytical process and are used to determine sample matrix effect on accuracy of the measurement system. The accuracy and precision estimated using MS/MSD is only representative of the precision of the sample that was spiked. |
| Method Blank (MB) | A sample composed of all the reagents (in the same quantities) in reagent water carried through the entire analytical process. The method blank is used to monitor the level of contamination introduced during sample preparation steps. |
| Surrogate Spike | Organic constituents not expected to be detected in environmental media and are added to every sample and QC at a known concentration. Surrogates are used to determine the efficiency of the sample preparation and the analytical process. |

Source: Quanterra® Quality Control Program, Policy QA-003, Rev. 0, 8/19/96.

**Woodward-Clyde Consultants**

SHIPMENT NO.: 5

## CHAIN OF CUSTODY RECORD

PAGE ____ OF ____

PROJECT NAME: AES

PROJECT NO.: 97-2044

DATE 3/20/98

| | Sample Number | Location | Type of Sample: Material | Type of Sample: Method | Type of Container | Type of Preservation: Temp | Type of Preservation: Chemical | Analysis Required* |
|---|---|---|---|---|---|---|---|---|
| 1 | HG06A-10-W | HG06A | $H_2O$ | GRAB | 1L amber glass | ICED | NONE | TPH-d |
| | | | | | 2(1L) amber glass | | NONE | SVOCs |
| | | | | | 1L amber glass | | NONE | PCBs |
| 2 | HG5B-10-W | ~~HG06A~~ HG5B | $H_2O$ | GRAB | 500ml poly | ICED | NONE | metals |
| | | | | | 1L amber glass | | NONE | TPH-d |
| | | | | | 3(40ml) vials | | HCL | VOCs |
| | | | | | 2(1L) amber glass | | NONE | SVOCs |
| 3 | HG5B-11-W | HG5B | $H_2O$ | GRAB | 500ml poly | ICED | NONE | metals |
| | | | | | 1L amber glass | | NONE | TPH-d |
| | | | | | 3(40ml) vials | | HCL | VOCs |
| | | | | | 1L amber glass | | NONE | SVOCs |
| 4 | HG08-10-W | HG08 | $H_2O$ | GRAB | 1L amber glass | ICED | NONE | TPH-d |
| | | | | | 3(40ml) vials | | HCL | VOCs |
| | | | | | 2(1L) amber glass | | NONE | SVOCs |
| 5 | HG11-10-W | HG19 | $H_2O$ | GRAB | 500ml poly | ICED | NONE | metals |
| | | | | | 1L amber glass | | NONE | TPH-d |
| | | | | | 3(40ml) vials | | HCL | VOCs |
| | | | | | 2(1L) amber glass | | NONE | SVOCs |

Total Number of Samples Shipped: 5 Sampler's Signature: [illegible]

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: [illegible] | Signature: [illegible] | 3/20/98 |
| Printed Name: Anthony [illegible] | Printed Name: R. MARTIN | 1700 |
| Company: Woodward Clyde | Company: Quanterra | |
| Reason: Ship to lab for analysis | 3 | |
| Relinquished By: | Received By: | Date / / |
| Signature: | Signature: | |
| Printed Name: | Printed Name: | Time |
| Company: | Company: | |
| Reason: | | |
| Relinquished By: | Received By: | Date / / |
| Signature: | Signature: | |
| Printed Name: | Printed Name: | Time |
| Company: | Company: | |
| Reason: | | |
| Relinquished By: | Received By: | Date / / |
| Signature: | Signature: | |
| Printed Name: | Printed Name: | Time |
| Company: | Company: | |
| Reason: | | |

Special Shipment / Handling / Storage Requirements:

Metal analysis filter 1st then preserve.

Questions? Call Partha Bora @ 714-835-6886

* Note — This does not constitute authorization to proceed with analysis

**Woodward-Clyde Consultants**

SHIPMENT NO.: 5

## CHAIN OF CUSTODY RECORD

PAGE ____ OF ____

DATE 3/20/98

PROJECT NAME: AES

PROJECT NO.: 9736 044

3/20/98

| | Sample Number | Location | Type of Sample: Material | Type of Sample: Method | Type of Container | Type of Preservation: Temp | Type of Preservation: Chemical | Analysis Required |
|---|---|---|---|---|---|---|---|---|
| 1 | HG19-01 | HG19 | SOIL | PUSH | 2 SS liners | ICED | NONE | metals |
| | | | | | | | | TPH-d |
| | | | | | | | | VOCs |
| | | | | | | | | SVOCs |
| 2 | HG19-02 | HG19 | SOIL | PUSH | 2 SS liners | ICED | NONE | metals |
| | | | | | | | | TPH-d |
| | | | | | 5°, | 4°, | 4° | VOCs |
| | | | | | | | | SVOCs |
| 3 | HG19-03 | HG19 | SOIL | PUSH | 2 SS liners | ICED | NONE | metals |
| | | | | | | | | TPH-d |
| | | | | | | | | VOCs |
| | | | | | | | | SVOCs |
| 4 | HG20-01 | HG20 | SOIL | PUSH | 2 SS liners | ICED | NONE | metals |
| | | | | | | | | TPH-d |
| | | | | | | | | VOCs |
| | | | | | | | | SVOCs |
| 5 | HG20-02 | HG20 | SOIL | PUSH | 2 SS liners | ICED | NONE | metals |
| | | | | | | | | TPH-d |
| | | | | | | | | VOCs |
| | | | | | | | | SVOCs |

Total Number of Samples Shipped: 5 | Sampler's Signature: [signature]

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: [signature] | Signature: [signature] | Date: 3/20/98 |
| Printed Name: [signature] | Printed Name: R. MARTIN | Time: 1700 |
| Company: Woodward-Clyde | Company: Quanterra | |
| Reason: Ship to lab for analysis | | |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |

Special Shipment / Handling / Storage Requirements:

Questions - Call Partha Bora @ 714-835-6886

* Note — This does not constitute authorization to proceed with analysis

**Woodward-Clyde Consultants**

SHIPMENT NO.: 5

CHAIN OF CUSTODY RECORD

PAGE ____ OF ____

DATE 3/20/98

PROJECT NAME: AES

PROJECT NO.: 97sb044

| Sample Number | Location | Type of Sample: Material | Type of Sample: Method | Type of Container | Type of Preservation: Temp | Type of Preservation: Chemical | Analysis Required* |
|---|---|---|---|---|---|---|---|
| 1B HG20-10-W | HG20 | $H_2O$ | GRAB | 500ml poly | ICD | NONE | metals |
| | | | " | 1L amber glass | " | NONE | TPH-d |
| | | | " | 3(40ml) vials | " | HCL | VOCs |
| | | | " | 2(1L) amber glass | " | NONE | SVOCs |
| 2B HG20-11-W | HG20 | $H_2O$ | GRAB | 500ml poly | " | NONE | metals |
| | | | " | 1L amber glass | " | NONE | TPH-d |
| | | | " | 3(40ml) vials | " | HCL | VOCs |
| | | | " | 2(1L) amber glass | " | NONE | SVOCs |

END OF RECORD

Total Number of Samples Shipped: 2

Sampler's Signature: [signature]

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: [signature] | Signature: [signature] | Date: 3/20/98 |
| Printed Name: Autumn King | Printed Name: R MARTIN | Time: 1700 |
| Company: Woodward Clyde | Company: Quantum | |
| Reason: Ship to lab for analysis | | |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |

Special Shipment / Handling / Storage Requirements:

For metal analysis filter 1st then preserve

Questions? - Call Partha Bora @ 714-835-6886

* Note – This does not constitute authorization to proceed with analysis

**Woodward-Clyde Consultants**

SHIPMENT NO.: 5

CHAIN OF CUSTODY RECORD

PAGE ____ OF ____

DATE 3/20/98

PROJECT NAME: [illegible]

PROJECT NO.: 9736044

| Sample Number | Location | Type of Sample: Material | Type of Sample: Method | Type of Container | Type of Preservation: Temp | Type of Preservation: Chemical | Analysis Required* |
|---|---|---|---|---|---|---|---|
| FB0320 | — | $H_2O$ | GRAB | 500ml poly | ICED | NONE | METALS |
| | | | | 1 L amber glass | | NONE | 1PH-d |
| | | | | 3/40ml vials | | ~~NONE~~ HCL | VOCs |
| | | | | 2(1L) amber glass | | NONE | SVOCs |
| | | | | 1 L amber glass | | NONE | PCBs |

Total Number of Samples Shipped: 1 Sampler's Signature: [signature]

| Relinquished By: | Received By: | Date / Time |
|---|---|---|
| Signature: [signature] | Signature: [signature] | Date: 3/20/98 |
| Printed Name: Antunin King | Printed Name: R-MARTIN | Time: 1700 |
| Company: WCC | Company: Quantera | |
| Reason: Ship to lab for analysis | | |
| Relinquished By: | Received By: | Date / Time |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |
| Relinquished By: | Received By: | Date / Time |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |
| Relinquished By: | Received By: | Date / Time |
| Signature: | Signature: | Date: / / |
| Printed Name: | Printed Name: | Time: |
| Company: | Company: | |
| Reason: | | |

Special Shipment / Handling / Storage Requirements:

Questions Call Partha Bera @ 714-835-6886, Metals filter first then preserve

* Note — This does not constitute authorization to proceed with analysis

# TEPH

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG19-01 | | |
| LAB ID: | 131273-0001-SA | | |
| Matrix: | SOIL | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 26 MAR 98 | Analyzed: 03 APR 98 |
| Instrument: | GC/FID | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 11 | mg/kg |
| C15-<C20 | 6.6 | J | 11 | mg/kg |
| C20-<C25 | 16 | | 11 | mg/kg |
| C25-<C30 | 33 | | 11 | mg/kg |
| C30-<C35 | 33 | | 11 | mg/kg |
| C35-C40 | 35 | | 11 | mg/kg |

Percent moisture is 8.8%. All results and limits are reported on a dry weight basis.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG19-02 | | |
| LAB ID: | 131273-0002-SA | | |
| Matrix: | SOIL | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 26 MAR 98 | Analyzed: 03 APR 98 |
| Instrument: | GC/FID | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 12 | mg/kg |
| C15-<C20 | ND | | 12 | mg/kg |
| C20-<C25 | ND | | 12 | mg/kg |
| C25-<C30 | ND | | 12 | mg/kg |
| C30-<C35 | 8.4 | J | 12 | mg/kg |
| C35-C40 | 18 | | 12 | mg/kg |

Percent moisture is 15.2%. All results and limits are reported on a dry weight basis.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG19-03 | | |
| LAB ID: | 131273-0003-SA | | |
| Matrix: | SOIL | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 26 MAR 98 | Analyzed: 03 APR 98 |
| Instrument: | GC/FID | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 11 | mg/kg |
| C15-<C20 | ND | | 11 | mg/kg |
| C20-<C25 | ND | | 11 | mg/kg |
| C25-<C30 | ND | | 11 | mg/kg |
| C30-<C35 | ND | | 11 | mg/kg |
| C35-C40 | ND | | 11 | mg/kg |

Percent moisture is 9.9%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG20-01 | | |
| LAB ID: | 131273-0004-SA | | |
| Matrix: | SOIL | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 26 MAR 98 | Analyzed: 03 APR 98 |
| Instrument: | GC/FID | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 11 | mg/kg |
| C15-<C20 | ND | | 11 | mg/kg |
| C20-<C25 | ND | | 11 | mg/kg |
| C25-<C30 | ND | | 11 | mg/kg |
| C30-<C35 | ND | | 11 | mg/kg |
| C35-C40 | ND | | 11 | mg/kg |

Percent moisture is 11.8%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG20-02 | | |
| LAB ID: | 131273-0005-SA | | |
| Matrix: | SOIL | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 26 MAR 98 | Analyzed: 03 APR 98 |
| Instrument: | GC/FID | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 12 | mg/kg |
| C15-<C20 | ND | | 12 | mg/kg |
| C20-<C25 | ND | | 12 | mg/kg |
| C25-<C30 | ND | | 12 | mg/kg |
| C30-<C35 | ND | | 12 | mg/kg |
| C35-C40 | ND | | 12 | mg/kg |

Percent moisture is 14.2%. All results and limits are reported on a dry weight basis.

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG06A-10-W | | |
| LAB ID: | 131273-0006-SA | | |
| Matrix: | WATER | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG5B-10-W | | |
| LAB ID: | 131273-0007-SA | | |
| Matrix: | WATER | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG5B-11-W | | |
| LAB ID: | 131273-0008-SA | | |
| Matrix: | WATER | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG08-10-W | | |
| LAB ID: | 131273-0009-SA | | |
| Matrix: | WATER | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG19-10-W | | |
| LAB ID: | 131273-0010-SA | | |
| Matrix: | WATER | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | 1.1 | | 1.0 | mg/L |
| C20-<C25 | 1.3 | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG20-10-W | | |
| LAB ID: | 131273-0011-SA | | |
| Matrix: | WATER | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG20-11-W | | |
| LAB ID: | 131273-0012-SA | | |
| Matrix: | WATER | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | FB03201-W | | |
| LAB ID: | 131273-0013-FB | | |
| Matrix: | WATER | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 28 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

Total Extractable Petroleum Hydrocarbons
Method 8015M

| | | | |
|---|---|---|---|
| Client Name: | Woodward-Clyde Consultants | | |
| Client ID: | HG08-11-W | | |
| LAB ID: | 131273-0014-SA | | |
| Matrix: | WATER | Sampled: 20 MAR 98 | Received: 20 MAR 98 |
| Authorized: | 21 MAR 98 | Prepared: 23 MAR 98 | Analyzed: 29 MAR 98 |
| Instrument: | GC/FID-HOA | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| C10-<C15 | ND | | 1.0 | mg/L |
| C15-<C20 | ND | | 1.0 | mg/L |
| C20-<C25 | ND | | 1.0 | mg/L |
| C25-<C30 | ND | | 1.0 | mg/L |
| C30-<C35 | ND | | 1.0 | mg/L |
| C35-C40 | ND | | 1.0 | mg/L |

ND = Not Detected

# APPENDIX D

# DATA REVIEW REPORT

This report summarizes the quality control (QC) activities performed for the verification of project, field and analytical data quality objectives (DQOs). QC activities included the development of DQOs, use of standard U.S. Environmental Protection Agency (EPA) methods, and evaluation of established acceptance precision and accuracy criteria. The data were compared to the laboratory established acceptance criteria for the evaluation of precision, accuracy, representativeness, comparability, and completeness (PARCC).

## D.1 OVERVIEW OF DATA ACQUISITION AND REVIEW

To meet the project objectives and generate data of sufficient quality, samples were analyzed using EPA Methods (SW-846, 1986 and revisions and EPA Methods for Chemical Analysis of Water and Wastes, 1983 and revisions). Additionally, to ensure the quality of the data, the following steps were taken:

- Internal QC samples and procedures were utilized by the laboratory.
- A complete laboratory data package was obtained from the laboratory, including results and associated QC evaluation. Full data documentation, including raw data, will be stored at the laboratory for a minimum of 10 years.
- Data were reviewed in accordance with the EPA document entitled *Functional Guidelines for Organic and Inorganic Data Review* (February 1994) as applicable for the method performed.

## D.2 SUMMARY OF DATA REVIEW

Samples collected during the field investigation, including groundwater, soil, and sediment, were analyzed by Quanterra Incorporated of Santa Ana, California. Some samples were subcontracted to Quanterra Incorporated in Canton, Ohio for the soil volatile organic compound (VOC) analyses and to Quanterra Incorporated in Tallahassee, Florida for the water VOC analyses. Data were reported in three Sample Delivery Groups (SDGs): 131259, 131262, and 131273. Table 4-1 lists the samples included in the SDGs. The data tables in the report document the sample analytical results and include any data qualifiers added as a result of this data review. The following sections present the results of the data review.

### D.2.1 Laboratory Case Narrative

In the case narratives for this project, the laboratory reported that occasionally inadequate groundwater or soil sample volumes were submitted for matrix spike/matrix spike duplicate (MS/MSD) analyses for the analysis of VOCs. In these situations, the laboratory analyzed laboratory control samples and duplicates to assess the accuracy and precision of the method. When inadequate sample material was submitted for analysis of project soil samples, Woodward-Clyde attempted to resample the location and submitted the sample to Quanterra Incorporated for analysis.

The laboratory analyzed total extractable petroleum hydrocarbons (TEPH) using the carbon chain breakdown specified by Woodward-Clyde. Because this is not a standard method for the laboratory, there are no control limits determined for surrogate, matrix spike, or laboratory control sample recoveries or duplicate relative percent differences (RPDs). Upon agreement with Woodward-Clyde, the laboratory initially reported the TEPH results without any associated laboratory quality control results. However, without the QC results, there is no assessment of the accuracy and precision of the TEPH analyses. Therefore, discussions were held with the laboratory to determine the types of QC samples and results and the corrective actions taken for QC results out of compliance. The laboratory analyzed method blanks that were free of contamination. The laboratory analyzed surrogates with each sample; all surrogate recoveries were above 10 percent and no samples required reanalysis. The laboratory analyzed a laboratory control sample with each batch that was specific for the carbon chain analysis (not a gas or diesel standard). In addition, the calibration procedures described in EPA Method 8015 mod. were followed. The TEPH data have been accepted without qualification.

The laboratory reported the temperature of coolers containing samples for VOC analysis and if any water samples contained headspace. The temperature of the coolers ranged from 3.5°C to 5.9°C, which adequately preserved the samples. All water samples were submitted with at least three separate 40-milliliter (mL) volatile organic analysis (VOA) vials. All samples had at least two containers for analysis without headspace. Other issues noted in the laboratory case narratives are addressed in the following sections.

### D.2.2 Holding Times

Holding times are evaluated by comparing sampling dates, extraction dates, and analysis dates. Samples were collected from March 19 through March 20, 1998. The recommended holding

times for each method are specified in the table below. Holding times were within the evaluation criteria specified by the methodology for all analyses.

| Analytes | Analytical Method | Matrix | Recommended Holding Time |
|---|---|---|---|
| Volatile Organic Compounds (VOCs) | 8260A | water<br>soil | 14 days<br>14 days |
| Semivolatile Organic Compounds (SVOCs) | 8270B | water<br>soil | 7 days (extraction); 40 days (analysis)<br>14 days (extraction); 40 days (analysis) |
| Polychlorinated Biphenyls (PCBs) | 8081 | water<br>soil | 7 days (extraction); 40 days (analysis)<br>14 days (extraction); 40 days (analysis) |
| California Title 22 CAM Metals | 6010B/7000 | water<br>soil | 180 days (28 days for mercury)<br>180 days (28 days for mercury) |
| Total Volatile Petroleum Hydrocarbons (TVPH) | 8015 mod | water<br>soil | 14 days<br>14 days |
| Total Extractable Petroleum Hydrocarbons (TEPH) | 8015 mod | water<br>soil | 7 days (extraction); 40 days (analysis)<br>14 days (extraction); 40 days (analysis) |

### D.2.3 Method Blank Samples

Method blanks were analyzed to assess if laboratory contamination had impacted project samples. Method blanks were analyzed by the laboratory at the rate of at least one per analytical batch for each method. Method blanks associated with the VOC, PCB, and SVOC analyses were free of contamination. Barium was detected in the soil method blank of SDGs 131262, 131259, and 131273 at a concentration (0.11 mg/kg) below reporting limits. All soil results were much greater than five times the method blank contamination and no data have been qualified.

### D.2.4 Field Equipment Blank Samples

Field equipment rinsate blanks were used to evaluate the effectiveness of decontamination procedures. At sampling locations where dedicated or disposable sampling equipment were used, the rinsate blanks were collected by pouring distilled or organic-free water directly into sampling bottles (bottle blanks). Approximately one field blank was collected each day of sampling.

Field blanks were free of contamination for the PCB analyses. Field blanks for SVOCs associated with SDG 131259 and 131262 had detections of bis(2-ethylhexyl)phthalate. Project samples with detected concentrations of this compound at less than ten times the field blank concentrations have been qualified as not detected.

Field blanks for VOCs associated with SDGs 131262 and 131273 had detections of acetone and methylene chloride, respectively. Project samples with detected concentrations of these compounds at less than ten times the field blank concentrations have been qualified as not detected.

Field blanks for metals associated with SDGs 131259 and 131273 had detections of zinc and nickel, respectively. Project samples with detected concentrations of these compounds at less than five times the field blank concentrations have been qualified as not detected.

### D.2.5 Trip Blanks

Trip blanks should be analyzed for VOCs; the data would be used to evaluate if contamination had occurred during shipment or storage. Trip blanks were not submitted with the samples for VOC analysis, which does not meet the EPA guidelines of one trip blank per cooler with samples for VOC analysis. The field blanks submitted in the coolers will help identify any cross-contamination caused by shipment or storage; however, contamination caused by some laboratory practices may be missed.

### D.2.6 Laboratory Control Samples (LCS)

LCS were prepared in the laboratory and analyzed with the field samples in each of the SDGs. LCS recoveries for VOCs, SVOCs, PCBs, and metals were within laboratory control limits. No data require qualification due to LCS results.

LCS were analyzed in duplicate if insufficient sample was received by the laboratory for MS/MSD analyses. The relative percent difference (RPD) for the duplicate analyses were within evaluation criteria.

### D.2.7 Reporting Limits

"Detection limit" refers to the Method Detection Limit (MDL) for organic analyses and the Instrument Detection Limit (IDL) for metals. The Reporting Limit (RL) is defined as the lowest level of analyte of interest that can be reliably detected and quantified on a routine basis. The RL is generally 5 to 10 times greater than the MDL or IDL. On a sample specific basis, RLs are adjusted to account for the dry weight, dilutions, and sample amount used. The laboratory reported sample concentrations detected above the MDL, but below the RL, as estimates (J).

Reporting limits were occasionally elevated due to matrix interference and dilutions for soil samples for metals analyses.

### D.2.8 Surrogate Compound Recoveries

Surrogates are spiked into samples to monitor the accuracy for an organic analysis. Every sample for organic analysis was spiked with a surrogate(s) compound. The surrogate recoveries were generally within evaluation criteria for VOC, SVOC, and PCB analyses. No qualification of soil data was required based on outlying surrogate recoveries.

The SVOC surrogate recoveries (11 percent to 22 percent) for one water sample in SDG 131262 (HG18-10-W) had all six surrogates below the control limits. The SVOC results for the sample has been qualified as estimates due to potential low bias.

### D.2.9 Matrix Spike/Matrix Spike Duplicate

For the evaluation of the accuracy and precision of the analysis, a known amount of an analyte is spiked into a sample. The recoveries are evaluated against established criteria to assess the accuracy, and the RPD between the analyses is calculated for the evaluation of the precision. SVOC and PCB MS/MSD recoveries and RPDs were within evaluation criteria.

All VOC MS/MSD RPDs were within control limits and most VOC MS recoveries were within control limits. The water MS recovery of 1,2-dichloroethene in SDG 131273 were above control limits. No compounds were detected in this sample; therefore, no data have been qualified.

The MS/MSD RPDs for metals were within control limits indicating acceptable precision. MS recoveries for some metals were below the laboratory control limits. The MS antimony recoveries for soil samples associated SDGs 131259 and 131262 were all below control limits (75 percent to 125 percent). Antimony data was qualified as estimated for all soil samples due to potential low bias.

In addition, the soil matrix spike associated with SDG 131259 had low recoveries of arsenic, chromium, copper, nickel and zinc. The results for the project sample used for the MS (HG09-01) have been qualified as estimated "J" for arsenic, chromium, copper, nickel and zinc.

### D.2.10 Field Duplicate Samples

Overall precision for the sampling event was measured using field duplicate samples. The duplicate pairs are listed in the table below. There was good agreement between field duplicate results; therefore, qualification of data based on the field duplicate precision was not required.

| Primary Sample | Duplicate Sample |
|---|---|
| HG08-01 | HG08-03 |
| HG18-10-W | HG18-11-W |
| HG16-01 | HG16-03 |
| HG19-01 | HG19-03 |
| HG5B-10-W | HG5B-11-W |
| HG20-10-W | HG20-11-W |

## D.3 DATA QUALITY ASSESSMENT

PARCC parameters are used to evaluate analytical data. These parameters may be assessed in terms of laboratory and/or field procedures, and may also provide information about the specific environmental sample undergoing evaluation. The PARCC parameters are also used to determine the usability of the individual results for meeting project objectives.

### D.3.1 Precision

Precision is the agreement between a set of replicate measurements without assumption or knowledge of the true value. Precision is assessed and measured as the RPD between duplicate (or replicate) analyses including field duplicate, MS/MSD, duplicate LCS, and matrix duplicate analyses. As noted in the data review, no data require qualification based on precision parameters.

### D.3.2 Accuracy

Accuracy is defined as the degree of agreement of a measurement to an accepted reference or true value. In the laboratory, accuracy is measured as the percent recovery (%R) of an analyte in a reference standard or spiked sample. To assess accuracy in terms of the overall objectives, the blank analyses, surrogate spikes, LCS, and MS/MSD recoveries were reviewed. Barium was detected in some method blanks causing data to be qualified as not detected. The accuracy evaluation of VOC and PCBs indicated acceptable recoveries of spiked compounds. One water sample had low surrogate recoveries, and the data are qualified as estimates due to potential low

bias. Various metals (antimony, arsenic, chromium, copper and zinc) were qualified as estimated based on MS/MSD recoveries. Due to the relatively minor deviations in bias and MS/MSD recoveries, the qualified data were judged acceptable for the project decisions.

### D.3.3 Representativeness

Representativeness is a qualitative measure of data quality defined by the degree to which the data represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Representativeness was assessed through the analysis of QC samples including field blanks and field blind duplicate samples. These samples were evaluated during the data review process to document that contamination originating from field or laboratory procedures was not attributed to the environmental media undergoing investigation, and the field duplicate samples were evaluated to assess the precision of the sampling. Field blanks were contaminated with bis(2-ethylhexyl)phthalate, zinc, nickel, and common laboratory contaminants VOCs. The analytical data obtained from the collocated field duplicates were reviewed and are representative of the area under investigation (on a site-specific basis).

### D.3.4 Comparability

Comparability is a qualitative measurement that expresses the confidence with which one data set can be compared to another data set measuring the same property. Comparability was optimized in the laboratory and during field activities with the establishment of minimum requirements, acceptance, and reporting criteria for all samples submitted for chemical analysis. This was accomplished by using standard methods for routine chemical analyses and meeting requirements as established by the laboratory and/or method. For the field activities, well established, documented sampling methodologies as specified in the Standard Operating Procedures were followed. Data generated for this project were judged to be comparable.

### D.3.5 Completeness

Completeness is a quantitative measure of how much usable data is obtained from a sampling program. Completeness is expressed in terms of the percentage of data requested from the laboratory that were accepted during the validation process. For this project, 100 percent of the project data were complete.

**Table 1**
**Summary of Samples Collected, Analyses, and Associated Data Package**
**Huntington Beach Generating Station**

| SDG | Sample Number | Sample Type | Lab Sample ID | Date Sampled | Analysis |
|---|---|---|---|---|---|
| 131262 | | | | | |
| | HG18-10-W | Water | 131262-0001-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG18-11-W | Water | 131262-0002-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG16-10-W | Water | 131262-0003-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | RBHG10-W | Rinstate Blank | 131262-0004-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG18-01 | Soil | 131262-0005-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG18-02 | Soil | 131262-0006-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG16-01 | Soil | 131262-0007-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG16-02 | Soil | 131262-0008-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG16-03 | Soil | 131262-0009-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG10-01 | Soil | 131262-0010-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG10-02 | Soil | 131262-0011-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| 131259 | | | | | |
| | HG09-01 | Soil | 131259-0001-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG09-02 | Soil | 131259-0002-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG06B-01 | Soil | 131259-0003-SA | 3/19/98 | PCBs, SVOCs, TPH-d |
| | HG06B-02 | Soil | 131259-0004-SA | 3/19/98 | PCBs, SVOCs, TPH-d |
| | HG06A-01 | Soil | 131259-0005-SA | 3/19/98 | PCBs, SVOCs, TPH-d |
| | HG06A-02 | Soil | 131259-0006-SA | 3/19/98 | PCBs, SVOCs, TPH-d |
| | HG05-01 | Soil | 131259-0007-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG05-02 | Soil | 131259-0008-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG08-01 | Soil | 131259-0009-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG08-02 | Soil | 131259-0010-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG08-03 | Soil | 131259-0011-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG09-10-W | Water | 131259-0012-SA | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG06B-10-W | Water | 131259-0013-SA | 3/19/98 | PCBs, SVOCs, TPH-d |
| | FB0319 | Rinsate Blank | 131259-0014-FB | 3/19/98 | PCBs, Metals, VOCs, SVOCs, TPH-d, |
| 131273 | | | | | |
| | HG19-01 | Soil | 131273-0001-SA | 3/20/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG19-02 | Soil | 131273-0002-SA | 3/20/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG19-03 | Soil | 131273-0003-SA | 3/20/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG20-01 | Soil | 131273-0004-SA | 3/20/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG20-02 | Soil | 131273-0005-SA | 3/20/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG06A-10-W | Water | 131273-0006-SA | 3/20/98 | PCBs, SVOCs, TPH-d |
| | HG05B-10-W | Water | 131273-0007-SA | 3/20/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG05B-11-W | Water | 131273-0008-SA | 3/20/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG08-10-W | Water | 131273-0009-SA | 3/20/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG19-10-W | Water | 131273-0010-SA | 3/20/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG20-10-W | Water | 131273-0011-SA | 3/20/98 | Metals, VOCs, SVOCs, TPH-d, |
| | HG20-11-W | Water | 131273-0012-SA | 3/20/98 | Metals, VOCs, SVOCs, TPH-d, |
| | FB03201-W | Rinsate Blank | 131273-0013-FB | 3/20/98 | PCBs, Metals, VOCs, SVOCs, TPH-d, |
| | HG08-11-W | Water | 131273-0014-FB | 3/20/98 | TPH-d |

**Table 2**
**Summary of QA/QC Samples**

| SDG | Sample Number | Sample Type | Lab Sample ID | Date Sampled | Analysis |
|---|---|---|---|---|---|
| **Alamitos Generating Station** | | | | | |
| 131212 | AG1B-10-W | Water | 131212-0007-MS | 3/17/98 | Metals, VOCs, SVOCs, TPH-d, |
| 131212 | AG1B-10-W | Water | 131212-0007-SD | 3/17/98 | Metals, VOCs, SVOCs, TPH-d, |
| 131235 | AG3B5-01 | Soil | 131235-0009-MS | 3/18/98 | Metals, VOCs, SVOCs, TPH-d, |
| 131235 | AG3B5-01 | Soil | 131235-0009-SD | 3/18/98 | Metals, VOCs, SVOCs, TPH-d, |
| 131235 | AG3B2-10-W | Water | 131235-0010-MS | 3/18/98 | Metals, VOCs, SVOCs, TPH-d, |
| 131235 | AG3B2-10-W | Water | 131235-0010-SD | 3/18/98 | Metals, VOCs, SVOCs, TPH-d, |
| **Huntington Generating Station** | | | | | |
| 131262 | HG16-10-W | Water | 131262-0003-MS | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| 131262 | HG16-10-W | Water | 131262-0003-SD | 3/19/98 | Metals, VOCs, SVOCs, TPH-d, |
| **Redondo Generating Station** | | | | | |
| 131313 | RG22B-10-W | Water | 131313-0001-MS | 3/23/98 | Metals, VOCs, SVOCs, TPH-d, TPH-g |
| 131313 | RG22B-10-W | Water | 131313-0001-SD | 3/23/98 | Metals, VOCs, SVOCs, TPH-d, TPH-g |

# APPENDIX E

# EPA REGION IX PRGs

Key: i=IRIS h=HEAST n=HCEA a=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

# FOR PLANNING PURPOSES

| TOXICITY INFORMATION | | | | | | | | CONTAMINANT | PRELIMINARY REMEDIAL GOALS (PRGs) | | | | SOIL SCREENING LEVELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SFo (mg/kg-d)⁻¹ | RfDo (mg/kg-d) | SFi 1/(mg/kg-d) | RfDi (mg/kg-d) | O C* | abs. soils | CAS No. | | | Residential Soil (mg/kg) | Industrial Soil (mg/kg) | Ambient Air (ug/m^3) | Tap Water (ug/l) | Migration to Ground Water DAF 20 (mg/kg) | Migration to Ground Water DAF 1 (mg/kg) |
| 1.7E-03 i | 4.0E-03 i | 8.7E-03 r | 4.0E-03 r | 0 | 0.10 | 30560-19-1 | | Acephate | 5.1E+01 ca** | 2.2E+02 ca* | 7.7E-01 ca* | 7.7E+00 ca* | | |
| 7.7E-03 r | 2.6E-03 r | 7.7E-03 i | 2.0E-03 i | 1 | 0.10 | 75-07-0 | | Acetaldehyde | 9.2E+00 ca** | 2.1E+01 ca** | 8.7E-01 ca* | 1.5E+00 ca* | | |
| | 2.0E-02 i | | 2.0E-02 r | 0 | 0.10 | 34256-82-1 | | Acetochlor | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 1.0E-01 i | | 1.0E-01 r | 1 | 0.10 | 67-64-1 | | Acetone | 2.1E+03 nc | 8.8E+03 nc | 3.7E+02 nc | 6.1E+02 nc | 1.6E+01 | 8.0E-01 |
| | 8.0E-04 h | | 2.9E-03 a | 0 | 0.10 | 75-86-5 | | Acetone cyanohydrin | 5.2E+01 nc | 5.5E+02 nc | 1.0E+01 nc | 2.9E+01 nc | | |
| | 8.0E-03 i | | 1.4E-02 h | 1 | 0.10 | 75-05-8 | | Acetonitrile | 2.2E+02 nc | 1.2E+03 nc | 5.2E+01 nc | 7.1E+01 nc | | |
| | 1.0E-01 i | | 5.7E-06 a | 1 | 0.10 | 98-86-2 | | Acetophenone | 4.9E-01 nc | 1.6E+00 nc | 2.1E-02 nc | 4.2E-02 nc | | |
| | 1.3E-02 i | | 1.3E-02 r | 0 | 0.10 | 50594-66-6 | | Acifluorfen | 8.5E+02 nc | 8.9E+03 nc | 4.7E+01 nc | 4.7E+02 nc | | |
| | 2.0E-02 h | | 5.7E-06 i | 1 | 0.10 | 107-02-8 | | Acrolein | 1.0E-01 nc | 3.4E-01 nc | 2.1E-02 nc | 4.2E-02 nc | | |
| 4.5E+00 i | 2.0E-04 i | 4.5E+00 i | 2.0E-04 r | 0 | 0.10 | 79-06-1 | | Acrylamide | 9.8E-02 ca* | 4.2E-01 ca | 1.5E-03 ca | 1.5E-02 ca | | |
| | 5.0E-01 i | | 2.9E-04 i | 0 | 0.10 | 79-10-7 | | Acrylic acid | 3.1E+04 nc | 2.9E+05 nc | 1.0E+00 nc | 1.8E+04 nc | | |
| 5.4E-01 i | 1.0E-03 h | 2.4E-01 i | 5.7E-04 i | 1 | 0.10 | 107-13-1 | | Acrylonitrile | 1.9E-01 ca* | 4.7E-01 ca* | 2.8E-02 ca* | 3.7E+00 ca* | | |
| 9.1E-02 h | 1.0E-02 i | 9.0E-02 r | 1.0E-02 r | 0 | 0.10 | 15972-60-8 | | Alachlor | 5.5E+00 ca* | 2.4E+01 ca | 8.4E-02 ca | 8.4E-01 ca | | |
| | 1.5E-01 i | | 1.5E-01 r | 0 | 0.10 | 1596-84-5 | | Alar | 9.8E+03 nc | 1.0E+05 nc | 5.5E+02 nc | 5.5E+03 nc | | |
| | 1.0E-03 i | | 1.0E-03 r | 0 | 0.10 | 116-06-3 | | Aldicarb | 6.5E+01 nc | 6.8E+02 nc | 3.7E+00 nc | 3.7E+01 nc | | |
| | 1.0E-03 i | | 1.0E-03 r | 0 | 0.10 | 1646-88-4 | | Aldicarb sulfone | 6.5E+01 nc | 6.8E+02 nc | 3.7E+00 nc | 3.7E+01 nc | | |
| 1.7E+01 i | 3.0E-05 i | 1.7E+01 i | 3.0E-05 r | 0 | 0.10 | 309-00-2 | | Aldrin | 2.6E-02 ca* | 1.1E-01 ca | 3.9E-04 ca | 4.0E-03 ca | 1.2E+04 | 5.9E+02 |
| | 2.9E-01 i | | 2.9E-01 r | 0 | 0.10 | 8565-64-9 | | Ally | 1.6E+04 nc | 1.0E+05 max | 9.1E+02 nc | 9.1E+03 nc | | |
| | 5.0E-03 a | | 5.0E-03 r | 0 | 0.10 | 107-18-6 | | Allyl alcohol | 3.3E+02 nc | 3.4E+03 nc | 1.8E+01 nc | 1.8E+02 nc | | |
| | 5.0E-02 h | | 2.9E-04 i | 0 | 0.10 | 107-05-1 | | Allyl chloride | 3.2E+03 nc | 3.3E+04 nc | 1.0E+00 nc | 1.8E+03 nc | | |
| | 1.0E+00 n | | | 0 | 0.01 | 7429-90-5 | | Aluminum | 7.7E+04 nc | 1.0E+05 max | | 3.7E+04 nc | | |
| | 4.0E-04 i | | | 0 | 0.01 | 20859-73-8 | | Aluminum phosphide | 3.1E+01 nc | 6.8E+02 nc | | 1.5E+01 nc | | |
| | 3.0E-04 i | | 3.0E-04 r | 0 | 0.10 | 67485-29-4 | | Amdro | 2.0E+01 nc | 2.0E+02 nc | 1.1E+00 nc | 1.1E+01 nc | | |
| | 9.0E-03 i | | 9.0E-03 r | 0 | 0.10 | 834-12-8 | | Ametryn | 5.9E+02 nc | 6.1E+03 nc | 3.3E+01 nc | 3.3E+02 nc | | |
| | 7.0E-02 h | | 7.0E-02 r | 0 | 0.10 | 591-27-5 | | m-Aminophenol | 4.6E+03 nc | 4.8E+04 nc | 2.6E+02 nc | 2.6E+03 nc | | |
| | 2.0E-05 h | | 2.0E-05 r | 0 | 0.10 | 504-24-5 | | 4-Aminopyridine | 1.3E+00 nc | 1.4E+01 nc | 7.3E-02 nc | 7.3E-01 nc | | |
| | 2.5E-03 i | | 2.9E-03 r | 0 | 0.10 | 33089-61-1 | | Amitraz | 1.6E+02 nc | 1.7E+03 nc | 9.1E+00 nc | 9.1E+01 nc | | |
| | | | 2.9E-02 i | n/a | n/a | 7664-41-7 | | Ammonia | | | 1.0E+02 nc | | | |
| | 2.0E-01 i | | | 0 | 0.10 | 7773-06-0 | | Ammonium sulfamate | 1.3E+04 nc | 1.0E+05 max | | 7.3E+03 nc | | |
| 5.7E-03 i | 2.9E-04 r | 5.7E-03 r | 2.9E-04 i | 0 | 0.15 | 62-53-3 | | Aniline | 1.9E+01 nc | 2.0E+02 nc | 1.0E+00 nc | 1.1E+01 nc | | |
| | 4.0E-04 i | | | 0 | 0.01 | 7440-36-0 | | Antimony and compounds | 3.1E+01 nc | 6.8E+02 nc | | 1.5E+01 nc | 5.0E+00 | 3.0E-01 |
| | 8.0E-04 h | | | 0 | 0.01 | 1314-60-9 | | Antimony pentoxide | 3.8E+01 nc | 8.5E+02 nc | | 1.8E+01 nc | | |
| | 8.0E-04 h | | | 0 | 0.01 | 28300-74-5 | | Antimony potassium tartrate | 6.9E+01 nc | 1.5E+03 nc | | 3.3E+01 nc | | |
| | 4.0E-04 h | | | 0 | 0.01 | 1332-81-6 | | Antimony tetroxide | 3.1E+01 nc | 6.8E+02 nc | | 1.5E+01 nc | | |
| | 4.0E-04 h | | | 0 | 0.01 | 1309-64-4 | | Antimony trioxide | 3.1E+01 nc | 6.8E+02 nc | | 1.5E+01 nc | | |
| | 1.3E-02 i | | 1.3E-02 r | 0 | 0.10 | 74115-24-5 | | Apollo | 8.5E+02 nc | 8.9E+03 nc | 4.7E+01 nc | 4.7E+02 nc | | |
| 2.9E-02 i | 5.0E-02 h | 2.5E-02 i | 5.0E-02 r | 0 | 0.10 | 140-57-8 | | Aramite | 1.8E+01 ca* | 7.6E+01 ca | 2.7E-01 ca | 2.7E+00 ca | | |
| | 3.0E-04 i | | | 0 | 0.03 | 7440-38-2 | | Arsenic (noncancer endpoint) | 2.2E+01 nc | | | | | |
| 1.5E+00 i | 3.0E-04 i | 1.8E+01 i | | 0 | 0.03 | 7440-38-2 | | Arsenic (cancer endpoint) | 3.8E-01 ca* | 2.4E+00 ca | 4.5E-04 ca | 4.5E-02 ca | 2.9E+01 | 1.0E+00 |
| | | | 1.4E-05 i | n/a | n/a | 7784-42-1 | | Arsine | | | 5.2E-02 nc | | | |
| | 9.0E-03 i | | 9.0E-03 r | 0 | 0.10 | 76578-12-0 | | Assure | 5.9E+02 nc | 6.1E+03 nc | 3.3E+01 nc | 3.3E+02 nc | | |
| | 8.0E-02 i | | 8.0E-02 r | 0 | 0.10 | 3337-71-1 | | Asulam | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | | |
| 2.2E-01 h | 3.5E-02 h | 3.2E-01 r | 3.5E-02 h | 0 | 0.10 | 1912-24-9 | | Atrazine | 2.0E+00 ca | 8.6E+00 ca | 3.1E-02 ca | 3.0E-01 ca | | |
| | 4.0E-04 i | | 4.0E-04 r | 0 | 0.10 | 71751-41-2 | | Avermectin B1 | 2.6E+01 nc | 2.7E+02 nc | 1.5E+00 nc | 1.5E+01 nc | | |
| 1.1E-01 i | | 1.1E-01 i | | 0 | 0.10 | 103-33-3 | | Azobenzene | 4.0E+00 ca | 1.7E+01 ca | 6.2E-02 ca | 6.1E-01 ca | | |
| | 7.0E-02 i | | 1.4E-04 h | 0 | 0.01 | 7440-39-3 | | Barium and compounds | 5.3E+03 nc | 1.0E+05 max | 5.2E-01 nc | 2.6E+03 nc | 1.6E+03 | 8.2E+01 |
| | 4.0E-03 i | | 4.0E-03 r | 0 | 0.10 | 114-26-1 | | Baygon | 2.6E+02 nc | 2.7E+03 nc | 1.5E+01 nc | 1.5E+02 nc | | |

Key: I=IRIS h=HEAST a=NCEA w=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

# FOR PLANNING PURPOSES

| TOXICITY INFORMATION | | | | | | | | CONTAMINANT | PRELIMINARY REMEDIAL GOALS (PRGs) | | | | SOIL SCREENING LEVELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SFo 1/(mg/kg-d) | RfDo (mg/kg-d) | SFi 1/(mg/kg-d) | RfDi (mg/kg-d) | U/I | O/C | skin abs. soils | CAS No. | | Residential Soil (mg/kg) | Industrial Soil (mg/kg) | Ambient Air (ug/m^3) | Tap Water (ug/l) | Migration to Ground Water DAF 20 (mg/kg) | Migration to Ground Water DAF 1 (mg/kg) |
| | 3.0E-02 I | | 3.0E-02 r | O | 0.10 | | 43121-43-3 | Bayleton | 2.0E+03 nc | 2.0E+04 nc | 1.1E+02 nc | 1.1E+03 nc | | |
| | 2.5E-02 I | | 2.5E-02 r | O | 0.10 | | 68359-37-5 | Baythroid | 1.6E+03 nc | 1.7E+04 nc | 9.1E+01 nc | 9.1E+02 nc | | |
| | 3.0E-01 I | | 3.0E-01 r | O | 0.10 | | 1861-40-1 | Benefin | 2.0E+04 nc | 1.0E+05 max | 1.1E+03 nc | 1.1E+04 nc | | |
| | 5.0E-02 I | | 5.0E-02 r | O | 0.10 | | 17804-35-2 | Benomyl | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | | |
| | 2.5E-03 I | | 2.5E-03 r | O | 0.10 | | 25057-89-0 | Bentazon | 1.6E+02 nc | 1.7E+03 nc | 9.1E+00 nc | 9.1E+01 nc | | |
| | 1.0E-01 I | | 1.0E-01 r | O | 0.10 | | 100-52-7 | Benzaldehyde | 6.5E+03 nc | 6.8E+04 nc | 3.7E+02 nc | 3.7E+03 nc | | |
| 2.9E-02 I | 1.7E-03 r | 2.9E-02 I | 1.7E-03 h | I | 0.10 | | 71-43-2 | Benzene | 6.3E-01 ca* | 1.4E+00 ca* | 2.3E-01 ca* | 3.9E-01 ca* | 3.0E-02 | 2.0E-03 |
| 2.3E+02 I | 3.0E-03 I | 2.3E+02 I | 3.0E-03 r | O | 0.10 | | 92-87-5 | Benzidine | 1.9E-03 ca | 8.3E-03 ca | 2.9E-05 ca | 2.9E-04 ca | | |
| | 4.0E+00 I | | 4.0E+00 I | O | 0.10 | | 65-85-0 | Benzoic acid | 1.0E+05 max | 1.0E+05 max | 1.5E+04 nc | 1.5E+05 nc | 4.0E+02 | 2.0E+01 |
| 1.3E+01 I | | 1.3E+01 r | | O | 0.10 | | 98-07-7 | Benzotrichloride | 3.4E-02 ca | 1.5E-01 ca | 5.2E-04 ca | 5.2E-03 ca | | |
| | 3.0E-01 h | | 3.0E-01 r | O | 0.10 | | 100-51-6 | Benzyl alcohol | 2.0E+04 nc | 1.0E+05 max | 1.1E+03 nc | 1.1E+04 nc | | |
| 1.7E-01 I | | 1.7E-01 r | | I | 0.10 | | 100-44-7 | Benzyl chloride | 8.1E-01 ca | 2.0E+00 ca | 4.0E-02 ca | 6.8E-02 ca | | |
| 4.3E+00 I | 5.0E-03 I | 8.4E+00 I | | O | 0.01 | | 7440-41-7 | Beryllium and compounds | 1.4E-01 ca | 1.1E+00 ca | 8.0E-04 ca | 1.6E-02 ca | 6.3E+01 | 3.0E+00 |
| | 1.0E-04 I | | 1.0E-04 r | O | 0.10 | | 141-66-2 | Bidrin | 6.5E+00 nc | 6.8E+01 nc | 3.7E-01 nc | 3.7E+00 nc | | |
| | 1.5E-02 I | | 1.5E-02 r | O | 0.10 | | 82657-04-3 | Biphenthrin (Talstar) | 9.8E+02 nc | 1.0E+04 nc | 5.5E+01 nc | 5.5E+02 nc | | |
| | 9.0E-02 I | | 8.0E-02 r | I | 0.10 | | 92-52-4 | 1,1-Biphenyl | 3.5E+02 sat | 3.5E+02 sat | 1.8E+02 nc | 3.0E+02 nc | | |
| 1.1E+00 I | | 1.2E+00 I | | I | 0.10 | | 111-44-4 | Bis(2-chloroethyl)ether | 4.3E-02 ca | 9.7E-02 ca | 5.8E-03 ca | 9.8E-03 ca | 4.0E-04 | 2.0E-05 |
| 7.0E-02 h | 4.0E-01 I | 3.5E-02 h | 4.0E-02 r | I | 0.10 | | 39638-32-9 | Bis(2-chloroisopropyl)ether | 2.5E+00 ca | 6.7E+00 ca | 1.9E-01 ca | 2.7E-01 ca | | |
| 2.2E+02 I | | 2.2E+02 I | | I | 0.10 | | 542-88-1 | Bis(chloromethyl)ether | 1.9E-04 ca | 4.2E-04 ca | 3.1E-05 ca | 5.2E-05 ca | | |
| 7.0E-02 w | | 7.0E-02 w | | O | 0.10 | | 108-60-1 | Bis(2-chloro-1-methylethyl)ether | 6.3E+00 ca | 2.7E+01 ca | 9.6E-02 ca | 9.6E-01 ca | | |
| 1.4E-02 I | 2.0E-02 I | 1.4E-02 r | 2.2E-02 r | O | 0.10 | | 117-81-7 | Bis(2-ethylhexyl)phthalate (DEHP) | 3.2E+01 ca* | 1.4E+02 ca | 4.8E-01 ca | 4.8E+00 ca | | |
| | 8.0E-02 I | | 8.0E-02 r | O | 0.10 | | 80-05-7 | Bisphenol A | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | | |
| | 9.0E-02 I | | 9.7E-03 h | O | 0.10 | | 7440-42-8 | Boron | 5.9E+03 nc | 6.1E+04 nc | 2.1E+01 nc | 3.3E+03 nc | | |
| | | | 2.0E-04 h | O | 0.10 | | 7637-07-2 | Boron trifluoride | | | 7.3E-01 nc | | | |
| 9.2E-03 I | 2.0E-02 I | 9.2E-02 r | 2.0E-02 r | I | 0.10 | | 75-27-4 | Bromodichloromethane | 6.3E-01 ca | 1.4E+00 ca | 1.1E-01 ca | 1.8E-01 ca | 6.0E-01 | 3.0E-02 |
| 7.9E-03 I | 2.0E-02 I | 3.9E-03 I | 2.0E-02 r | O | 0.10 | | 75-25-2 | Bromoform (tribromomethane) | 5.6E+01 ca** | 2.4E+02 ca* | 1.7E+00 ca* | 8.5E+00 ca* | 8.0E-01 | 4.0E-02 |
| | 1.4E-03 I | | 1.4E-03 I | I | 0.10 | | 74-83-9 | Bromomethane | 8.8E+00 nc | 2.3E+01 nc | 5.2E+00 nc | 8.7E+00 nc | 2.0E-01 | 1.0E-02 |
| | | | | O | 0.10 | | 101-55-3 | 4-Bromophenyl phenyl ether | | | | | | |
| | 5.0E-03 h | | 5.0E-03 r | O | 0.10 | | 2104-96-3 | Bromophos | 3.3E+02 nc | 3.4E+03 nc | 1.8E+01 nc | 1.8E+02 nc | | |
| | 2.0E-02 I | | 2.0E-02 r | O | 0.10 | | 1689-84-5 | Bromoxynil | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 1.8E+02 nc | | |
| | 2.0E-02 I | | 2.0E-02 r | O | 0.10 | | 1689-99-2 | Bromoxynil octanoate | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| 9.9E-01 r | | 9.9E-01 I | | I | 0.10 | | 106-99-0 | 1,3-Butadiene | 6.5E-03 ca | 1.4E-02 ca | 6.9E-03 ca | 1.1E-02 ca | | |
| | 1.0E-01 I | | 1.0E-01 r | O | 0.10 | | 71-36-3 | 1-Butanol | 6.5E+03 nc | 6.8E+04 nc | 3.7E+02 nc | 3.7E+03 nc | 1.7E+01 | 9.0E-01 |
| | 5.0E-02 I | | 5.0E-02 r | O | 0.10 | | 2008-41-5 | Butylate | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | | |
| | 2.0E-01 I | | 2.0E-01 r | O | 0.10 | | 85-68-7 | Butyl benzyl phthalate | 9.3E+02 sat | 9.3E+02 sat | 7.3E+02 nc | 7.3E+03 nc | 9.3E+02 | 6.1E+02 |
| | 1.0E+00 I | | 1.0E+00 r | O | 0.10 | | 85-70-1 | Butylphthalyl butylglycolate | 6.5E+04 nc | 1.0E+05 max | 3.7E+03 nc | 3.7E+04 nc | | |
| | 3.0E-03 h | | 3.0E-03 r | O | 0.10 | | 75-60-5 | Cacodylic acid | 2.0E+02 nc | 2.0E+03 nc | 1.1E+01 nc | 1.1E+02 nc | | |
| | 9.0E-04 I | 8.3E+00 I | 8.7E-05 h | O | 0.01 | | 7440-43-9 | Cadmium and compounds | 3.8E+01 nc | 8.6E+02 nc | 1.1E-03 ca | 1.8E+01 nc | 8.0E+00 | 4.0E-01 |
| | | | | | | | | "CAL-Modified PRG" (PEA, 1994) | 9.0E+00 | | | | | |
| | 5.0E-01 I | | 5.0E-01 r | O | 0.10 | | 105-60-2 | Caprolactam | 3.3E+04 nc | 1.0E+05 max | 1.8E+03 nc | 1.8E+04 nc | | |
| 8.8E-03 h | 2.0E-03 I | 8.8E-03 r | 2.0E-03 r | O | 0.10 | | 2425-06-1 | Captafol | 5.2E+01 ca** | 2.2E+02 ca* | 7.8E-01 ca* | 7.8E+00 ca* | | |
| 3.5E-03 h | 1.3E-01 I | 3.5E-03 r | 1.3E-01 r | O | 0.10 | | 133-06-2 | Captan | 1.3E+02 ca* | 5.5E+02 ca | 1.9E+00 ca | 1.9E+01 ca | | |
| | 1.0E-01 I | | 1.1E-01 r | O | 0.10 | | 63-25-2 | Carbaryl | 6.5E+03 nc | 6.8E+04 nc | 4.0E+02 nc | 3.7E+03 nc | | |
| 2.0E-02 h | | 2.0E-02 r | | O | 0.10 | | 86-74-8 | Carbazole | 2.2E+01 ca | 9.5E+01 ca | 3.4E-01 ca | 3.4E+00 ca | 8.0E-01 | 3.0E-02 |
| | 5.0E-03 I | | 5.0E-03 r | O | 0.10 | | 1563-66-2 | Carbofuran | 3.3E+02 nc | 3.4E+03 nc | 1.8E+01 nc | 1.8E+02 nc | | |
| | 1.0E[illegible] | | 2.9E-03 h | I | 0.10 | | 75-15-0 | Carbon disulfide | 7.5E+00 nc | 2.4E+01 nc | 1.0E+01 nc | 2.1E+01 nc | 3.2E+01 | [illegible].0E+00 |
| 1.3E-01 I | 7.0[illegible] | [illegible].3E-02 I | 5.7E-04 h | I | 0.10 | | 56-23-5 | Carbon tetrachloride | 2.3E-01 ca* | 5.0E-01 ca* | 1.3E-01 ca* | 1.7E-01 ca* | 7.0E-02 | [illegible]0E-03 |

Key: I=IRIS h=HEAST p=ICEA w=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

# FOR PLANNING PURPOSES

| TOXICITY INFORMATION | | | | | | | | CONTAMINANT | PRELIMINARY REMEDIAL GOALS (PRGs) | | | | SOIL SCREENING LEVELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SFo (1/(mg/kg-d)) | RfDo (mg/kg-d) | SFi (1/(mg/kg-d)) | RfDi (mg/kg-d) | O C | abs. soil | CAS No. | | | Residential Soil (mg/kg) | Industrial Soil (mg/kg) | Ambient Air (ug/m^3) | Tap Water (ug/l) | Migration to Ground Water DAF 20 (mg/kg) | DAF 1 (mg/kg) |
| | 1.0E-02 I | | 1.0E-02 r | 0 | 0.10 | 85285-14-8 | | Carbosulfan | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| | 1.0E-01 I | | 1.0E-01 r | 0 | 0.10 | 5234-68-4 | | Carboxin | 6.5E+03 nc | 6.8E+04 nc | 3.7E+02 nc | 3.7E+03 nc | | |
| | 2.0E-03 I | | 2.0E-03 r | 0 | 0.10 | 302-17-0 | | Chloral | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| | 1.5E-02 I | | 1.5E-02 r | 0 | 0.10 | 133-90-4 | | Chloramben | 9.8E+02 nc | 1.0E+04 nc | 5.5E+01 nc | 5.5E+02 nc | | |
| 4.0E-01 h | | 4.0E-01 r | | 0 | 0.10 | 118-75-2 | | Chloranil | 1.1E+00 ca | 4.7E+00 ca | 1.7E-02 ca | 1.7E-01 ca | | |
| 1.3E+00 I | 6.0E-05 I | 1.3E+00 I | 6.0E-05 r | 0 | 0.10 | 57-74-9 | | Chlordane | 3.4E-01 ca** | 1.5E+00 ca* | 5.2E-03 ca* | 5.2E-02 ca* | 1.0E+01 | 5.0E-01 |
| | 2.0E-02 I | | 2.0E-02 r | 0 | 0.10 | 90982-32-4 | | Chlorimuron-ethyl | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 1.0E-01 I | | | 0 | 0.01 | 7782-50-5 | | Chlorine | 7.7E+03 nc | 1.7E+05 nc | | 3.7E+03 nc | | |
| | | | 5.7E-05 I | n/a | n/a | 10049-04-4 | | Chlorine dioxide | | | 2.1E-01 nc | | | |
| | | | | 1 | 0.10 | 107-20-0 | | Chloroacetaldehyde | | | | | | |
| | 2.0E-03 h | | 2.0E-03 r | 0 | 0.10 | 79-11-8 | | Chloroacetic acid | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| | 8.0E-06 r | | 8.0E-06 I | 1 | 0.10 | 532-27-4 | | 2-Chloroacetophenone | 3.2E-02 nc | 1.1E-01 nc | 3.1E-02 nc | 5.2E-02 nc | | |
| | 4.0E-03 I | | 4.0E-03 r | 0 | 0.10 | 106-47-8 | | 4-Chloroaniline | 2.6E+02 nc | 2.7E+03 nc | 1.5E+01 nc | 1.5E+02 nc | 7.0E-01 | 3.0E-02 |
| | 2.0E-02 I | | 5.7E-03 h | 1 | 0.10 | 108-90-7 | | Chlorobenzene | 6.5E+01 nc | 2.2E+02 nc | 2.1E+01 nc | 3.9E+01 nc | 1.0E+00 | 7.0E-02 |
| 2.7E-01 h | 2.0E-02 I | 2.7E-01 h | 2.0E-02 r | 0 | 0.10 | 510-15-6 | | Chlorobenzilate | 1.6E+00 ca | 7.1E+00 ca | 2.5E-02 ca | 2.5E-01 ca | | |
| | 2.0E-01 h | | 2.0E-01 r | 0 | 0.10 | 74-11-3 | | p-Chlorobenzoic acid | 1.3E+04 nc | 1.0E+05 max | 7.3E+02 nc | 7.3E+03 nc | | |
| | 2.0E-02 h | | 2.0E-02 r | 0 | 0.10 | 98-56-6 | | 4-Chlorobenzotrifluoride | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 2.0E-02 h | | 2.0E-03 h | 1 | 0.10 | 126-99-8 | | 2-Chloro-1,3-buladiene | 3.6E+00 nc | 1.2E+01 nc | 7.3E+00 nc | 1.4E+01 nc | | |
| | 4.0E-01 h | | 4.0E-01 r | 1 | 0.10 | 109-69-3 | | 1-Chlorobutane | 4.8E+02 sat | 4.8E+02 sat | 1.5E+03 nc | 2.4E+03 nc | | |
| | 1.4E+01 r | | 1.4E+01 I | 1 | 0.10 | 75-68-3 | | 1-Chloro-1,1-difluoroethane (HCFC-142b) | 3.4E+02 sat | 3.4E+02 sat | 5.2E+04 nc | 8.7E+04 nc | | |
| | | | | 1 | 0.10 | 110-75-8 | | 2-Chloroethyl vinyl ether | | | | | | |
| | 1.4E+01 r | | 1.4E+01 I | 1 | 0.10 | 75-45-6 | | Chlorodifluoromethane | 3.4E+02 sat | 3.4E+02 sat | 5.1E+04 nc | 8.5E+04 nc | | |
| 6.1E-03 I | 1.0E-02 I | 6.1E-02 I | 1.0E-02 r | 1 | 0.10 | 67-66-3 | | Chloroform | 2.5E-01 ca | 5.3E-01 ca | 8.4E-02 ca | 1.6E-01 ca | 8.0E-01 | 3.0E-02 |
| 1.3E-02 h | | 8.3E-03 h | | 1 | 0.10 | 74-87-3 | | Chloromethane | 1.2E+00 ca | 2.6E+00 ca | 1.1E+00 ca | 1.5E+00 ca | | |
| 5.0E-01 h | | 5.0E-01 r | | 0 | 0.10 | 95-69-2 | | 4-Chloro-2-methylaniline | 7.7E-01 ca | 3.3E+00 ca | 1.2E-02 ca | 1.2E-01 ca* | | |
| 4.0E-01 h | | 4.0E-01 r | | 0 | 0.10 | 3165-93-3 | | 4-Chloro-2-methylaniline hydrochloride | 9.7E-01 ca | 4.1E+00 ca | 1.5E-02 ca | 1.5E-01 ca | | |
| | 8.0E-02 I | | 8.0E-02 r | 1 | 0.10 | 91-58-7 | | beta-Chloronaphthalene | 1.1E+02 sat | 1.1E+02 sat | 2.9E+02 nc | 4.9E+02 nc | | |
| 2.9E-02 h | | 2.9E-02 r | r | 0 | 0.10 | 88-73-3 | | o-Chloronitrobenzene | 1.8E+01 ca | 7.6E+01 ca | 2.7E-01 ca | 2.7E+00 ca | | |
| 1.8E-02 h | | 1.8E-02 r | r | 0 | 0.10 | 100-00-5 | | p-Chloronitrobenzene | 2.5E+01 ca | 1.1E+02 ca | 3.7E-01 ca | 3.7E+00 ca | | |
| | 5.0E-03 I | | 5.0E-03 r | 1 | 0.10 | 95-57-8 | | 2-Chlorophenol | 9.1E+01 nc | 3.7E+02 nc | 1.8E+01 nc | 3.8E+01 nc | 4.0E+00 | 2.0E-01 |
| | 3.0E-02 r | | 2.9E-02 h | 1 | 0.10 | 75-29-6 | | 2-Chloropropane | 1.7E+02 nc | 5.8E+02 nc | 1.0E+02 nc | 1.7E+02 nc | | |
| 1.1E-02 h | 1.5E-02 I | 1.1E-02 r | 1.5E-02 r | 0 | 0.10 | 1897-45-6 | | Chlorothalonil | 4.0E+01 ca** | 1.7E+02 ca* | 6.1E-01 ca* | 6.1E+00 ca* | | |
| | 2.0E-02 I | | 2.0E-02 r | 1 | 0.10 | 95-49-8 | | o-Chlorotoluene | 1.6E+02 nc | 5.5E+02 nc | 7.3E+01 nc | 1.2E+02 nc | | |
| | 2.0E-01 I | | 2.0E-01 r | 0 | 0.10 | 101-21-3 | | Chlorpropham | 1.3E+04 nc | 1.0E+05 max | 7.3E+02 nc | 7.3E+03 nc | | |
| | 3.0E-03 I | | 3.0E-03 r | 0 | 0.10 | 2921-88-2 | | Chlorpyrifos | 2.0E+02 nc | 2.0E+03 nc | 1.1E+01 nc | 1.1E+02 nc | | |
| | 1.0E-02 h | | 1.0E-02 r | 0 | 0.10 | 5598-13-0 | | Chlorpyrifos-methyl | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| | 6.0E-02 I | | 5.0E-02 r | 0 | 0.10 | 64902-72-3 | | Chlorsulfuron | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | | |
| | 8.0E-04 h | | 8.0E-04 r | 0 | 0.10 | 602-38-56-4 | | Chlorthiophos | 5.2E+01 nc | 5.5E+02 nc | 2.9E+00 nc | 2.9E+01 nc | | |
| | | 4.2E+01 I | | 0 | 0.01 | n/a | | Total Chromium (1/6 ratio Cr VI/Cr III) | 2.1E+02 ca | 4.5E+02 ca | 1.6E-04 ca | | 3.8E+01 | 2.0E+00 |
| | 5.0E-03 I | 2.9E+02 I | | 0 | 0.01 | 7440-47-3 | | Chromium VI | 3.0E+01 ca | 6.4E+01 ca | 2.3E-05 ca | 1.8E+02 nc | 3.8E+01 | 2.0E+00 |
| | | | | | | | | "CAL-Modified PRG" (PEA, 1994) | 2.0E-01 | | | 1.6E-01 | | |
| | 6.0E-02 m | | 2.9E-04 m | 0 | 0.01 | 7440-48-4 | | Cobalt | 4.6E+03 nc | 9.7E+04 nc | 1.0E+00 nc | 2.2E+03 nc | | |
| | | 2.2E+00 I | | 0 | 0.01 | 8007-45-2 | | Coke Oven Emissions | | | 3.1E-03 ca | | | |
| | 3.7E-02 h | | | 0 | 0.01 | 7440-50-8 | | Copper and compounds | 2.8E+03 nc | 6.3E+04 nc | | 1.4E+03 nc | | |
| 1.9E+00 h | 1.0E-02 a | 1.9E+00 a | 1.0E-02 r | 1 | 0.10 | 123-73-9 | | Crotonaldehyde | 5.3E-03 ca | 1.1E-02 ca | 3.5E-03 ca | 5.9E-03 ca | | |
| | 4.0E-02 I | | 2.8E-03 h | 1 | 0.10 | 98-82-8 | | Cumene | 1.9E+01 nc | 6.2E+01 nc | 9.4E+00 nc | 1.9E+01 nc | | |
| 8.4E-01 h | 2.0E-03 h | 8.4E-01 r | 2.0E-03 r | 0 | 0.10 | 21725-46-2 | | Cyanazine | 5.3E-01 ca* | 2.3E+00 ca | 8.0E-03 ca | 8.0E-02 ca | | |

Key: i=IRIS h=HEAST n=NCEA w=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

# FOR PLANNING PURPOSES

| TOXICITY INFORMATION | | | | | | | CONTAMINANT | PRELIMINARY REMEDIAL GOALS (PRGs) | | | | SOIL SCREENING LEVELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SFo 1/(mg/kg-d) | RfDo (mg/kg-d) | SFi 1/(mg/kg-d) | RfDi (mg/kg-d) | V O C | skin abs. soils | CAS No. | | Residential Soil (mg/kg) | Industrial Soil (mg/kg) | Ambient Air (ug/m^3) | Tap Water (ug/l) | Migration to Ground Water DAF 20 (mg/kg) | Migration to Ground Water DAF 1 (mg/kg) |
| | | | | | 0.01 | n/a | Cyanides | | | | | | |
| | 1.0E-01 h | | | 0 | 0.01 | 542-62-1 | Barium cyanide | 7.7E+03 nc | 1.0E+05 max | | 3.7E+03 nc | | |
| | 4.0E-02 i | | | 0 | 0.01 | 592-01-8 | Calcium cyanide | 3.1E+03 nc | 6.8E+04 nc | | 1.5E+03 nc | | |
| | 8.0E-02 i | | | 0 | 0.01 | 506-77-4 | Chlorine cyanide | 3.8E+03 nc | 8.5E+04 nc | | 1.8E+03 nc | | |
| | 8.0E-03 i | | | 0 | 0.01 | 544-92-3 | Copper cyanide | 3.8E+02 nc | 8.5E+03 nc | | 1.8E+02 nc | | |
| | 4.0E-02 i | | | 0 | 0.10 | 460-19-5 | Cyanogen | 2.6E+03 nc | 2.7E+04 nc | | 1.5E+03 nc | | |
| | 9.0E-02 i | | | 0 | 0.10 | 506-68-3 | Cyanogen bromide | 5.9E+03 nc | 1.0E+05 max | | 3.3E+03 nc | | |
| | 8.0E-02 i | | | 0 | 0.10 | 506-77-4 | Cyanogen chloride | 3.3E+03 nc | 3.4E+04 nc | | 1.8E+03 nc | | |
| | 2.0E-02 i | | | 0 | 0.10 | 57-12-5 | Free cyanide | 1.3E+03 nc | 1.4E+04 nc | | 7.3E+02 nc | 4.0E+01 | 2.0E+00 |
| | 2.0E-02 i | | 8.6E-04 i | 1 | 0.10 | 74-90-8 | Hydrogen cyanide | 1.1E+01 nc | 3.5E+01 nc | 3.1E+00 nc | 6.2E+00 nc | | |
| | 5.0E-02 i | | | 0 | 0.10 | 151-50-8 | Potassium cyanide | 3.3E+03 nc | 3.4E+04 nc | | 1.8E+03 nc | | |
| | 2.0E-01 i | | | 0 | 0.10 | 506-61-6 | Potassium silver cyanide | 1.3E+04 nc | 1.0E+05 max | | 7.3E+03 nc | | |
| | 1.0E-01 i | | | 0 | 0.10 | 506-64-9 | Silver cyanide | 6.5E+03 nc | 1.0E+05 max | | 3.7E+03 nc | | |
| | 4.0E-02 i | | | 0 | 0.10 | 143-33-9 | Sodium cyanide | 2.6E+03 nc | 2.7E+04 nc | | 1.5E+03 nc | | |
| | 5.0E-02 i | | | 0 | 0.10 | 557-21-1 | Zinc cyanide | 3.3E+03 nc | 3.4E+04 nc | | 1.8E+03 nc | | |
| | 8.0E+00 i | | 5.0E+00 r | 0 | 0.10 | 108-94-1 | Cyclohexanone | 1.0E+05 max | 1.0E+05 max | 1.8E+04 nc | 1.8E+05 nc | | |
| | 2.0E-01 i | | 2.0E-01 r | 0 | 0.10 | 108-91-8 | Cyclohexylamine | 1.3E+04 nc | 1.0E+05 max | 7.3E+02 nc | 7.3E+03 nc | | |
| | 5.0E-03 i | | 5.0E-03 r | 0 | 0.10 | 68085-85-8 | Cyhalothrin/Karate | 3.3E+02 nc | 3.4E+03 nc | 1.8E+01 nc | 1.8E+02 nc | | |
| | 1.0E-02 i | | 1.0E-02 r | 0 | 0.10 | 52315-07-8 | Cypermethrin | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| | 7.5E-03 i | | 7.5E-03 r | 0 | 0.10 | 66215-27-8 | Cyromazine | 4.9E+02 nc | 5.1E+03 nc | 2.7E+01 nc | 2.7E+02 nc | | |
| | 1.0E-02 i | | 1.0E-02 r | 0 | 0.10 | 1861-32-1 | Dacthal | 6.5E+02 nc | 1.0E+05 max | 3.7E+01 nc | 3.7E+02 nc | | |
| | 3.0E-02 i | | 3.0E-02 r | 0 | 0.10 | 75-99-0 | Dalapon | 2.0E+03 nc | 2.0E+04 nc | 1.1E+02 nc | 1.1E+03 nc | | |
| | 2.5E-02 i | | 2.5E-02 r | 0 | 0.10 | 39515-41-8 | Danitol | 1.6E+03 nc | 1.7E+04 nc | 9.1E+01 nc | 9.1E+02 nc | | |
| 2.4E-01 i | | 2.4E-01 r | | 0 | 0.10 | 72-54-8 | DDD | 1.9E+00 ca | 7.9E+00 ca | 2.8E-02 ca | 2.8E-01 ca | 1.6E+01 | 8.0E-01 |
| 3.4E-01 i | | 3.4E-01 r | | 0 | 0.10 | 72-55-9 | DDE | 1.3E+00 ca | 5.6E+00 ca | 2.0E-02 ca | 2.0E-01 ca | 5.4E+01 | 3.0E+00 |
| 3.4E-01 i | 5.0E-04 i | 3.4E-01 i | 5.0E-04 r | 0 | 0.10 | 50-29-3 | DDT | 1.3E+00 ca* | 5.6E+00 ca* | 2.0E-02 ca* | 2.0E-01 ca* | 3.2E+01 | 2.0E+00 |
| | 1.0E-02 i | | 1.0E-02 r | 0 | 0.10 | 1163-19-5 | Decabromodiphenyl ether | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| | 4.0E-05 i | | 4.0E-05 r | 0 | 0.10 | 8065-48-3 | Demeton | 2.6E+00 nc | 2.7E+01 nc | 1.5E-01 nc | 1.5E+00 nc | | |
| 8.1E-02 h | | 8.1E-02 r | | 0 | 0.10 | 2303-16-4 | Diallate | 7.3E+00 ca | 3.1E+01 ca | 1.1E-01 ca | 1.1E+00 ca | | |
| | 9.0E-04 h | | 9.0E-04 r | 0 | 0.10 | 333-41-5 | Diazinon | 5.9E+01 nc | 6.1E+02 nc | 3.3E+00 nc | 3.3E+01 nc | | |
| | 4.0E-03 n | | 4.0E-03 r | 1 | 0.10 | 132-64-9 | Dibenzofuran | 1.4E+02 sat | 1.4E+02 sat | 1.5E+01 nc | 2.4E+01 nc | | |
| | 1.0E-02 i | | 1.0E-02 r | 0 | 0.10 | 106-37-6 | 1,4-Dibromobenzene | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| 8.4E-02 i | 2.0E-02 i | 8.4E-02 r | 2.0E-02 r | 0 | 0.10 | 124-48-1 | Dibromochloromethane | 5.3E+00 ca* | 2.3E+01 ca | 8.0E-02 ca | 1.0E+00 ca | 4.0E-01 | 2.0E-02 |
| 1.4E+00 h | 5.7E-05 r | 2.4E-03 h | 5.7E-05 i | 0 | 0.10 | 96-12-8 | 1,2-Dibromo-3-chloropropane | 3.2E-01 ca** | 1.4E+00 ca* | 2.1E-01 nc | 4.8E-02 ca* | | |
| | | | | | | | "CAL-Modified PRG" (PEA, 1994) | 6.0E-02 | | 9.6E-04 | 4.7E-03 | | |
| 9.5E+01 i | 5.7E-05 r | 7.7E-01 i | 5.7E-05 h | 1 | 0.10 | 106-93-4 | 1,2-Dibromoethane | 4.9E-03 ca | 2.0E-02 ca | 8.7E-03 ca* | 7.6E-04 ca | | |
| | 1.0E-01 i | | 1.0E-01 r | 0 | 0.10 | 84-74-2 | Dibutyl phthalate | 6.5E+03 nc | 6.8E+04 nc | 3.7E+02 nc | 3.7E+03 nc | 2.3E+03 | 2.7E+02 |
| | 3.0E-02 i | | 3.0E-02 r | 0 | 0.10 | 1918-00-9 | Dicamba | 2.0E+03 nc | 2.0E+04 nc | 1.1E+02 nc | 1.1E+03 nc | | |
| | 9.0E-02 i | | 5.7E-02 h | 1 | 0.10 | 95-50-1 | 1,2-Dichlorobenzene | 7.0E+02 sat | 7.0E+02 sat | 2.1E+02 nc | 3.7E+02 nc | 1.7E+01 | 9.0E-01 |
| | 3.0E-02 w | | 3.0E-02 r | 1 | 0.10 | 541-73-1 | 1,3-Dichlorobenzene | 5.0E+02 nc | 8.6E+02 sat | 1.1E+02 nc | 1.8E+02 nc | | |
| 2.4E-02 h | 2.3E-01 r | 2.4E-02 r | 2.3E-01 i | 1 | 0.10 | 106-46-7 | 1,4-Dichlorobenzene | 3.6E+00 ca | 8.5E+00 ca | 2.8E-01 ca | 4.7E-01 ca | 2.0E+00 | 1.0E-01 |
| 4.5E-01 i | | 4.5E-01 r | | 0 | 0.10 | 91-94-1 | 3,3-Dichlorobenzidine | 9.9E-01 ca | 4.2E+00 ca | 1.5E-02 ca | 1.5E-01 ca | 7.0E-03 | 3.0E-04 |
| 9.3E+00 r | | 9.3E+00 h | | 1 | 0.10 | 764-41-0 | 1,4-Dichloro-2-butene | 7.5E-03 ca | 1.7E-02 ca | 7.2E-04 ca | 1.2E-03 ca | | |
| | 2.0E-01 i | | 5.7E-02 h | 1 | 0.10 | 75-71-8 | Dichlorodifluoromethane | 9.4E+01 nc | 3.1E+02 nc | 2.1E+02 nc | 3.9E+02 nc | | |
| | 1.0E-01 h | | 1.4E-01 h | 1 | 0.10 | 75-34-3 | 1,1-Dichloroethane | 5.0E+02 nc | 1.7E+03 nc | 5.2E+02 nc | 8.1E+02 nc | 2.3E+01 | 1.0E+00 |
| 9.1E-02 i | 2.9E-03 r | 9.1E-02 i | 2.9E-03 n | 1 | 0.10 | 107-06-2 | 1,2-Dichloroethane (EDC) | 2.5E-01 ca* | 5.5E-01 ca* | 7.4E-02 ca | 1.2E-01 ca | 2.0E-02 | 1.0E-03 |
| 9.0E-01 i | 9.0E-03 i | 1.8E-01 i | 9.0E-03 r | 1 | 0.10 | 75-35-4 | 1,1-Dichloroethylene | 3.7E-02 ca | 8.0E-02 ca | 3.8E-02 ca | 4.6E-02 ca | 8.0E-02 | 8.0E-03 |

Key: I=IRIS h=HEAST n=NCEA w=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 100X ca)

# FOR PLANNING PURPOSES

| TOXICITY INFORMATION | | | | | | | | CONTAMINANT | PRELIMINARY REMEDIAL GOALS (PRGs) | | | | SOIL SCREENING LEVELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | Migration to Ground Water | |
| SFo 1/(mg/kg-d) | RfDo (mg/kg-d) | SFi 1/(mg/kg-d) | RfDi (mg/kg-d) | V O C | skin abs. soils | CAS No. | | Residential Soil (mg/kg) | Industrial Soil (mg/kg) | Ambient Air (ug/m^3) | Tap Water (ug/l) | DAF 20 (mg/kg) | DAF 1 (mg/kg) |
| | 1.0E-02 h | | 1.0E-02 r | 1 | 0.10 | 156-59-2 | 1,2-Dichloroethylene (cis) | 3.1E+01 nc | 1.0E+02 nc | 3.7E+01 nc | 6.1E+01 nc | 4.0E-01 | 2.0E-02 |
| | 2.0E-02 I | | 2.0E-02 r | 1 | 0.10 | 156-60-5 | 1,2-Dichloroethylene (trans) | 7.8E+01 nc | 2.7E+02 nc | 7.3E+01 nc | 1.2E+02 nc | 7.0E-01 | 3.0E-02 |
| | 9.0E-03 h | | 9.0E-03 r | 1 | 0.10 | 540-59-0 | 1,2-Dichloroethylene (mixture) | 3.5E+01 nc | 1.2E+02 nc | 3.3E+01 nc | 5.5E+01 nc | | |
| | 3.0E-03 I | | 3.0E-03 r | 0 | 0.10 | 120-83-2 | 2,4-Dichlorophenol | 2.0E+02 nc | 2.0E+03 nc | 1.1E+01 nc | 1.1E+02 nc | 1.0E+00 | 5.0E-02 |
| | 8.0E-03 I | | 8.0E-03 r | 0 | 0.10 | 94-82-6 | 4-(2,4-Dichlorophenoxy)butyric Acid (2,4-DB) | 5.2E+02 nc | 5.5E+03 nc | 2.9E+01 nc | 2.9E+02 nc | | |
| | 1.0E-02 I | | 1.0E-02 r | 0 | 0.10 | 94-75-7 | 2,4-Dichlorophenoxyacetic Acid (2,4-D) | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| 6.0E-02 h | 1.1E-03 r | 6.0E-02 r | 1.1E-03 I | 1 | 0.10 | 78-87-5 | 1,2-Dichloropropane | 3.1E-01 ca* | 6.8E-01 ca* | 9.9E-02 ca* | 1.6E-01 ca* | 3.0E-02 | 1.0E-03 |
| 1.8E-01 h | 3.0E-04 I | 1.3E-01 h | 5.7E-03 I | 1 | 0.10 | 542-75-6 | 1,3-Dichloropropene | 2.5E-01 ca* | 5.5E-01 ca | 5.2E-02 ca | 8.1E-02 ca | 4.0E-03 | 2.0E-04 |
| | 3.0E-03 I | | 3.0E-03 r | 0 | 0.10 | 616-23-9 | 2,3-Dichloropropanol | 2.0E+02 nc | 2.0E+03 nc | 1.1E+01 nc | 1.1E+02 nc | | |
| 2.9E-01 I | 5.0E-04 I | 2.9E-01 r | 1.4E-04 I | 0 | 0.10 | 62-73-7 | Dichlorvos | 1.5E+00 ca** | 6.6E+00 ca* | 2.3E-02 ca* | 2.3E-01 ca* | | |
| 4.4E-01 w | | 4.4E-01 r | | 0 | 0.10 | 115-32-2 | Dicofol | 1.0E+00 ca | 4.3E+00 ca | 1.5E-02 ca | 1.5E-01 ca | | |
| | 3.0E-02 h | | 5.7E-05 h | 1 | 0.10 | 77-73-6 | Dicyclopentadiene | | | 2.1E-01 nc | 4.2E-01 nc | | |
| 1.6E+01 I | 5.0E-05 I | 1.6E+01 I | 5.0E-05 r | 0 | 0.10 | 60-57-1 | Dieldrin | 2.8E-02 ca* | 1.2E-01 ca | 4.2E-04 ca | 4.2E-03 ca | 4.0E-03 | 2.0E-04 |
| | 5.7E-03 h | | 5.7E-03 w | 0 | 0.10 | 112-34-5 | Diethylene glycol, monobutyl ether | 3.7E+02 nc | 3.9E+03 nc | 2.1E+01 nc | 2.1E+02 nc | | |
| | 2.0E+00 h | | 2.0E+00 r | 0 | 0.10 | 111-90-0 | Diethylene glycol, monoethyl ether | 1.0E+05 max | 1.0E+05 max | 7.3E+03 nc | 7.3E+04 nc | | |
| | 1.1E-02 h | | 1.1E-02 r | 0 | 0.10 | 617-84-5 | Diethylformamide | 7.2E+02 nc | 7.5E+03 nc | 4.0E+01 nc | 4.0E+02 nc | | |
| 1.2E-03 I | 6.0E-01 I | 1.2E-03 r | 6.0E-01 r | 0 | 0.10 | 103-23-1 | Di(2-ethylhexyl)adipate | 3.7E+02 nc | 1.6E+03 nc | 5.6E+00 nc | 5.6E+01 nc | | |
| | 8.0E-01 I | | 8.0E-01 r | 0 | 0.10 | 84-66-2 | Diethyl phthalate | 5.2E+04 nc | 1.0E+05 max | 2.9E+03 nc | 2.9E+04 nc | | |
| 4.7E+03 h | | 4.7E+03 r | | 0 | 0.10 | 56-53-1 | Diethylstilbestrol | 9.5E-05 ca | 4.1E-04 ca | 1.4E-06 ca | 1.4E-05 ca | | |
| | 8.0E-02 I | | 8.0E-02 r | 0 | 0.10 | 43222-48-6 | Difenzoquat (Avenge) | 5.2E+03 nc | 5.5E+04 nc | 2.9E+02 nc | 2.9E+03 nc | | |
| | 2.0E-02 I | | 2.0E-02 r | 0 | 0.10 | 35367-38-5 | Diflubenzuron | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 1.1E+01 r | | 1.1E+01 I | 1 | 0.10 | 75-37-6 | 1,1-Difluoroethane | | | 4.2E+04 nc | 6.8E+04 nc | | |
| | 8.0E-02 I | | 8.0E-02 r | 0 | 0.10 | 1445-75-6 | Diisopropyl methylphosphonate | 5.2E+03 nc | 5.5E+04 nc | 2.9E+02 nc | 2.9E+03 nc | | |
| | 2.0E-02 I | | 2.0E-02 r | 0 | 0.10 | 55290-64-7 | Dimethipin | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 2.0E-04 I | | 2.0E-04 r | 0 | 0.10 | 60-51-5 | Dimethoate | 1.3E+01 nc | 1.4E+02 nc | 7.3E-01 nc | 7.3E+00 nc* | | |
| 1.4E-02 h | | 1.4E-02 r | | 0 | 0.10 | 119-90-4 | 3,3'-Dimethoxybenzidine | 3.2E+01 ca | 1.4E+02 ca | 4.8E-01 ca | 4.8E+00 ca | | |
| | 5.7E-06 r | | 5.7E-06 w | 1 | 0.10 | 124-40-3 | Dimethylamine | 6.5E-02 nc | 2.4E-01 nc | 2.1E-02 nc | 3.5E-02 nc | | |
| | 2.0E-03 I | | 2.0E-03 r | 0 | 0.10 | 121-69-7 | N-N-Dimethylaniline | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| 7.5E-01 h | | 7.5E-01 r | | 0 | 0.10 | 95-68-1 | 2,4-Dimethylaniline | 5.8E-01 ca | 2.5E+00 ca | 9.0E-03 ca | 9.0E-02 ca | | |
| 5.8E-01 h | | 5.8E-01 r | | 0 | 0.10 | 21436-96-4 | 2,4-Dimethylaniline hydrochloride | 7.7E-01 ca | 3.3E+00 ca | 1.2E-02 ca | 1.2E-01 ca | | |
| 8.2E+00 h | | 8.2E+00 r | | 0 | 0.10 | 119-93-7 | 3,3'-Dimethylbenzidine | 4.8E-02 ca | 2.1E-01 ca | 7.3E-04 ca | 7.3E-03 ca | | |
| 2.6E+00 w | | 3.5E+00 w | | 0 | 0.10 | 57-14-7 | 1,1-Dimethylhydrazine | 1.7E-01 ca | 7.3E-01 ca | 1.8E-03 ca | 2.6E-02 ca | | |
| 3.7E+01 w | | 3.7E+01 w | | 0 | 0.10 | 540-73-8 | 1,2-Dimethylhydrazine | 1.2E-02 ca | 5.2E-02 ca | 1.8E-04 ca | 1.8E-03 ca | | |
| | 1.0E-01 h | | 8.0E-03 I | 0 | 0.10 | 68-12-2 | N,N-Dimethylformamide | 6.5E+03 nc | 6.8E+04 nc | 3.1E+01 nc | 3.7E+03 nc | | |
| | 2.0E-02 I | | 2.0E-02 r | 0 | 0.10 | 105-67-9 | 2,4-Dimethylphenol | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | 9.0E+00 | 4.0E-01 |
| | 8.0E-04 I | | 8.0E-04 r | 0 | 0.10 | 576-26-1 | 2,6-Dimethylphenol | 3.9E+01 nc | 4.1E+02 nc | 2.2E+00 nc | 2.2E+01 nc | | |
| | 1.0E-03 I | | 1.0E-03 r | 0 | 0.10 | 95-65-8 | 3,4-Dimethylphenol | 6.5E+01 nc | 6.8E+02 nc | 3.7E+00 nc | 3.7E+01 nc | | |
| | 1.0E+01 h | | 1.0E+01 r | 0 | 0.10 | 131-11-3 | Dimethyl phthalate | 1.0E+05 max | 1.0E+05 max | 3.7E+04 nc | 3.7E+05 nc | | |
| | 1.0E-01 I | | 1.0E-01 r | 0 | 0.10 | 120-61-6 | Dimethyl terephthalate | 6.5E+03 nc | 6.8E+04 nc | 3.7E+02 nc | 3.7E+03 nc | | |
| | 2.0E-03 I | | 2.0E-03 r | 0 | 0.10 | 131-89-5 | 4,6-Dinitro-o-cyclohexyl phenol | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| | 1.0E-04 I | | 1.0E-04 r | 0 | 0.10 | 99-65-0 | 1,3-Dinitrobenzene | 6.5E+00 nc | 6.8E+01 nc | 3.7E-01 nc | 3.7E+00 nc | | |
| | 4.0E-04 h | | 4.0E-04 r | 0 | 0.10 | 528-29-0 | 1,2-Dinitrobenzene | 2.6E+01 nc | 2.7E+02 nc | 1.5E+00 nc | 1.5E+01 nc | | |
| | 4.0E-04 h | | 4.0E-04 r | 0 | 0.10 | 100-25-4 | 1,4-Dinitrobenzene | 2.6E+01 nc | 2.7E+02 nc | 1.5E+00 nc | 1.5E+01 nc | | |
| | 2.0E-03 I | | 2.0E-03 r | 0 | 0.10 | 51-28-5 | 2,4-Dinitrophenol | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | 3.0E-01 | 1.0E-02 |
| 8.8E-01 I | | 8.8E-01 r | | 0 | 0.10 | 25321-14-6 | Dinitrotoluene mixture | 6.5E-01 ca | 2.8E+00 ca | 9.9E-03 ca | 9.9E-02 ca | 8.0E-04 | 4.0E-05 |
| | 2.0E-03 I | | 2.0E-03 r | 0 | 0.10 | 121-14-2 | 2,4-Dinitrotoluene (also see Dinitrotoluene mixture) | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | 8.0E-04 | 4.0E-05 |
| | 1.0E-03 h | | 1.0E-03 r | 0 | 0.10 | 606-20-2 | 2,6-Dinitrotoluene (also see Dinitrotoluene mixture) | 6.5E+01 nc | 6.8E+02 nc | 3.7E+00 nc | 3.7E+01 nc | 7.0E-04 | 3.0E-05 |

Key: i=IRIS h=HEAST n=NCEA w=WITHDRAWN p=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

# FOR PLANNING PURPOSES

| TOXICITY INFORMATION | | | | | | | CONTAMINANT | PRELIMINARY REMEDIAL GOALS (PRGs) | | | | SOIL SCREENING LEVELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SFo (1/(mg/kg-d)) | RfDo (mg/kg-d) | SFi (1/(mg/kg-d)) | RfDi (mg/kg-d) | VO C | abs. soil | CAS No. | | Residential Soil (mg/kg) | Industrial Soil (mg/kg) | Ambient Air (ug/m^3) | Tap Water (ug/l) | Migration to Ground Water DAF 20 (mg/kg) | DAF 1 (mg/kg) |
| | 1.0E-03 i | | 1.0E-03 r | 0 | 0.10 | 88-85-7 | Dinoseb | 6.5E+01 nc | 6.8E+02 nc | 3.7E+00 nc | 3.7E+01 nc | | |
| | 2.0E-02 h | | 2.0E-02 r | 0 | 0.10 | 117-84-0 | di-n-Octyl phthalate | 1.3E+03 nc | 1.0E+04 sat | 7.3E+01 nc | 7.3E+02 nc | 1.0E+04 | 1.0E+04 |
| 1.1E-02 i | | 1.1E-02 r | | 0 | 0.10 | 123-91-1 | 1,4-Dioxane | 4.0E+01 ca | 1.7E+02 ca | 6.1E-01 ca | 6.1E+00 ca | | |
| | 3.0E-02 i | | 3.0E-02 r | 0 | 0.10 | 957-51-7 | Diphenamid | 2.0E+03 nc | 2.0E+04 nc | 1.1E+02 nc | 1.1E+03 nc | | |
| | 2.0E-02 i | | 2.5E-02 r | 0 | 0.10 | 122-39-4 | Diphenylamine | 1.6E+03 nc | 1.7E+04 nc | 9.1E+01 nc | 9.1E+02 nc | | |
| 8.0E-01 i | | 7.7E-01 i | | 0 | 0.10 | 122-66-7 | 1,2-Diphenylhydrazine | 5.6E-01 ca | 2.4E+00 ca | 8.7E-03 ca | 8.4E-02 ca | | |
| | 2.2E-03 i | | 2.2E-03 r | 0 | 0.10 | 85-00-7 | Diquat | 1.4E+02 nc | 1.5E+03 nc | 8.0E+00 nc | 8.0E+01 nc | | |
| 8.0E+00 h | | 8.8E+00 r | | 0 | 0.10 | 1937-37-7 | Direct black 38 | 5.2E-02 ca | 2.2E-01 ca | 7.8E-04 ca | 7.8E-03 ca | | |
| 8.1E+00 h | | 8.1E+00 r | | 0 | 0.10 | 2602-46-2 | Direct blue 6 | 5.5E-02 ca | 2.4E-01 ca | 8.3E-04 ca | 8.3E-03 ca | | |
| 8.3E+00 h | | 8.3E+00 r | | 0 | 0.10 | 16071-86-6 | Direct brown 95 | 4.8E-02 ca | 2.1E-01 ca | 7.2E-04 ca | 7.2E-03 ca | | |
| | 4.0E-05 i | | 4.0E-05 r | 0 | 0.10 | 298-04-4 | Disulfoton | 2.6E+00 nc | 2.7E+01 nc | 1.5E-01 nc | 1.5E+00 nc | | |
| | 1.0E-02 i | | 1.0E-02 r | 0 | 0.10 | 505-29-3 | 1,4-Dithiane | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| | 2.0E-03 i | | 3.0E-03 r | 0 | 0.10 | 330-54-1 | Diuron | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| | 4.0E-03 i | | 4.0E-03 r | 0 | 0.10 | 2439-10-3 | Dodine | 2.6E+02 nc | 2.7E+03 nc | 1.5E+01 nc | 1.5E+02 nc | | |
| | 6.0E-03 i | | 6.0E-03 r | 0 | 0.10 | 115-29-7 | Endosulfan | 3.9E+02 nc | 4.1E+03 nc | 2.2E+01 nc | 2.2E+02 nc | 1.8E+01 | 9.0E-01 |
| | 2.0E-02 i | | 2.0E-02 r | 0 | 0.10 | 145-73-3 | Endothall | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 3.0E-04 i | | 3.0E-04 r | 0 | 0.10 | 72-20-8 | Endrin | 2.0E+01 nc | 2.0E+02 nc | 1.1E+00 nc | 1.1E+01 nc | 1.0E+00 | 5.0E-02 |
| 9.0E-03 i | 2.0E-03 h | 4.2E-03 i | 2.0E-04 i | 1 | 0.10 | 106-89-8 | Epichlorohydrin | 7.5E+00 nc | 2.5E+01 nc | 1.0E+00 nc | 2.0E+00 nc | | |
| | 8.7E-03 r | | 8.7E-03 i | 0 | 0.10 | 106-88-7 | 1,2-Epoxybutane | 3.7E+02 nc | 3.9E+03 nc | 2.1E+01 nc | 2.1E+02 nc | | |
| | 2.5E-02 i | | 2.5E-02 r | 0 | 0.10 | 759-94-4 | EPTC (S-Ethyl dipropylthiocarbamate) | 1.6E+03 nc | 1.7E+04 nc | 9.1E+01 nc | 9.1E+02 nc | | |
| | 5.0E-03 i | | 5.0E-03 r | 0 | 0.10 | 16672-87-0 | Ethephon (2-chloroethyl phosphonic acid) | 3.3E+02 nc | 3.4E+03 nc | 1.8E+01 nc | 1.8E+02 nc | | |
| | 5.0E-04 i | | 5.0E-04 r | 0 | 0.10 | 563-12-2 | Ethion | 3.3E+01 nc | 3.4E+02 nc | 1.8E+00 nc | 1.8E+01 nc | | |
| | 4.0E-01 h | | 5.7E-02 i | 0 | 0.10 | 110-80-5 | 2-Ethoxyethanol | 2.6E+04 nc | 1.0E+05 max | 2.1E+02 nc | 1.5E+04 nc | | |
| | 2.0E-01 h | | 3.0E-01 r | 0 | 0.10 | 111-15-9 | 2-Ethoxyethanol acetate | 2.0E+04 nc | 1.0E+05 max | 1.1E+03 nc | 1.1E+04 nc | | |
| | 9.0E-01 i | | 9.0E-01 r | 1 | 0.10 | 141-78-6 | Ethyl acetate | 1.8E+04 nc | 1.0E+05 max | 3.3E+03 nc | 5.5E+03 nc | | |
| 4.8E-02 h | | 4.8E-02 r | | 1 | 0.10 | 140-88-5 | Ethyl acrylate | 2.1E-01 ca | 4.5E-01 ca | 1.4E-01 ca | 2.3E-01 ca | | |
| | 1.0E-01 i | | 2.9E-01 i | 1 | 0.10 | 100-41-4 | Ethylbenzene | 2.3E+02 sat | 2.3E+02 sat | 1.1E+03 nc | 1.3E+03 nc | 1.3E+01 | 7.0E-01 |
| | 3.0E-01 h | | 3.0E-01 r | 0 | 0.10 | 109-78-4 | Ethylene cyanohydrin | 2.0E+04 nc | 1.0E+05 max | 1.1E+03 nc | 1.1E+04 nc | | |
| | 2.0E-02 h | | 2.0E-02 r | 0 | 0.10 | 107-15-3 | Ethylene diamine | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 2.0E+00 i | | 2.0E+00 r | 0 | 0.10 | 107-21-1 | Ethylene glycol | 1.3E+05 nc | 1.0E+05 max | 7.3E+03 nc | 7.3E+04 nc | | |
| | 5.7E-03 r | | 5.7E-03 h | 0 | 0.10 | 111-76-2 | Ethylene glycol, monobutyl ether | 3.7E+02 nc | 3.9E+03 nc | 2.1E+01 nc | 2.1E+02 nc | | |
| 1.0E+00 h | | 3.5E-01 h | | 1 | 0.10 | 75-21-8 | Ethylene oxide | 1.3E-01 ca | 3.2E-01 ca | 1.9E-02 ca | 2.4E-02 ca | | |
| 1.1E-01 h | 8.0E-03 i | 1.1E-01 r | 8.0E-03 r | 0 | 0.10 | 96-45-7 | Ethylene thiourea (ETU) | 4.0E+00 ca** | 1.7E+01 ca* | 6.1E-02 ca* | 6.1E-01 ca* | | |
| | 2.0E-02 n | | 2.9E+00 i | 1 | 0.10 | 75-00-3 | Ethyl chloride | 1.1E+03 nc | 1.6E+03 sat | 1.0E+04 nc | 7.1E+02 nc | | |
| | 2.0E-01 i | | 2.0E-01 r | 1 | 0.10 | 60-29-7 | Ethyl ether | 1.8E+03 sat | 1.8E+03 sat | 7.3E+02 nc | 1.2E+03 nc | | |
| | 9.0E-02 h | | 9.0E-02 r | 1 | 0.10 | 97-63-2 | Ethyl methacrylate | 1.4E+02 sat | 1.4E+02 sat | 3.3E+02 nc | 6.5E+02 nc | | |
| | 1.0E-05 i | | 1.0E-05 r | 0 | 0.10 | 2104-64-5 | Ethyl p-nitrophenyl phenylphosphorothioate | 6.5E-01 nc | 6.8E+00 nc | 3.7E-02 nc | 3.7E-01 nc | | |
| | 3.0E+00 i | | 3.0E+00 r | 0 | 0.10 | 84-72-0 | Ethylphthalyl ethyl glycolate | 1.0E+05 max | 1.0E+05 max | 1.1E+04 nc | 1.1E+05 nc | | |
| | 8.0E-03 i | | 8.0E-03 r | 0 | 0.10 | 101200-48-0 | Express | 5.2E+02 nc | 5.5E+03 nc | 2.9E+01 nc | 2.9E+02 nc | | |
| | 2.5E-04 i | | 2.5E-04 r | 0 | 0.10 | 22224-92-6 | Fenamiphos | 1.6E+01 nc | 1.7E+02 nc | 9.1E-01 nc | 9.1E+00 nc | | |
| | 1.3E-02 i | | 1.3E-02 r | 0 | 0.10 | 2164-17-2 | Fluometuron | 8.5E+02 nc | 8.9E+03 nc | 4.7E+01 nc | 4.7E+02 nc | | |
| | 9.0E-02 i | | 9.0E-02 r | 0 | 0.10 | 7782-41-4 | Fluorine (soluble fluoride) | 3.9E+03 nc | 4.1E+04 nc | 2.2E+02 nc | 2.2E+03 nc | | |
| | 9.0E-02 i | | 9.0E-02 r | 0 | 0.10 | 59756-60-4 | Fluoridone | 5.2E+03 nc | 5.5E+04 nc | 2.9E+02 nc | 2.9E+03 nc | | |
| | 2.0E-02 i | | 2.0E-02 r | 0 | 0.10 | 56425-91-3 | Flurprimidol | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 9.0E-02 i | | 9.0E-02 r | 0 | 0.10 | 66332-96-5 | Flutolanil | 3.9E+03 nc | 4.1E+04 nc | 2.2E+02 nc | 2.2E+03 nc | | |
| | 1.0E-02 i | | 1.0E-02 r | 0 | 0.10 | 69409-94-5 | Fluvalinate | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| 3.5E-03 i | 1.0E-01 [illegible] | 3.5E-03 r | 1.0E-01 r | 0 | 0.10 | 133-07-3 | Folpet | 1.3E+02 ca* | 6.5E+02 ca | 1.9E+00 ca | 1.9E+01 ca | | |

Key: i=IRIS h=HEAST n=HCEA w=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

# FOR PLANNING PURPOSES

| TOXICITY INFORMATION | | | | | | | CONTAMINANT | PRELIMINARY REMEDIAL GOALS (PRGs) | | | | SOIL SCREENING LEVELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RfDo (mg/kg-d) | | SFI 1/(mg/kg-d) | RfDi (mg/kg-d) | V O C? | skin abs. poll. | CAS No. | | Residential Soil (mg/kg) | Industrial Soil (mg/kg) | Ambient Air (ug/m^3) | Tap Water (ug/l) | Migration to Ground Water DAF 20 (mg/kg) | DAF 1 (mg/kg) |
| 0E-01 i | | 1.9E-01 r | | 0 | 0.10 | 72178-02-0 | Fomesafen | 2.3E+00 ca | 1.0E+01 ca | 3.5E-02 ca | 3.5E-01 ca | | |
| | 2.0E-03 i | | 2.0E-03 r | 0 | 0.10 | 944-22-9 | Fonofos | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| | 1.5E-01 i | 4.6E-02 i | | 0 | 0.10 | 50-00-0 | Formaldehyde | 9.8E+03 nc | 1.0E+05 nc | 1.5E-01 ca | 5.5E+03 nc | | |
| | 2.0E+00 h | | 2.0E+00 r | 0 | 0.10 | 64-18-6 | Formic Acid | 1.0E+05 max | 1.0E+05 max | 7.3E+03 nc | 7.3E+04 nc | | |
| | 3.0E+00 i | | 3.0E+00 r | 0 | 0.10 | 39148-24-8 | Fosetyl-al | 1.0E+05 max | 1.0E+05 max | 1.1E+04 nc | 1.1E+05 nc | | |
| | 1.0E-03 i | | 1.0E-03 r | 1 | 0.10 | 110-00-9 | Furan | 2.5E+00 nc | 8.5E+00 nc | 3.7E+00 nc | 6.1E+00 nc | | |
| 0E+00 h | | 3.8E+00 r | | 0 | 0.10 | 67-45-8 | Furazolidone | 1.2E-01 ca | 5.0E-01 ca | 1.6E-03 ca | 1.6E-02 ca | | |
| | 3.0E-03 i | | 1.4E-02 h | 0 | 0.10 | 98-01-1 | Furfural | 2.0E+02 nc | 2.0E+03 nc | 5.2E+01 nc | 1.1E+02 nc | | |
| 0E+01 h | | 5.0E-01 r | | 0 | 0.10 | 531-82-8 | Fusium | 8.9E-03 ca | 3.8E-02 ca | 1.3E-04 ca | 1.3E-03 ca | | |
| 0E-02 i | | 3.0E-02 r | | 0 | 0.10 | 80568-05-0 | Furmecyclox | 1.5E+01 ca | 6.4E+01 ca | 2.2E-01 ca | 2.2E+00 ca | | |
| | 4.0E-04 i | | 4.0E-04 r | 0 | 0.10 | 77182-82-2 | Glufosinate-ammonium | 2.6E+01 nc | 2.7E+02 nc | 1.5E+00 nc | 1.5E+01 nc | | |
| | 4.0E-04 i | | 2.9E-04 h | 0 | 0.10 | 765-34-4 | Glycidaldehyde | 2.6E+01 nc | 2.7E+02 nc | 1.0E+00 nc | 1.5E+01 nc | | |
| | 1.0E-01 i | | 1.0E-01 r | 0 | 0.10 | 1071-83-6 | Glyphosate | 6.5E+03 nc | 6.8E+04 nc | 3.7E+02 nc | 3.7E+03 nc | | |
| | 5.0E-05 i | | 5.0E-05 r | 0 | 0.10 | 80808-40-2 | Haloxyfop-methyl | 3.3E+00 nc | 3.4E+01 nc | 1.8E-01 nc | 1.8E+00 nc | | |
| | 1.3E-02 i | | 1.3E-02 r | 0 | 0.10 | 79277-27-3 | Harmony | 8.5E+02 nc | 8.9E+03 nc | 4.7E+01 nc | 4.7E+02 nc | | |
| 5E+00 i | 5.0E-04 i | 4.6E+00 i | 5.0E-04 r | 0 | 0.10 | 76-44-8 | Heptachlor | 9.9E-02 ca | 4.2E-01 ca | 1.5E-03 ca | 1.5E-02 ca | 2.3E+01 | 1.0E+00 |
| 1E+00 i | 1.3E-05 i | 9.1E+00 i | 1.3E-05 r | 0 | 0.10 | 1024-57-3 | Heptachlor epoxide | 4.9E-02 ca** | 2.1E-01 ca* | 7.4E-04 ca* | 7.4E-03 ca* | 7.0E-01 | 3.0E-02 |
| | 2.0E-03 i | | 2.0E-03 r | 0 | 0.10 | 87-82-1 | Hexabromobenzene | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| 0E+00 i | 8.0E-04 i | 1.6E+00 i | 8.0E-04 r | 0 | 0.10 | 118-74-1 | Hexachlorobenzene | 2.8E-01 ca* | 1.2E+00 ca | 4.2E-03 ca | 4.2E-02 ca | 2.0E+00 | 1.0E-01 |
| 2E-02 i | 2.0E-04 h | 7.7E-02 i | 2.0E-04 r | 0 | 0.10 | 87-68-3 | Hexachlorobutadiene | 5.7E+00 ca** | 2.4E+01 ca* | 8.7E-02 ca* | 8.6E-01 ca* | 2.0E+00 | 1.0E-01 |
| 3E+00 i | | 6.3E+00 i | | 0 | 0.10 | 319-84-6 | HCH (alpha) | 7.1E-02 ca | 3.0E-01 ca | 1.1E-03 ca | 1.1E-02 ca | 5.0E-04 | 3.0E-05 |
| 0E+00 i | | 1.8E+00 i | | 0 | 0.10 | 319-85-7 | HCH (beta) | 2.5E-01 ca | 1.1E+00 ca | 3.7E-03 ca | 3.7E-02 ca | 3.0E-03 | 1.0E-04 |
| 3E+00 h | 3.0E-04 i | 1.3E+00 r | 3.0E-04 r | 0 | 0.10 | 58-89-9 | HCH (gamma) Lindane | 3.4E-01 ca* | 1.5E+00 ca | 5.2E-03 ca | 5.2E-02 ca | 9.0E-03 | 5.0E-04 |
| 8E+00 i | | 1.8E+00 i | | 0 | 0.10 | 58-89-9 | HCH-technical | 2.5E-01 ca | 1.1E+00 ca | 3.8E-03 ca | 3.7E-02 ca | 3.0E-03 | 1.0E-04 |
| | 7.0E-03 i | | 2.0E-05 h | 0 | 0.10 | 77-47-4 | Hexachlorocyclopentadiene | 4.5E+02 nc | 4.6E+03 nc | 7.3E-02 nc | 2.6E+02 nc | 4.0E+02 | 2.0E+01 |
| 3E+03 i | | 4.0E+03 i | | 0 | 0.10 | 19408-74-3 | Hexachlorodibenzo-p-dioxin mixture (HxCDD) | 7.2E-05 ca | 3.1E-04 ca | 1.5E-06 ca | 1.1E-05 ca | | |
| 4E-02 i | 1.0E-03 i | 1.4E-02 i | 1.0E-03 r | 0 | 0.10 | 67-72-1 | Hexachloroethane | 3.2E+01 ca** | 1.4E+02 ca** | 4.8E-01 ca** | 4.8E+00 ca** | 5.0E-01 | 2.0E-02 |
| | 3.0E-04 i | | 3.0E-04 r | 0 | 0.10 | 70-30-4 | Hexachlorophene | 2.0E+01 nc | 2.0E+02 nc | 1.1E+00 nc | 1.1E+01 nc | | |
| 1E-01 i | 3.0E-03 i | 1.1E-01 r | 3.0E-03 r | 0 | 0.10 | 121-82-4 | Hexahydro-1,3,5-trinitro-1,3,5-triazine | 4.0E+00 ca* | 1.7E+01 ca | 6.1E-02 ca | 6.1E-01 ca | | |
| | 2.9E-06 r | | 2.9E-06 i | 0 | 0.10 | 822-06-0 | 1,6-Hexamethylene diisocyanate | | | 1.0E-02 nc | 1.0E-01 nc | | |
| | 6.0E-02 h | | 5.7E-02 i | 1 | 0.10 | 110-54-3 | n-Hexane | 1.1E+02 sat | 1.1E+02 sat | 2.1E+02 nc | 3.5E+02 nc | | |
| | 3.3E-02 i | | 3.3E-02 r | 0 | 0.10 | 51235-04-2 | Hexazinone | 2.2E+03 nc | 2.2E+04 nc | 1.2E+02 nc | 1.2E+03 nc | | |
| 3E+00 i | | 1.7E+01 i | | 0 | 0.10 | 302-01-2 | Hydrazine, hydrazine sulfate | 1.5E-01 ca | 6.4E-01 ca | 3.9E-04 ca | 2.2E-02 ca | | |
| | | | 5.7E-03 i | 0 | 0.10 | 7647-01-0 | Hydrogen chloride | | | 2.1E+01 nc | | | |
| | 3.0E-03 i | | 2.8E-04 i | 1 | 0.10 | 7783-06-4 | Hydrogen sulfide | | | 1.0E+00 nc | 2.0E+00 nc | | |
| | 4.0E-02 h | | 4.0E-02 r | 0 | 0.10 | 123-31-9 | p-Hydroquinone | 2.6E+03 nc | 2.7E+04 nc | 1.5E+02 nc | 1.5E+03 nc | | |
| | 1.3E-02 i | | 1.3E-02 r | 0 | 0.10 | 35554-44-0 | Imazalil | 8.5E+02 nc | 8.9E+03 nc | 4.7E+01 nc | 4.7E+02 nc | | |
| | 2.5E-01 i | | 2.5E-01 r | 0 | 0.10 | 81335-37-7 | Imazaquin | 1.6E+04 nc | 1.0E+05 max | 9.1E+02 nc | 9.1E+03 nc | | |
| | 4.0E-02 i | | 4.0E-02 r | 0 | 0.10 | 36734-19-7 | Iprodione | 2.6E+03 nc | 2.7E+04 nc | 1.5E+02 nc | 1.5E+03 nc | | |
| | 3.0E-01 i | | 3.0E-01 r | 1 | 0.10 | 78-83-1 | Isobutanol | 1.1E+04 nc | 1.0E+05 max | 1.1E+03 nc | 1.8E+03 nc | | |
| 5E-04 i | 2.0E-01 i | 9.5E-04 r | 2.0E-01 r | 0 | 0.10 | 78-59-1 | Isophorone | 4.7E+02 ca* | 2.0E+03 ca* | 7.1E+00 ca | 7.1E+01 ca | 5.0E-01 | 3.0E-02 |
| | 1.5E-02 i | | 1.5E-02 r | 0 | 0.10 | 33820-53-0 | Isopropalin | 9.8E+02 nc | 1.0E+04 nc | 5.5E+01 nc | 5.5E+02 nc | | |
| | 1.0E-01 i | | 1.1E-01 r | 0 | 0.10 | 1832-54-8 | Isopropyl methyl phosphonic acid | 6.5E+03 nc | 6.8E+04 nc | 4.0E+02 nc | 3.7E+03 nc | | |
| | 5.0E-02 i | | 5.0E-02 r | 0 | 0.10 | 82558-50-7 | Isoxaben | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | | |
| 1E+01 n | | 1.8E+01 r | | 0 | 0.10 | 143-50-0 | Kepone | 2.5E-02 ca | 1.1E-01 ca | 3.7E-04 ca | 3.7E-03 ca | | |
| | 2.0E-03 i | | 2.0E-03 r | 0 | 0.10 | 77501-63-4 | Lactofen | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |

Key: i=IRIS h=HEAST n=NCEA w=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

# FOR PLANNING PURPOSES

| TOXICITY INFORMATION | | | | | | | CONTAMINANT | PRELIMINARY REMEDIAL GOALS (PRGs) | | | | SOIL SCREENING LEVELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SFo (mg/kg-d)⁻¹ | RfDo (mg/kg-d) | SFi (mg/kg-d)⁻¹ | RfDi (mg/kg-d) | V O C | skin abs. soils | CAS No. | | Residential Tap Soil (mg/kg) | Industrial Tap Soil (mg/kg) | Ambient Air (ug/m^3) | Tap Water (ug/l) | Migration to Ground Water DAF 20 (mg/kg) | DAF 1 (mg/kg) |
| Residential PRG Based on Uptake Biokinetic Model | | | | 0 | n/a | 7439-92-1 | Lead | 4.0E+02 nc | 1.0E+03 nc | | 4.0E+00 nc | | |
| | | | | | | | "CAL-Modified PRG" (PEA, 1994) | 1.3E+02 | | | | | |
| | 1.0E-07 i | | | 0 | 0.10 | 78-00-2 | Lead (tetraethyl) | 6.5E-03 nc | 6.8E-02 nc | | 3.7E-03 nc | | |
| | 2.0E-03 i | | 2.0E-03 r | 0 | 0.10 | 330-55-2 | Linuron | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| | 2.0E-02 n | | | 0 | 0.01 | 7439-93-2 | Lithium | 1.5E+03 nc | 3.4E+04 nc | | 7.3E+02 nc | | |
| | 2.0E-01 i | | 2.0E-01 r | 0 | 0.10 | 83055-99-9 | Londax | 1.3E+04 nc | 1.0E+05 max | 7.3E+02 nc | 7.3E+03 nc | | |
| | 2.0E-02 i | | 2.0E-02 r | 0 | 0.10 | 121-75-5 | Malathion | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 1.0E-01 i | | 1.0E-01 r | 0 | 0.10 | 108-31-6 | Maleic anhydride | 6.5E+03 nc | 6.8E+04 nc | 3.7E+02 nc | 3.7E+03 nc | | |
| | 5.0E-01 i | | 5.0E-01 r | 1 | 0.10 | 123-33-1 | Maleic hydrazide | 1.7E+03 nc | 2.4E+03 sat | 1.8E+03 nc | 3.0E+03 nc | | |
| | 2.0E-05 h | | 2.0E-05 r | 0 | 0.10 | 109-77-3 | Malononitrile | 1.3E+00 nc | 1.4E+01 nc | 7.3E-02 nc | 7.3E-01 nc | | |
| | 3.0E-02 h | | 3.0E-02 r | 0 | 0.10 | 8018-01-7 | Mancozeb | 2.0E+03 nc | 2.0E+04 nc | 1.1E+02 nc | 1.1E+03 nc | | |
| | 5.0E-03 i | | 5.0E-03 r | 0 | 0.10 | 12427-38-2 | Maneb | 3.3E+02 nc | 3.4E+03 nc | 1.8E+01 nc | 1.8E+02 nc | | |
| | 4.7E-02 i | | 1.4E-05 i | 0 | 0.01 | 7439-96-5 | Manganese and compounds | 3.2E+03 nc | 4.3E+04 nc | 5.1E-02 nc | 1.7E+03 nc | | |
| | 9.0E-05 h | | 9.0E-05 r | 0 | 0.10 | 950-10-7 | Mephosfolan | 5.9E+00 nc | 8.1E+01 nc | 3.3E-01 nc | 3.3E+00 nc | | |
| | 3.0E-02 i | | 3.0E-02 r | 0 | 0.10 | 24307-26-4 | Mepiquat | 2.0E+03 nc | 2.0E+04 nc | 1.1E+02 nc | 1.1E+03 nc | | |
| | 3.0E-04 i | | | 0 | 0.01 | 7439-97-6 | Mercuric chloride | 2.3E+01 nc | 5.1E+02 nc | | 1.1E+01 nc | | |
| | | | 8.6E-05 i | n/a | n/a | 7439-97-6 | Mercury (elemental) | | | 3.1E-01 nc | | | |
| | 1.0E-04 i | | | 0 | 0.10 | 22967-92-6 | Mercury (methyl) | 6.5E+00 nc | 6.8E+01 nc | | 3.7E+00 nc | | |
| | 3.0E-05 i | | 3.0E-05 r | 0 | 0.10 | 150-50-5 | Merphos | 2.0E+00 nc | 2.0E+01 nc | 1.1E-01 nc | 1.1E+00 nc | | |
| | 3.0E-05 i | | 3.0E-05 r | 0 | 0.10 | 78-48-8 | Merphos oxide | 2.0E+00 nc | 2.0E+01 nc | 1.1E-01 nc | 1.1E+00 nc | | |
| | 8.0E-02 i | | 8.0E-02 r | 0 | 0.10 | 57837-19-1 | Metalaxyl | 3.9E+03 nc | 4.1E+04 nc | 2.2E+02 nc | 2.2E+03 nc | | |
| | 1.0E-04 i | | 2.0E-04 h | 1 | 0.10 | 126-98-7 | Methacrylonitrile | 2.0E+00 nc | 8.1E+00 nc | 7.3E-01 nc | 1.0E+00 nc | | |
| | 5.0E-05 i | | 5.0E-05 r | 0 | 0.10 | 10265-92-6 | Methamidophos | 3.3E+00 nc | 3.4E+01 nc | 1.8E-01 nc | 1.8E+00 nc | | |
| | 5.0E-01 i | | 5.0E-01 r | 0 | 0.10 | 67-56-1 | Methanol | 3.3E+04 nc | 1.0E+05 max | 1.8E+03 nc | 1.8E+04 nc | | |
| | 1.0E-03 i | | 1.0E-03 r | 0 | 0.10 | 950-37-8 | Methidathion | 6.5E+01 nc | 6.8E+02 nc | 3.7E+00 nc | 3.7E+01 nc | | |
| | 2.5E-02 i | | 2.5E-02 r | 1 | 0.10 | 16752-77-5 | Methomyl | 4.4E+01 nc | 1.5E+02 nc | 9.1E+01 nc | 1.5E+02 nc | | |
| | 5.0E-03 i | | 5.0E-03 r | 0 | 0.10 | 72-43-5 | Methoxychlor | 3.3E+02 nc | 3.4E+03 nc | 1.8E+01 nc | 1.8E+02 nc | 1.6E+02 | 8.0E+00 |
| | 1.0E-03 h | | 5.7E-03 i | 0 | 0.10 | 109-86-4 | 2-Methoxyethanol | 6.5E+01 nc | 6.8E+02 nc | 2.1E+01 nc | 3.7E+01 nc | | |
| | 2.0E-03 h | | 2.0E-03 r | 0 | 0.10 | 110-49-6 | 2-Methoxyethanol acetate | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| 4.6E-02 h | | 4.6E-02 r | | 0 | 0.10 | 99-59-2 | 2-Methoxy-5-nitroaniline | 9.7E+00 ca | 4.1E+01 ca | 1.5E-01 ca | 1.5E+00 ca | | |
| | 1.0E+00 h | | 1.0E+00 r | 1 | 0.10 | 79-20-9 | Methyl acetate | 2.1E+04 nc | 6.8E+04 nc | 3.7E+03 nc | 6.1E+03 nc | | |
| | 3.0E-02 h | | 3.0E-02 r | 1 | 0.10 | 96-33-3 | Methyl acrylate | 6.9E+01 nc | 2.3E+02 nc | 1.1E+02 nc | 1.8E+02 nc | | |
| 2.4E-01 h | | 2.4E-01 r | | 0 | 0.10 | 100-61-8 | 2-Methylaniline (o-toluidine) | 1.9E+00 ca | 7.9E+00 ca | 2.8E-02 ca | 2.8E-01 ca | | |
| 1.8E-01 h | | 1.8E-01 r | | 0 | 0.10 | 636-21-5 | 2-Methylaniline hydrochloride | 2.5E+00 ca | 1.1E+01 ca | 3.7E-02 ca | 3.7E-01 ca | | |
| | 1.0E+00 w | | 1.0E+00 r | 0 | 0.10 | 79-22-1 | Methyl chlorocarbonate | 6.5E+04 nc | 1.0E+05 max | 3.7E+03 nc | 3.7E+04 nc | | |
| | 5.0E-04 i | | 5.0E-04 r | 0 | 0.10 | 94-74-6 | 2-Methyl-4-chlorophenoxyacetic acid | 3.3E+01 nc | 3.4E+02 nc | 1.8E+00 nc | 1.8E+01 nc | | |
| | 1.0E-02 i | | 1.0E-02 r | 0 | 0.10 | 94-81-5 | 4-(2-Methyl-4-chlorophenoxy) butyric acid | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| | 1.0E-03 i | | 1.0E-03 r | 0 | 0.10 | 93-65-2 | 2-(2-Methyl-4-chlorophenoxy) propionic acid | 6.5E+01 nc | 6.8E+02 nc | 3.7E+00 nc | 3.7E+01 nc | | |
| | 1.0E-03 i | | 1.0E-03 r | 0 | 0.10 | 16484-77-8 | 2-(2-Methyl-1,4-chlorophenoxy) propionic acid | 6.5E+01 nc | 6.8E+02 nc | 3.7E+00 nc | 3.7E+01 nc | | |
| | 8.0E-01 r | | 8.6E-01 h | 0 | 0.10 | 108-87-2 | Methylcyclohexane | 5.6E+04 nc | 1.0E+05 max | 3.1E+03 nc | 3.1E+04 nc | | |
| 2.5E-01 h | | 2.5E-01 r | | 0 | 0.10 | 101-77-9 | 4,4'-Methylenebisbenzenamine | 1.8E+00 ca | 7.8E+00 ca | 2.7E-02 ca | 2.7E-01 ca | | |
| 1.3E-01 h | 7.0E-04 h | 1.3E-01 h | 7.0E-04 r | 0 | 0.10 | 101-14-4 | 4,4'-Methylene bis(2-chloroaniline) | 3.4E+00 ca* | 1.5E+01 ca* | 5.2E-02 ca* | 5.2E-01 ca* | | |
| 4.6E-02 i | | 4.6E-02 r | | 0 | 0.10 | 101-61-1 | 4,4'-Methylene bis(N,N'-dimethyl)aniline | 9.7E+00 ca | 4.1E+01 ca | 1.5E-01 ca | 1.5E+00 ca | | |
| | 1.0E-02 h | | 1.0E-02 r | 0 | 0.10 | 74-95-3 | Methylene bromide | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| 7.5E-03 i | 6.0E-02 i | 1.6E-03 i | 8.6E-01 h | 1 | 0.10 | 75-09-2 | Methylene chloride | 7.8E+00 ca | 1.8E+01 ca | 4.1E+00 ca | 4.3E+00 ca | 2.0E-02 | 1.0E-03 |
| | | | 8.7E-06 i | 0 | n/a | 101-68-8 | 4,4'-Methylenediphenyl isocyanate | | | 2.1E-02 nc | | | |
| | 6.0E-01 i | | 2.9E-01 i | 1 | 0.10 | 78-93-3 | Methyl ethyl ketone | 7.1E+03 nc | 2.7E+04 nc | 1.0E+03 nc | 1.9E+03 nc | | |

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# FOR PLANNING PURPOSES

| TOXICITY INFORMATION | | | | | | | CONTAMINANT | PRELIMINARY REMEDIAL GOALS (PRGs) | | | | SOIL SCREENING LEVELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RfDo (mg/kg-d) | | SFi 1/(mg/kg-d) | RfDi (mg/kg-d) | IV O C | skin abs. fraction | CAS No. | | Residential Soil (mg/kg) | Industrial Soil (mg/kg) | Ambient Air (ug/m^3) | Tap Water (ug/l) | Migration to Ground Water DAF 20 (mg/kg) | DAF 1 (mg/kg) |
| 1E+00 h | | 1.1E+00 r | | 0 | 0.10 | 60-34-4 | Methyl hydrazine | 4.0E-01 ca | 1.7E+00 ca | 6.1E-03 ca | 6.1E-02 ca | | |
| | 9.0E-02 h | | 2.3E-02 h | 1 | 0.10 | 108-10-1 | Methyl isobutyl ketone | 7.7E+02 nc | 2.8E+03 nc | 8.3E+01 nc | 1.6E+02 nc | | |
| | 8.0E-02 h | | 8.0E-02 r | 1 | 0.10 | 80-62-6 | Methyl methacrylate | 7.6E+02 nc | 2.8E+03 nc | 2.9E+02 nc | 4.9E+02 nc | | |
| 3E-02 h | | 3.3E-02 r | | 0 | 0.10 | 99-55-8 | 2-Methyl-5-nitroaniline | 1.3E+01 ca | 5.8E+01 ca | 2.0E-01 ca | 2.0E+00 ca | | |
| | 2.5E-04 i | | 2.5E-04 r | 0 | 0.10 | 298-00-0 | Methyl parathion | 1.6E+01 nc | 1.7E+02 nc | 9.1E-01 nc | 9.1E+00 nc | | |
| | 5.0E-02 w | | 5.0E-02 r | 0 | 0.10 | 95-48-7 | 2-Methylphenol | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | 1.5E+01 | 8.0E-01 |
| | 5.0E-02 w | | 5.0E-02 r | 0 | 0.10 | 108-39-4 | 3-Methylphenol | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | | |
| | 5.0E-03 h | | 5.0E-03 r | 0 | 0.10 | 106-44-5 | 4-Methylphenol | 3.3E+02 nc | 3.4E+03 nc | 1.8E+01 nc | 1.8E+02 nc | | |
| | 6.0E-03 h | | 1.1E-02 h | 1 | 0.10 | 25013-15-4 | Methyl styrene (mixture) | 1.2E+02 nc | 5.2E+02 nc | 4.2E+01 nc | 6.0E+01 nc | | |
| | 7.0E-02 h | | 7.0E-02 r | 1 | 0.10 | 98-83-9 | Methyl styrene (alpha) | 6.8E+02 sat | 6.8E+02 sat | 2.6E+02 nc | 4.3E+02 nc | | |
| | 5.0E-05 n | | 8.6E-01 i | 1 | 0.10 | 1634-04-4 | Methyl tertbutyl ether (MTBE) | | | 3.1E+03 nc | 1.8E+02 nc | | |
| | 1.5E-01 i | | 1.5E-01 r | 0 | 0.10 | 51218-45-2 | Metolachlor (Dual) | 9.8E+03 nc | 1.0E+05 max | 5.5E+02 nc | 5.5E+03 nc | | |
| | 2.5E-02 i | | 2.5E-02 r | 0 | 0.10 | 21087-64-9 | Metribuzin | 1.6E+03 nc | 1.7E+04 nc | 9.1E+01 nc | 9.1E+02 nc | | |
| E+00 h | 2.0E-04 i | 1.8E+00 r | 2.0E-04 r | 0 | 0.10 | 2385-85-5 | Mirex | 2.5E-01 ca* | 1.1E+00 ca | 3.7E-03 ca | 3.7E-02 ca | | |
| | 2.0E-03 i | | 2.0E-03 r | 0 | 0.10 | 2212-67-1 | Molinate | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| | 5.0E-03 h | | | 0 | 0.01 | 7439-98-7 | Molybdenum | 3.8E+02 nc | 8.5E+03 nc | | 1.8E+02 nc | | |
| | 1.0E-01 h | | 1.0E-01 h | 0 | 0.10 | 10599-90-3 | Monochloramine | 8.5E+03 nc | 6.8E+04 nc | 3.7E+02 nc | 3.7E+03 nc | | |
| | 2.0E-03 i | | 2.0E-03 r | 0 | 0.10 | 300-76-5 | Naled | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| | 1.0E-01 i | | 1.0E-01 r | 0 | 0.10 | 15299-99-7 | Napropamide | 6.5E+03 nc | 6.8E+04 nc | 3.7E+02 nc | 3.7E+03 nc | | |
| | 2.0E-02 i | | | 0 | 0.01 | 7440-02-0 | Nickel (soluble salts) | 1.5E+03 nc | 3.4E+04 nc | | 7.3E+02 nc | 1.3E+02 | 7.0E+00 |
| | | | | | | | "CAL-Modified PRG" (PEA, 1994) | 1.6E+02 | | | | | |
| | | 8.4E-01 i | | 0 | 0.01 | n/a | Nickel refinery dust | | | 8.0E-03 ca | | | |
| | | 1.7E+00 i | | 0 | 0.01 | 12035-72-2 | Nickel subsulfide | | 1.1E+04 ca | 4.0E-03 ca | | | |
| | 1.5E-03 w | | 1.5E-03 r | 0 | 0.10 | 1929-82-4 | Nitrapyrin | 9.8E+01 nc | 1.0E+03 nc | 5.5E+00 nc | 5.5E+01 nc | | |
| | 1.6E+00 i | | | 0 | 0.10 | 14797-55-8 | Nitrate | | | | 5.8E+04 nc | | |
| | 1.0E-01 w | | | 0 | 0.10 | 10102-43-9 | Nitric Oxide | 6.5E+03 nc | 1.0E+05 max | | 3.7E+03 nc | | |
| | 1.0E-01 i | | | 0 | 0.10 | 14797-65-0 | Nitrite | 6.5E+03 nc | 1.0E+05 max | | 3.7E+03 nc | | |
| | 6.0E-05 r | | 6.7E-05 h | 0 | 0.10 | 88-74-4 | 2-Nitroaniline | 3.8E+00 nc | 4.1E+01 nc | 2.1E-01 nc | 2.2E+00 nc | | |
| | | | | 0 | 0.10 | 99-09-2 | 3-Nitroaniline | | | | | | |
| | | | | 0 | 0.10 | 100-01-6 | 4-Nitroaniline | | | | | | |
| | 5.0E-04 i | | 5.7E-04 h | 1 | 0.10 | 98-95-3 | Nitrobenzene | 1.8E+01 nc | 9.4E+01 nc | 2.1E+00 nc | 3.4E+00 nc | 1.0E-01 | 7.0E-03 |
| | 7.0E-02 h | | 7.0E-02 r | 0 | 0.10 | 67-20-9 | Nitrofurantoin | 4.6E+03 nc | 4.8E+04 nc | 2.6E+02 nc | 2.6E+03 nc | | |
| 5E+00 h | | 8.4E+00 h | | 0 | 0.10 | 59-87-0 | Nitrofurazone | 3.0E-01 ca | 1.3E+00 ca | 7.2E-04 ca | 4.5E-02 ca | | |
| | 1.0E+00 w | | | 0 | 0.10 | 101102-44-0 | Nitrogen dioxide | 6.5E+03 nc | 6.8E+04 nc | 3.7E+02 nc | 3.7E+03 nc | | |
| | 1.0E-01 i | | 1.0E-01 r | 0 | 0.10 | 556-88-7 | Nitroguanidine | | | | | | |
| | | | | 0 | 0.10 | 100-02-7 | 4-Nitrophenol | | | | | | |
| 4E+00 r | 5.7E-03 r | 8.4E+00 h | 5.7E-03 i | 1 | 0.10 | 79-46-9 | 2-Nitropropane | | | 7.2E-04 ca | 3.5E+01 ca | | |
| 4E+00 i | | 5.8E+00 i | | 1 | 0.10 | 924-16-3 | N-Nitrosodi-n-butylamine | 2.2E-02 ca | 5.5E-02 ca | 1.2E-03 ca | 2.0E-03 ca | | |
| 8E+00 i | | 2.8E+00 r | | 0 | 0.10 | 1116-54-7 | N-Nitrosodiethanolamine | 1.6E-01 ca | 6.8E-01 ca | 2.4E-03 ca | 2.4E-02 ca | | |
| 5E+02 i | | 1.5E+02 i | | 0 | 0.10 | 55-18-5 | N-Nitrosodiethylamine | 3.0E-03 ca | 1.3E-02 ca | 4.5E-05 ca | 4.5E-04 ca | | |
| 1E+01 i | | 4.9E+01 i | | 0 | 0.10 | 62-75-9 | N-Nitrosodimethylamine | 8.7E-03 ca | 3.7E-02 ca | 1.4E-04 ca | 1.3E-03 ca | | |
| 0E-03 i | | 4.9E-03 r | | 0 | 0.10 | 86-30-6 | N-Nitrosodiphenylamine | 9.1E+01 ca | 3.9E+02 ca | 1.4E+00 ca | 1.4E+01 ca | 1.0E+00 | 6.0E-02 |
| 0E+00 i | | 7.0E+00 r | | 0 | 0.10 | 621-64-7 | N-Nitroso di-n-propylamine | 6.3E-02 ca | 2.7E-01 ca | 9.6E-04 ca | 9.6E-03 ca | 6.0E-05 | 2.0E-06 |
| 2E+01 i | | 2.2E+01 r | | 0 | 0.10 | 10595-95-6 | N-Nitroso-N-methylethylamine | 2.0E-02 ca | 8.7E-02 ca | 3.1E-04 ca | 3.1E-03 ca | | |
| 1E+00 i | | 2.1E+00 i | | 0 | 0.10 | 930-55-2 | N-Nitrosopyrrolidine | 2.1E-01 ca | 9.1E-01 ca | 3.1E-03 ca | 3.2E-02 ca | | |
| | 1.0E-02 h | | 1.0E-02 r | 0 | 0.10 | 99-08-1 | m-Nitrotoluene | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| | 1.0E-02 h | | 1.0E-02 r | 0 | 0.10 | 99-99-0 | p-Nitrotoluene | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |

Key: i=IRIS h=HEAST a=NCEA w=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

# FOR PLANNING PURPOSES

| TOXICITY INFORMATION | | | | | | | CHEMICAL CONTAMINANT | PRELIMINARY REMEDIAL GOALS (PRGs) | | | | SOIL SCREENING LEVELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SFo (1/(mg/kg-d)) | RfDo (mg/kg-d) | SFi (1/(mg/kg-d)) | RfDi (mg/kg-d) | V O C abs. soils | CAS No. | | | Residential Soil (mg/kg) | Industrial Soil (mg/kg) | Ambient Air (ug/m^3) | Tap Water (ug/l) | Migration to Ground Water DAF 20 (mg/kg) | DAF 1 (mg/kg) |
| | 4.0E-02 i | | 4.0E-02 r | 0 | 0.10 | 27314-13-2 | Norflurazon | | | | | | |
| | 7.0E-04 i | | 7.0E-04 r | 0 | 0.10 | 85509-19-9 | NuStar | 4.6E+01 nc | 4.8E+02 nc | 2.6E+00 nc | 2.6E+01 nc | | |
| | 3.0E-03 i | | 3.0E-03 r | 0 | 0.10 | 32536-52-0 | Octabromodiphenyl ether | 2.0E+02 nc | 2.0E+03 nc | 1.1E+01 nc | 1.1E+02 nc | | |
| | 5.0E-02 i | | 5.0E-02 r | 0 | 0.10 | 2691-41-0 | Octahydro-1357-tetranitro-1357-tetrazocine (HMX) | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | | |
| | 2.0E-03 h | | 2.0E-03 r | 0 | 0.10 | 152-16-9 | Octamethylpyrophosphoramide | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| | 5.0E-02 i | | 5.0E-02 r | 0 | 0.10 | 19044-88-3 | Oryzalin | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | | |
| | 5.0E-03 i | | 5.0E-03 r | 0 | 0.10 | 19666-30-9 | Oxadiazon | 3.3E+02 nc | 3.4E+03 nc | 1.8E+01 nc | 1.8E+02 nc | | |
| | 2.5E-02 i | | 2.5E-02 r | 0 | 0.10 | 23135-22-0 | Oxamyl | 1.6E+03 nc | 1.7E+04 nc | 9.1E+01 nc | 9.1E+02 nc | | |
| | 3.0E-03 i | | 3.0E-03 r | 0 | 0.10 | 42874-03-3 | Oxyfluorfen | 2.0E+02 nc | 2.0E+03 nc | 1.1E+01 nc | 1.1E+02 nc | | |
| | 1.3E-02 i | | 1.3E-02 r | 0 | 0.10 | 76738-62-0 | Paclobutrazol | 8.5E+02 nc | 8.9E+03 nc | 4.7E+01 nc | 4.7E+02 nc | | |
| | 4.5E-03 i | | 4.5E-03 r | 0 | 0.10 | 4685-14-7 | Paraquat | 2.9E+02 nc | 3.1E+03 nc | 1.6E+01 nc | 1.6E+02 nc | | |
| | 6.0E-03 h | | 6.0E-03 r | 0 | 0.10 | 56-38-2 | Parathion | 3.9E+02 nc | 4.1E+03 nc | 2.2E+01 nc | 2.2E+02 nc | | |
| | 5.0E-02 h | | 5.0E-02 r | 0 | 0.10 | 1114-71-2 | Pebulate | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | | |
| | 4.0E-02 i | | 4.0E-02 r | 0 | 0.10 | 40487-42-1 | Pendimethalin | 2.6E+03 nc | 2.7E+04 nc | 1.5E+02 nc | 1.5E+03 nc | | |
| 2.3E-02 h | | 2.3E-02 r | | 0 | 0.10 | 87-84-3 | Pentabromo-6-chloro cyclohexane | 1.9E+01 ca | 8.3E+01 ca | 2.9E-01 ca | 2.9E+00 ca | | |
| | 2.0E-03 i | | 2.0E-03 r | 0 | 0.10 | 32534-81-9 | Pentabromodiphenyl ether | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| | 6.0E-04 i | | 6.0E-04 r | 0 | 0.10 | 608-93-5 | Pentachlorobenzene | 5.2E+01 nc | 5.5E+02 nc | 2.9E+00 nc | 2.9E+01 nc | | |
| 2.9E-01 h | 3.0E-03 i | 2.9E-01 r | 3.0E-03 r | 0 | 0.10 | 82-68-8 | Pentachloronitrobenzene | 1.7E+00 ca* | 7.3E+00 ca | 2.6E-02 ca | 2.6E-01 ca | | |
| 1.2E-01 i | 3.0E-02 i | 1.2E-01 r | 3.0E-02 r | 0 | 0.25 | 87-86-5 | Pentachlorophenol | 2.5E+00 ca | 7.9E+00 ca | 5.6E-02 ca | 5.6E-01 ca | 3.0E-02 | 1.0E-03 |
| | 6.0E-02 i | | 5.0E-02 r | 0 | 0.10 | 52645-53-1 | Permethrin | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | | |
| | 2.5E-01 i | | 2.5E-01 r | 0 | 0.10 | 13684-63-4 | Phenmedipham | 1.6E+04 nc | 1.0E+05 max | 9.1E+02 nc | 9.1E+03 nc | | |
| | 6.0E-01 i | | 6.0E-01 r | 0 | 0.10 | 108-95-2 | Phenol | 3.9E+04 nc | 1.0E+05 max | 2.2E+03 nc | 2.2E+04 nc | 1.0E+02 | 5.0E+00 |
| | 6.0E-03 i | | 6.0E-03 r | 0 | 0.10 | 108-45-2 | m-Phenylenediamine | 3.9E+02 nc | 4.1E+03 nc | 2.2E+01 nc | 2.2E+02 nc | | |
| | 1.9E-01 h | | 1.9E-01 r | 0 | 0.10 | 106-50-3 | p-Phenylenediamine | 1.2E+04 nc | 1.0E+05 max | 6.9E+02 nc | 6.9E+03 nc | | |
| | 8.0E-05 i | | 8.0E-05 r | 0 | 0.10 | 62-38-4 | Phenylmercuric acetate | 5.2E+00 nc | 5.5E+01 nc | 2.9E+00 nc | 2.9E+00 nc | | |
| 1.9E-03 h | | 1.9E-03 r | | 0 | 0.10 | 90-43-7 | 2-Phenylphenol | 2.3E+02 ca | 9.8E+02 ca | 3.5E+00 ca | 3.5E+01 ca* | | |
| | 2.0E-04 h | | 2.0E-04 r | 0 | 0.10 | 298-02-2 | Phorate | 1.3E+01 nc | 1.4E+02 nc | 7.3E-01 nc | 7.3E+00 nc | | |
| | 2.0E-02 i | | 2.0E-02 r | 0 | 0.10 | 732-11-6 | Phosmet | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 3.0E-04 h | | 6.6E-05 i | 0 | 0.10 | 7803-51-2 | Phosphine | 2.0E+01 nc | 2.0E+02 nc | 3.1E-01 nc | 1.1E+01 nc | | |
| | | | 2.8E-03 i | n/a | n/a | 7664-38-2 | Phosphoric acid | | | 1.0E+01 nc | | | |
| | 2.0E-05 i | | 2.0E-05 r | 0 | 0.10 | 7723-14-0 | Phosphorus (white) | | | 7.3E-02 nc | | | |
| | 1.0E+00 h | | 1.0E+00 r | 0 | 0.10 | 100-21-0 | p-Phthalic acid | | | 3.7E+03 nc | | | |
| | 2.0E+00 i | | 3.4E-02 h | 0 | 0.10 | 85-44-9 | Phthalic anhydride | | | 1.2E+02 nc | | | |
| | 7.0E-02 i | | 7.0E-02 r | 0 | 0.10 | 1918-02-1 | Picloram | 4.6E+03 nc | 4.8E+04 nc | 2.6E+02 nc | 2.6E+03 nc | | |
| | 1.0E-02 i | | 1.0E-02 r | 0 | 0.10 | 23505-41-1 | Pirimiphos-methyl | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| 9.0E+00 h | 7.0E-06 h | 9.0E+00 r | 7.0E-06 r | 0 | 0.10 | | Polybrominated biphenyls | 5.0E-02 ca** | 2.1E-01 ca* | 7.6E-04 ca* | 7.6E-03 ca* | | |
| 7.7E+00 i | | 7.7E+00 r | | 0 | 0.08 | 1336-36-3 | Polychlorinated biphenyls (PCBs) | 6.6E-02 ca* | 3.4E-01 ca* | 8.7E-04 ca* | 8.7E-03 ca* | | |
| | 7.0E-05 i | | 7.0E-05 r | 0 | 0.08 | 12674-11-2 | Aroclor 1016 (see PCBs for cancer endpoint) | 4.9E+00 nc | 6.5E+01 nc | 2.6E-01 nc | 2.6E+00 nc | | |
| | 2.0E-05 i | | 2.0E-05 r | 0 | 0.08 | 11097-69-1 | Aroclor 1254 (see PCBs for cancer endpoint) | 1.4E+00 nc | 1.9E+01 nc | 7.3E-02 nc | 7.3E-01 nc | | |
| | | | | | 0.10 | | Polynuclear aromatic hydrocarbons (PAHs) | | | | | | |
| | 6.0E-02 i | | 6.0E-02 r | 1 | 0.10 | 83-32-9 | Acenaphthene | 1.1E+02 sat | 1.1E+02 sat | 2.2E+02 nc | 3.7E+02 nc | 5.7E+02 | 2.9E+01 |
| | 3.0E-01 i | | 3.0E-01 r | 1 | 0.10 | 120-12-7 | Anthracene | 5.7E+00 sat | 5.7E+00 sat | 1.1E+03 nc | 1.8E+03 nc | 1.2E+04 | 5.9E+02 |
| 7.3E-01 a | | 7.3E-01 r | | 0 | 0.10 | 56-55-3 | Benz[a]anthracene | 6.1E-01 ca | 2.6E+00 ca | 9.2E-03 ca | 9.2E-02 ca | 2.0E+00 | 8.0E-02 |
| 7.3E-01 a | | 7.3E-01 r | | 0 | 0.10 | 205-99-2 | Benzo[b]fluoranthene | 6.1E-01 ca | 2.6E+00 ca | 9.2E-03 ca | 9.2E-02 ca | 5.0E+00 | 2.0E-01 |
| 7.3E-02 a | | 7.3E-02 r | | 0 | 0.10 | 207-08-9 | Benzo[k]fluoranthene | 6.1E+00 ca | 2.6E+01 ca | 9.2E-02 ca | 9.2E-01 ca | 4.9E+01 | 2.0E+00 |
| | | | | | | | "CAL-Modified PRG" (PEA, 1994) | 6.1E-01 | | | | | |

Key: I=IRIS h=HEAST n=HCEA w=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

# FOR PLANNING PURPOSES

| TOXICITY INFORMATION | | | | | | | CONTAMINANT | PRELIMINARY REMEDIAL GOALS (PRGs) | | | | SOIL SCREENING LEVELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SFo (mg/kg-d) | RfDo (mg/kg-d) | SFi 1/(mg/kg-d) | RfDi (mg/kg-d) | V O C | skin abs. soils | CAS No. | | Residential Soil (mg/kg) | Industrial Soil (mg/kg) | Ambient Air (ug/m^3) | Tap Water (ug/l) | Migration to Ground Water DAF 20 (mg/kg) | DAF 1 (mg/kg) |
| | | | | | | | PAHs continued | | | | | | |
| 3E+00 I | | 7.3E+00 r | | 0 | 0.10 | 56-32-8 | Benzo[a]pyrene | 6.1E-02 ca | 2.6E-01 ca | 9.2E-04 ca | 9.2E-03 ca | 8.0E+00 | 4.0E-01 |
| | | | | | | | "CAL-Modified PRG" (PEA, 1994) | | | | 1.6E-03 | | |
| 3E-03 n | | 7.3E-03 r | | 0 | 0.10 | 218-01-9 | Chrysene | 7.2E+00 sat | 7.2E+00 sat | 9.2E-01 ca | 9.2E+00 ca | 1.6E+02 | 8.0E+00 |
| | | | | | | | "CAL-Modified PRG" (PEA, 1994) | 6.1E+00 | | | | | |
| 3E+00 n | | 7.3E+00 r | | 0 | 0.10 | 53-70-3 | Dibenz[ah]anthracene | 6.1E-02 ca | 2.6E-01 ca | 9.2E-04 ca | 9.2E-03 ca | 2.0E+00 | 8.0E-02 |
| | 4.0E-02 I | | 4.0E-02 r | 0 | 0.10 | 206-44-0 | Fluoranthene | 2.6E+03 nc | 2.7E+04 nc | 1.5E+02 nc | 1.5E+03 nc | 4.3E+03 | 2.1E+02 |
| | 4.0E-02 I | | 4.0E-02 r | 1 | 0.10 | 86-73-7 | Fluorene | 9.0E+01 sat | 9.0E+01 sat | 1.5E+02 nc | 2.4E+02 nc | 5.6E+02 | 2.8E+01 |
| 3E-01 n | | 7.3E-01 r | | 0 | 0.10 | 193-39-5 | Indeno[1,2,3-cd]pyrene | 6.1E-01 ca | 2.6E+00 ca | 9.2E-03 ca | 9.2E-02 ca | 1.4E+01 | 7.0E-01 |
| | 4.0E-02 n | | 4.0E-02 r | 1 | 0.10 | 91-20-3 | Naphthalene | 2.4E+02 sat | 2.4E+02 sat | 1.5E+02 nc | 2.4E+02 nc | 8.4E+01 | 4.0E+00 |
| | 3.0E-02 I | | 3.0E-02 r | 1 | 0.10 | 129-00-0 | Pyrene | 1.0E+02 sat | 1.0E+02 sat | 1.1E+02 nc | 1.8E+02 nc | 4.2E+03 | 2.1E+02 |
| 5E-01 I | 8.0E-03 I | 1.8E-01 r | 8.0E-03 r | 0 | 0.10 | 67747-09-5 | Prochloraz | 3.0E+00 ca | 1.3E+01 ca | 4.5E-02 ca | 3.3E+02 ca | | |
| | 8.0E-03 h | | 8.0E-03 r | 0 | 0.10 | 26399-36-0 | Profluralin | 3.9E+02 nc | 4.1E+03 nc | 2.2E+01 nc | 2.2E+02 nc | | |
| | 1.5E-02 I | | 1.5E-02 r | 0 | 0.10 | 1610-18-0 | Prometon | 9.8E+02 nc | 1.0E+04 nc | 5.5E+01 nc | 5.5E+02 nc | | |
| | 4.0E-03 I | | 4.0E-03 r | 0 | 0.10 | 7287-19-6 | Prometryn | 2.6E+02 nc | 2.7E+03 nc | 1.5E+01 nc | 1.5E+02 nc | | |
| | 7.5E-02 I | | 7.5E-02 r | 0 | 0.10 | 23950-58-5 | Pronamide | 4.9E+03 nc | 5.1E+04 nc | 2.7E+02 nc | 2.7E+03 nc | | |
| | 1.3E-02 I | | 1.3E-02 r | 0 | 0.10 | 1918-16-7 | Propachlor | 8.5E+02 nc | 8.9E+03 nc | 4.7E+01 nc | 4.7E+02 nc | | |
| | 5.0E-03 I | | 5.0E-03 r | 0 | 0.10 | 709-98-8 | Propanil | 3.3E+02 nc | 3.4E+03 nc | 1.8E+01 nc | 1.8E+02 nc | | |
| | 2.0E-02 I | | 2.0E-02 r | 0 | 0.10 | 2312-35-8 | Propargite | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 2.0E-03 I | | 2.0E-03 r | 0 | 0.10 | 107-19-7 | Propargyl alcohol | 1.3E+02 nc | 1.4E+03 nc | 7.3E+00 nc | 7.3E+01 nc | | |
| | 2.0E-02 I | | 2.0E-02 r | 0 | 0.10 | 139-40-2 | Propazine | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 2.0E-02 I | | 2.0E-02 r | 0 | 0.10 | 122-42-9 | Propham | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 1.3E-02 I | | 1.3E-02 r | 0 | 0.10 | 60207-90-1 | Propiconazole | 8.5E+02 nc | 8.9E+03 nc | 4.7E+01 nc | 4.7E+02 nc | | |
| | 2.0E+01 h | | 2.0E+01 r | 0 | 0.10 | 57-55-6 | Propylene glycol | 1.0E+05 max | 1.0E+05 max | 7.3E+04 nc | 7.3E+05 nc | | |
| | 7.0E-01 h | | 7.0E-01 r | 0 | 0.10 | 111-35-3 | Propylene glycol, monoethyl ether | 4.6E+04 nc | 1.0E+05 max | 2.6E+03 nc | 2.6E+04 nc | | |
| | 7.0E-01 h | | 5.7E-01 I | 0 | 0.10 | 107-98-2 | Propylene glycol, monomethyl ether | 4.6E+04 nc | 1.0E+05 max | 2.1E+03 nc | 2.6E+04 nc | | |
| 4E-01 I | 9.0E-03 r | 1.3E-02 I | 9.0E-03 I | 1 | 0.10 | 75-56-9 | Propylene oxide | | | 5.2E-01 ca | 2.2E-01 ca | | |
| | 2.5E-01 I | | 2.5E-01 r | 0 | 0.10 | 81335-77-5 | Pursuit | 1.6E+04 nc | 1.0E+05 max | 9.1E+02 nc | 9.1E+03 nc | | |
| | 2.5E-02 I | | 2.5E-02 r | 0 | 0.10 | 51630-58-1 | Pydrin | 1.6E+03 nc | 1.7E+04 nc | 9.1E+01 nc | 9.1E+02 nc | | |
| | 1.0E-03 I | | 1.0E-03 r | 0 | 0.10 | 110-86-1 | Pyridine | 6.5E+01 nc | 6.8E+02 nc | 3.7E+00 nc | 3.7E+01 nc | | |
| | 5.0E-04 I | | 5.0E-04 r | 0 | 0.10 | 13593-03-8 | Quinalphos | 3.3E+01 nc | 3.4E+02 nc | 1.8E+00 nc | 1.8E+01 nc | | |
| 2E+01 h | | 1.2E+01 r | | 0 | 0.10 | 91-22-5 | Quinoline | 3.7E-02 ca | 1.6E-01 ca | 5.6E-04 ca | 5.6E-03 ca | | |
| 1.1E-01 I | 3.0E-03 I | 1.1E-01 r | 3.0E-03 r | 0 | 0.10 | 121-82-4 | RDX (Cyclonite) | 4.0E+00 ca* | 1.7E+01 ca | 6.1E-02 ca | 6.1E-01 ca | | |
| | 3.0E-02 I | | 3.0E-02 r | 0 | 0.10 | 10453-86-8 | Resmethrin | 2.0E+03 nc | 2.0E+04 nc | 1.1E+02 nc | 1.1E+03 nc | | |
| | 6.0E-02 h | | 6.0E-02 r | 0 | 0.10 | 299-84-3 | Ronnel | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | | |
| | 4.0E-03 I | | 4.0E-03 r | 0 | 0.10 | 83-79-4 | Rotenone | 2.6E+02 nc | 2.7E+03 nc | 1.5E+01 nc | 1.5E+02 nc | | |
| | 2.5E-02 I | | 2.5E-02 r | 0 | 0.10 | 78587-05-0 | Savey | 1.6E+03 nc | 1.7E+04 nc | 9.1E+01 nc | 9.1E+02 nc | | |
| | 5.0E-03 I | | | 0 | 0.10 | 7783-00-8 | Selenious Acid | 3.3E+02 nc | 3.4E+03 nc | | 1.8E+02 nc | | |
| | 5.0E-03 I | | | 0 | 0.01 | 7782-49-2 | Selenium | 3.8E+02 nc | 8.5E+03 nc | | 1.8E+02 nc | 5.0E+00 | 3.0E-01 |
| | 5.0E-03 h | | | 0 | 0.10 | 630-10-4 | Selenourea | 3.3E+02 nc | 3.4E+03 nc | | 1.8E+02 nc | | |
| | 9.0E-02 I | | 9.0E-02 r | 0 | 0.10 | 74051-80-2 | Sethoxydim | 5.9E+03 nc | 6.1E+04 nc | 3.3E+02 nc | 3.3E+03 nc | | |
| | 5.0E-03 I | | | 0 | 0.01 | 7440-22-4 | Silver and compounds | 3.8E+02 nc | 8.5E+03 nc | | 1.8E+02 nc | 3.4E+01 | 2.0E+00 |
| 1.2E-01 h | 6.0E-03 I | 1.2E-01 r | 2.0E-03 r | 0 | 0.10 | 122-34-9 | Simazine | 3.7E+00 ca* | 1.6E+01 ca* | 5.6E-02 ca | 5.6E-01 ca | | |
| | 4.0E-03 I | | 4.0E-03 r | 0 | 0.10 | 26628-22-8 | Sodium azide | 2.8E+02 nc | 2.7E+03 nc | 1.5E+01 nc | 1.5E+02 nc | | |
| 2.7E-01 h | 3.0E-02 I | 2.7E-01 r | 3.0E-02 r | 0 | 0.10 | 148-18-5 | Sodium diethyldithiocarbamate | 1.6E+00 ca | 7.1E+00 ca | 2.5E-02 ca | 2.5E-01 ca | | |
| | 2.0E-05 I | | 2.0E-05 r | 0 | 0.10 | 62-74-8 | Sodium fluoroacetate | 1.3E+00 nc | 1.4E+01 nc | 7.3E-02 nc | 7.3E-01 nc | | |
| | 1.0E-03 h | | 1.0E-03 r | 0 | 0.10 | 13718-26-8 | Sodium metavanadate | 6.5E+01 nc | 6.8E+02 nc | 3.7E+00 nc | 3.7E+01 nc | | |

Key: i=IRIS h=HEAST n=NCEA w=WITHDRAWN r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

# FOR PLANNING PURPOSES

| TOXICITY INFORMATION | | | | | | | | CONTAMINANT | PRELIMINARY REMEDIAL GOALS (PRGs) | | | | SOIL SCREENING LEVELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SFo 1/(mg/kg-d) | RfDo (mg/kg-d) | SFi 1/(mg/kg-d) | RfDi (mg/kg-d) | V O C | skin abs. soils | CAS No. | | Residential Air Soil (mg/kg) | Industrial Air Soil (mg/kg) | Ambient Air Levels (ug/m^3) | Tap Water (ug/l) | Migration to Ground Water DAF 20 (mg/kg) | Migration to Ground Water DAF 1 (mg/kg) |
| | 6.0E-01 i | | | 0 | 0.01 | 7440-24-6 | Stronium, stable | 4.6E+04 nc | 1.0E+05 max | | 2.2E+04 nc | | |
| | 3.0E-04 i | | 3.0E-04 r | 0 | 0.10 | 57-24-9 | Strychnine | 2.0E+01 nc | 2.0E+02 nc | 1.1E+00 nc | 1.1E+01 nc | | |
| | 2.0E-01 i | | 2.0E-01 i | 1 | 0.10 | 100-42-5 | Styrene | 6.8E+02 sat | 6.8E+02 sat | 1.1E+03 nc | 1.6E+03 nc | 4.0E+00 | 2.0E-01 |
| | 2.5E-02 i | | 2.5E-02 r | 0 | 0.10 | 95071-89-0 | Systhane | 1.6E+03 nc | 1.7E+04 nc | 9.1E+01 nc | 9.1E+02 nc | | |
| 1.5E+05 h | | 1.5E+05 h | | 0 | 0.03 | 1746-01-6 | 2,3,7,8-TCDD (dioxin) | 3.6E-06 ca | 2.4E-05 ca | 4.5E-08 ca | 4.5E-07 ca | | |
| | 7.0E-02 i | | 7.0E-02 r | 0 | 0.10 | 34014-18-1 | Tebuthiuron | 4.6E+03 nc | 4.8E+04 nc | 2.6E+02 nc | 2.6E+03 nc | | |
| | 2.0E-02 h | | 2.0E-02 r | 0 | 0.10 | 3383-96-8 | Temephos | 1.3E+03 nc | 1.4E+04 nc | 7.3E+01 nc | 7.3E+02 nc | | |
| | 1.3E-02 i | | 1.3E-02 r | 0 | 0.10 | 5902-51-2 | Terbacil | 8.5E+02 nc | 8.9E+03 nc | 4.7E+01 nc | 4.7E+02 nc | | |
| | 2.5E-05 h | | 2.5E-05 r | 0 | 0.10 | 13071-79-9 | Terbufos | 1.6E+00 nc | 1.7E+01 nc | 9.1E-02 nc | 9.1E-01 nc | | |
| | 1.0E-03 i | | 1.0E-03 r | 0 | 0.10 | 886-50-0 | Terbutryn | 6.5E+01 nc | 6.8E+02 nc | 3.7E+00 nc | 3.7E+01 nc | | |
| | 3.0E-04 i | | 3.0E-04 r | 0 | 0.10 | 95-94-3 | 1,2,4,5-Tetrachlorobenzene | 2.0E+01 nc | 2.0E+02 nc | 1.1E+00 nc | 1.1E+01 nc | | |
| 2.0E-02 i | 3.0E-02 i | 2.0E-02 i | 3.0E-02 r | 1 | 0.10 | 630-20-6 | 1,1,1,2-Tetrachloroethane | 2.4E+00 ca | 5.4E+00 ca | 2.6E-01 ca | 4.3E-01 ca | | |
| 2.0E-01 i | | 2.0E-01 i | | 1 | 0.10 | 79-34-5 | 1,1,2,2-Tetrachloroethane | 4.5E-01 ca | 1.1E+00 ca | 3.3E-02 ca | 5.5E-02 ca | 3.0E-03 | 2.0E-04 |
| 5.2E-02 n | 1.0E-02 i | 2.0E-03 n | 1.0E-02 r | 1 | 0.10 | 127-18-4 | Tetrachloroethylene (PCE) | 5.4E+00 ca | 1.7E+01 ca | 3.3E+00 ca | 1.1E+00 ca | 6.0E-02 | 3.0E-03 |
| | | | | | | | "CAL-Modified PRG" (PEA, 1994) | | | 3.2E-01 | | | |
| | 3.0E-02 i | | 3.0E-02 r | 0 | 0.10 | 58-90-2 | 2,3,4,6-Tetrachlorophenol | 2.0E+03 nc | 2.0E+04 nc | 1.1E+02 nc | 1.1E+03 nc | | |
| 7.0E+01 h | | 2.0E+01 r | | 0 | 0.10 | 5216-25-1 | p,a,a,a-Tetrachlorotoluene | 2.2E-02 ca | 9.5E-02 ca | 3.4E-04 ca | 3.4E-03 ca | | |
| 2.4E-02 h | 3.0E-02 i | 2.4E-02 r | 3.0E-02 r | 0 | 0.10 | 961-11-5 | Tetrachlorovinphos | 1.9E+01 ca | 7.9E+01 ca | 2.8E-01 ca | 2.8E+00 ca | | |
| | 8.0E-04 i | | 8.0E-04 r | 0 | 0.10 | 3689-24-5 | Tetraethyldithiopyrophosphate | 3.3E+01 nc | 3.4E+02 nc | 1.8E+00 nc | 1.8E+01 nc | | |
| | 7.0E-05 h | | | 0 | 0.01 | 1314-32-5 | Thallic oxide | 5.4E+00 nc | 1.2E+02 nc | | 2.6E+00 nc | | |
| | 8.0E-05 i | | | 0 | 0.01 | 563-68-8 | Thallium acetate | 6.9E+00 nc | 1.5E+02 nc | | 3.3E+00 nc | 7.0E-01 | 4.0E-01 |
| | 8.0E-05 i | | | 0 | 0.01 | 6533-73-9 | Thallium carbonate | 6.1E+00 nc | 1.4E+02 nc | | 2.9E+00 nc | 7.0E-01 | 4.0E-01 |
| | 8.0E-05 i | | | 0 | 0.01 | 7791-12-0 | Thallium chloride | 6.1E+00 nc | 1.4E+02 nc | | 2.9E+00 nc | 7.0E-01 | 4.0E-01 |
| | 8.0E-05 i | | | 0 | 0.01 | 10102-45-1 | Thallium nitrate | 6.9E+00 nc | 1.5E+02 nc | | 3.3E+00 nc | 7.0E-01 | 4.0E-01 |
| | 8.0E-05 w | | | 0 | 0.01 | 12039-52-0 | Thallium selenite | 6.8E+00 nc | 1.5E+02 nc | | 3.3E+00 nc | 7.0E-01 | 4.0E-01 |
| | 8.0E-05 i | | | 0 | 0.01 | 7446-18-6 | Thallium sulfate | 6.1E+00 nc | 1.4E+02 nc | | 2.9E+00 nc | 7.0E-01 | 4.0E-01 |
| | 1.0E-02 i | | 1.0E-02 r | 0 | 0.10 | 28249-77-6 | Thiobencarb | 8.5E+02 nc | 8.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| | 3.0E-02 w | | 3.0E-02 r | 0 | 0.10 | 3689-24-5 | 2-(Thiocyanomethylthio)- benzothiazole (TCMTB) | 2.0E+03 nc | 2.0E+04 nc | 1.1E+02 nc | 1.1E+03 nc | | |
| | 3.0E-04 h | | 3.0E-04 r | 0 | 0.10 | 39196-18-4 | Thiofanox | 2.0E+01 nc | 2.0E+02 nc | 1.1E+00 nc | 1.1E+01 nc | | |
| | 8.0E-02 i | | 8.0E-02 r | 0 | 0.10 | 23564-05-8 | Thiophanate-methyl | 5.2E+03 nc | 5.5E+04 nc | 2.9E+02 nc | 2.9E+03 nc | | |
| | 5.0E-03 i | | 5.0E-03 r | 0 | 0.10 | 137-26-8 | Thiram | 3.3E+02 nc | 3.4E+03 nc | 1.8E+01 nc | 1.8E+02 nc | | |
| | 4.0E-01 h | | | 0 | 0.01 | n/a | Tin (inorganic, see tributyltin oxide for organic tin) | 4.6E+04 nc | 1.0E+05 max | | 2.2E+04 nc | | |
| | 2.0E-01 i | | 1.1E-01 h | 1 | 0.10 | 108-88-3 | Toluene | 7.9E+02 nc | 8.8E+02 sat | 4.0E+02 nc | 7.2E+02 nc | 1.2E+01 | 6.0E-01 |
| 3.2E+00 h | | 3.2E+00 r | | 0 | 0.10 | 95-80-7 | Toluene-2,4-diamine | 1.4E-01 ca | 6.0E-01 ca | 2.1E-03 ca | 2.1E-02 ca | | |
| | 9.0E-01 h | | 6.0E-01 r | 0 | 0.10 | 95-70-5 | Toluene-2,5-diamine | 3.9E+04 nc | 1.0E+05 max | 2.2E+03 nc | 2.2E+04 nc | | |
| | 2.0E-01 h | | 2.0E-01 r | 0 | 0.10 | 823-40-5 | Toluene-2,6-diamine | 1.3E+04 nc | 1.0E+05 max | 7.3E+02 nc | 7.3E+03 nc | | |
| 1.9E-01 i | | 1.9E-01 r | | 0 | 0.10 | 106-49-0 | p-Toluidine | 2.3E+00 ca | 1.0E+01 ca | 3.5E-02 ca | 3.5E-01 ca | | |
| 1.1E+00 i | | 1.1E+00 i | | 0 | 0.10 | 8001-35-2 | Toxaphene | 4.0E-01 ca | 1.7E+00 ca | 8.0E-03 ca | 8.1E-02 ca | 3.1E+01 | 2.0E+00 |
| | 7.5E-03 i | | 7.5E-03 r | 0 | 0.10 | 66841-25-6 | Tralomethrin | 4.9E+02 nc | 5.1E+03 nc | 2.7E+01 nc | 2.7E+02 nc | | |
| | 1.3E-02 i | | 1.3E-02 r | 0 | 0.10 | 2303-17-5 | Triallate | 8.5E+02 nc | 8.9E+03 nc | 4.7E+01 nc | 4.7E+02 nc | | |
| | 1.0E-02 i | | 1.0E-02 r | 0 | 0.10 | 82097-50-5 | Triasulfuron | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| | 8.0E-03 i | | 8.0E-03 r | 0 | 0.10 | 615-54-3 | 1,2,4-Tribromobenzene | 3.3E+02 nc | 3.4E+03 nc | 1.8E+01 nc | 1.8E+02 nc | | |
| | 3.0E-05 i | | 3.0E-05 r | 0 | 0.10 | 56-35-9 | Tributyltin oxide (TBTO) | 2.0E+00 nc | 2.0E+01 nc | 1.1E-01 nc | 1.1E+00 nc | | |
| 3.4E-02 h | | 3.4E-02 r | | 0 | 0.10 | 634-93-5 | 2,4,6-Trichloroaniline | 1.3E+01 ca | 5.6E+01 ca | 2.0E-01 ca | 2.0E+00 ca | | |
| 2.9E-02 h | | 2.9E-02 r | | 0 | 0.10 | 33663-50-2 | 2,4,6-Trichloroaniline hydrochloride | 1.5E+01 ca | 6.6E+01 ca | 2.3E-01 ca | 2.3E+00 ca | | |
| | 1.0E-02 i | | 5.7E-02 h | 1 | 0.10 | 120-82-1 | 1,2,4-Trichlorobenzene | 5.7E+02 nc | 5.5E+03 sat | 2.1E+02 nc | 1.9E+02 nc | 5.0E+00 | 3.0E-01 |
| | 2.0E-02 n | | 2.0E-01 w | 1 | 0.10 | 71-55-6 | 1,1,1-Trichloroethane | 1.2E+03 nc | 3.0E+03 sat | 1.0E+03 nc | 7.9E+02 nc | 2.0E+00 | 1.0E-01 |

Key: i=IRIS h=HEAST a=ATSDR r=ROUTE EXTRAPOLATION ca=CANCER PRG nc=NONCANCER PRG sat=SOIL SATURATION max=CEILING LIMIT *(where: nc < 100X ca) **(where: nc < 10X ca)

# FOR PLANNING PURPOSES

| TOXICITY INFORMATION | | | | | | | | | CONTAMINANT | PRELIMINARY REMEDIAL GOALS (PRGs) | | | | SOIL SCREENING LEVELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | RfDo (mg/kg-d) | | SFo 1/(mg/kg-d) | RfDi (mg/kg-d) | V O C | skin abs. soils | CAS No. | | | Residential Soil (mg/kg) | Industrial Soil (mg/kg) | Ambient Air (ug/m^3) | Tap Water (ug/l) | Migration to Ground Water DAF 20 (mg/kg) | DAF 1 (mg/kg) |
| 02 i | 4 0E-03 i | 5 0E-02 i | | 4 0E-03 r | 1 | 0.10 | 79-00-5 | | 1,1,2-Trichloroethane | 6.5E-01 ca | 1.5E+00 ca | 1.2E-01 ca | 2.0E-01 ca | 2.0E-02 | 9.0E-04 |
| 02 a | 6 0E-03 h | 5 0E-03 h | | 6 0E-03 r | 1 | 0.10 | 79-01-6 | | Trichloroethylene (TCE) | 3.2E+00 ca* | 7.0E+00 ca* | 1.1E+00 ca* | 1.6E+00 ca* | 6.0E-02 | 3.0E-03 |
| | 3 0E-01 i | | | 2 0E-01 h | 1 | 0.10 | 75-69-4 | | Trichlorofluoromethane | 3.6E+02 nc | 1.3E+03 nc | 7.3E+02 nc | 1.3E+03 nc | | |
| | 1.0E-01 i | | | 1.0E-01 r | 0 | 0.10 | 95-95-4 | | 2,4,5-Trichlorophenol | 6.5E+03 nc | 6.8E+04 nc | 3.7E+02 nc | 3.7E+03 nc | 2.7E+02 | 1.4E+01 |
| 02 i | | | 1.1E-02 i | | 0 | 0.10 | 88-06-2 | | 2,4,6-Trichlorophenol | 4.0E+01 ca | 1.7E+02 ca | 6.2E-01 ca | 6.1E+00 ca | 2.0E-01 | 8.0E-03 |
| | 1 0E-02 i | | | 1 0E-02 r | 0 | 0.10 | 93-76-5 | | 2,4,5-Trichlorophenoxyacetic Acid | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| | 8 0E-03 i | | | 8 0E-03 r | 0 | 0.10 | 93-72-1 | | 2-(2,4,5-Trichlorophenoxy) propionic acid | 5.2E+02 nc | 5.5E+03 nc | 2.9E+01 nc | 2.9E+02 nc | | |
| | 5 0E-03 i | | | 5 0E-03 r | 1 | 0.10 | 598-77-6 | | 1,1,2-Trichloropropane | 1.5E+01 nc | 5.0E+01 nc | 1.8E+01 nc | 3.0E+01 nc | | |
| 00 h | 6 0E-03 i | 7.0E+00 r | | 5 0E-03 r | 1 | 0.10 | 96-18-4 | | 1,2,3-Trichloropropane | 1.4E-03 ca | 3.1E-03 ca | 9.6E-04 ca | 1.6E-03 ca | | |
| | 5 0E-03 h | | | 5 0E-03 r | 1 | 0.10 | 96-19-5 | | 1,2,3-Trichloropropene | 1.1E+01 nc | 3.8E+01 nc | 1.8E+01 nc | 3.0E+01 nc | | |
| | 3 0E+01 i | | | 8 0E+00 h | 1 | 0.10 | 76-13-1 | | 1,1,2-Trichloro-1,2,2-trifluoroethane | 5.6E+03 sat | 5.6E+03 sat | 3.1E+04 nc | 5.9E+04 nc | | |
| | 3 0E-03 i | | | 3 0E-03 r | 0 | 0.10 | 58138-08-2 | | Tridiphane | 2.0E+02 nc | 2.0E+03 nc | 1.1E+01 nc | 1.1E+02 nc | | |
| | 2 0E-03 r | | | 2 0E-03 i | 1 | 0.10 | 121-44-8 | | Triethylamine | 2.3E+01 nc | 8.4E+01 nc | 7.3E+00 nc | 1.2E+01 nc | | |
| 03 i | 7.5E-03 i | 7.7E-03 r | | 7.5E-03 r | 0 | 0.10 | 1582-09-8 | | Trifluralin | 5.8E+01 ca** | 2.5E+02 ca* | 8.7E-01 ca* | 8.7E+00 ca* | | |
| 02 h | | 3 7E-02 r | | | 0 | 0.10 | 512-56-1 | | Trimethyl phosphate | 1.2E+01 ca | 5.2E+01 ca | 1.8E-01 ca | 1.8E+00 ca | | |
| | 5 0E-05 i | | | 5 0E-05 r | 0 | 0.10 | 99-35-4 | | 1,3,5-Trinitrobenzene | 3.3E+00 nc | 3.4E+01 nc | 1.8E-01 nc | 1.8E+00 nc | | |
| | 1 0E-02 h | | | 1 0E-02 r | 0 | 0.10 | 479-45-8 | | Trinitrophenylmethylnitramine | 6.5E+02 nc | 6.8E+03 nc | 3.7E+01 nc | 3.7E+02 nc | | |
| 02 i | 8 0E-04 i | 3 0E-02 r | | 5 0E-04 r | 0 | 0.10 | 118-96-7 | | 2,4,6-Trinitrotoluene | 1.5E+01 ca** | 6.4E+01 ca** | 2.2E-01 ca** | 2.2E+00 ca** | | |
| | 3 0E-03 i | | | | 0 | 0.01 | 7440-61-1 | | Uranium (soluble salts) | | | | | | |
| | 7 0E-03 h | | | | 0 | 0.01 | 7440-62-2 | | Vanadium | 5.4E+02 nc | 1.2E+04 nc | | 2.6E+02 nc | 8.0E+03 | 3.0E+02 |
| | 9 0E-03 i | | | | 0 | 0.01 | 1314-62-1 | | Vanadium pentoxide | 6.9E+02 nc | 1.5E+04 nc | | 3.3E+02 nc | 8.0E+03 | 3.0E+02 |
| | 2 0E-02 h | | | | 0 | 0.01 | 13701-70-7 | | Vanadium sulfate | 1.5E+03 nc | 3.4E+04 nc | | 7.3E+02 nc | 6.0E+03 | 3.0E+02 |
| | 1 0E-03 i | | | 1 0E-03 r | 0 | 0.10 | 8828-77-7 | | Vernam | 6.5E+01 nc | 6.8E+02 nc | 3.7E+00 nc | 3.7E+01 nc | | |
| | 2 5E-02 i | | | 2 5E-02 r | 0 | 0.10 | 50471-44-8 | | Vinclozolin | 1.6E+03 nc | 1.7E+04 nc | 9.1E+01 nc | 9.1E+02 nc | | |
| | 1 0E+00 h | | | 8.7E-02 i | 1 | 0.10 | 108-05-4 | | Vinyl acetate | 7.8E+02 nc | 2.6E+03 nc | 2.1E+02 nc | 4.1E+02 nc | 1.7E+02 | 8.0E+00 |
| -01 r | 8 0E-04 r | 1.9E-01 h | | 8.8E-04 i | 1 | 0.10 | 593-60-2 | | Vinyl bromide (bromoethene) | 1.9E-01 ca* | 4.1E-01 ca* | 6.1E-02 ca* | 1.0E-01 ca* | | |
| +00 h | | 9 0E-01 h | | | 1 | 0.10 | 75-01-4 | | Vinyl chloride | 1.6E-02 ca | 3.5E-02 ca | 2.2E-02 ca | 2.0E-02 ca | 1.0E-02 | 7.0E-04 |
| | 3 0E-04 i | | | 3 0E-04 r | 0 | 0.10 | 81-81-2 | | Warfarin | 2.0E+01 nc | 2.0E+02 nc | 1.1E+00 nc | 1.1E+01 nc | | |
| | 2 0E+00 i | | | 2 0E-01 a | 1 | 0.10 | 108-38-3 | | m-Xylene | 3.2E+02 sat | 3.2E+02 sat | 7.3E+02 nc | 1.4E+03 nc | 2.1E+02 | 1.0E+01 |
| | 2 0E+00 i | | | 2 0E-01 a | 1 | 0.10 | 95-47-6 | | o-Xylene | 3.2E+02 sat | 3.2E+02 sat | 7.3E+02 nc | 1.4E+03 nc | 1.9E+02 | 9.0E+00 |
| | | | | | 1 | 0.10 | 106-42-3 | | p-Xylene | 3.2E+02 sat | 3.2E+02 sat | | | 2.0E+02 | 1.0E+01 |
| | 2 0E+00 i | | | 2 0E-01 a | 1 | 0.10 | 1330-20-7 | | Xylene (mixed) | 3.2E+02 sat | 3.2E+02 sat | 7.3E+02 nc | 1.4E+03 nc | 2.0E+02 | 1.0E+01 |
| | 3 0E-01 i | | | | 0 | 0.01 | 7440-66-6 | | Zinc | 2.3E+04 nc | 1.0E+05 max | | 1.1E+04 nc | 1.2E+04 | 6.2E+02 |
| | 3 0E-04 i | | | | 0 | 0.01 | 1314-84-7 | | Zinc phosphide | 2.3E+01 nc | 5.1E+02 nc | | 1.1E+01 nc | | |
| | 5 0E-02 i | | | 5 0E-02 r | 0 | 0.10 | 12122-67-7 | | Zineb | 3.3E+03 nc | 3.4E+04 nc | 1.8E+02 nc | 1.8E+03 nc | | |

H. Dim

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105-3901

August 1, 1996

Subject: Region 9 Preliminary Remediation Goals (PRGs) 1996

From: Stanford J. Smucker, Ph.D.
Regional Toxicologist (H-9-3)
Technical Support Team

To: PRG Table Mailing List

Please find the annual update to the Region 9 PRG table. The table has been revised to reflect the most current EPA toxicological and risk assessment information. Updates to EPA toxicity values were obtained from IRIS through July 1996, HEAST through May 1995, and EPA's National Center for Environmental Assessment (NCEA, formerly ECAO).

Region 9 PRGs are "evergreen" and have evolved as new methodologies and parameters have been developed. In several cases the models, equations, and assumptions presented in RAGS HHEM, *Part B, Development of Risk-Based Preliminary Remediation Goals* (1991) have been replaced with new information that is consistent with the document, *Soil Screening Guidance*, recently issued by the Office of Solid Waste and Emergency Response (OSWER), dated April 1996.

The updated PRG table also contains soil screening levels (SSLs) for protection of groundwater. The SSLs were obtained directly from EPA/OSWER's *Soil Screening Guidance* document which is available from NTIS as EPA/540/R-96/018 and EPA/540/R-95/128. Please note that because R 9 PRGs currently evaluate intermedia transfer of volatile organic chemicals (VOCs) and heavy metals from soil to air, the PRG table does not include a separate list of SSLs for the air pathway.

To help users rapidly identify substances with new PRGs, these contaminants are printed in boldface type. Changes in PRG values are either due to new toxicity constants or new physico-chemical information. This version of the table contains revised toxicity values for acetaldehyde, chlorine cyanide, 1,3-dichlorobenzene, 2-dichloroethane, endosulfan, manganese, phosphoric acid, and 1,1,1-trichloroethane. Also, 23 additional VOCs have been identified and evaluated for inhalation exposures resulting from intermedia transfer from soil and water to air.

EPA Region 9 has established a homepage on the World Wide Web which you can find at http://www.epa.gov/region 9/. Our homepage will soon include the PRG table in downloadable form. The electronic table contains additional information not presented in the printed table (e.g. physico-chemical constants, non-cancer PRGs for carcinogens, pathway-specific PRGs, and volatilization factors for VOCs). Meanwhile, we still provide the electronic PRG table (PRG96.zip) on California Regional Water Board's BBS (510.286.0404) for those of you who have a modem.

Before relying on any number in the table, it is recommended that the user verify the numbers with an agency toxicologist or risk assessor because the toxicity / exposure information in the table may contain errors or default assumptions that need to be refined based on further evaluation. If you find an error please send me a note via email at Smucker.Stan@epamail.epa.gov or fax at 415.744.1916.

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## DISCLAIMER

**Preliminary remediation goals (PRGs) focus on common exposure pathways and may not consider all exposure pathways encountered at CERCLA / RCRA sites (Exhibit 1-1). PRGs do not consider impact to groundwater or address ecological concerns. PRGs are specifically not intended as a (1) stand-alone decision-making tool, (2) as a substitute for EPA guidance for preparing baseline risk assessments, or (3) a rule to determine if a waste is hazardous under RCRA.**

**The guidance set out in this document is not final Agency action. It is not intended, nor can it be relied upon to create any rights enforceable by any party in litigation with the United States. EPA officials may decide to follow the guidance provided herein, or act at variance with the guidance, based on an analysis of specific circumstances. The Agency also reserves the right to change this guidance at any time without public notice.**

## 1.0 INTRODUCTION

The Region 9 PRG table combines current EPA toxicity values with "standard" exposure factors to estimate contaminant concentrations in environmental media (soil, air, and water) that are protective of humans, including sensitive groups, over a lifetime. Chemical concentrations above these levels would not automatically designate a site as "dirty" or trigger a response action. However, exceeding a PRG suggests that further evaluation of the potential risks that may be posed by site contaminants is appropriate. Further evaluation may include additional sampling, consideration of ambient levels in the environment, or a reassessment of the assumptions contained in these screening-level estimates (e.g. appropriateness of route-to-route extrapolations).

The PRG concentrations presented in the table can be used to screen pollutants in environmental media, trigger further investigation, and provide an initial cleanup goal if applicable. When considering PRGs as preliminary goals, residential concentrations should be used for maximum beneficial uses of a property. Industrial concentrations are included in the table as an alternative cleanup goal for soils, but it is not recommended that industrial concentrations be used for screening sites.

Before applying PRGs as screening tools or initial goals, the user of the table should consider whether the exposure pathways and exposure scenarios at the site are fully accounted for in the PRG calculation. Region 9 PRG concentrations are based on exposure pathways for which generally accepted methods, models, and assumptions have been developed (i.e. ingestion, dermal contact, and inhalation) for specific land-use conditions and do not consider impact to groundwater or ecological receptors (see Developing a Conceptual Site Model below).

**EXHIBIT 1-1**
**TYPICAL EXPOSURE PATHWAYS BY MEDIUM**
**FOR RESIDENTIAL AND INDUSTRIAL LAND USES***

| EXPOSURE PATHWAYS, ASSUMING: | | |
|---|---|---|
| MEDIUM | RESIDENTIAL LAND USE | INDUSTRIAL LAND USE |
| Ground Water | ***Ingestion from drinking*** | Ingestion from drinking |
| | ***Inhalation of volatiles*** | Inhalation of volatiles |
| | Dermal absorption from bathing | Dermal absorption |
| Surface Water | ***Ingestion from drinking*** | Ingestion from drinking |
| | ***Inhalation of volatiles*** | Inhalation of volatiles |
| | Dermal absorption from bathing | Dermal absorption |
| | Ingestion during swimming | |
| | Ingestion of contaminated fish | |
| Soil | ***Ingestion*** | ***Ingestion*** |
| | ***Inhalation of particulates*** | ***Inhalation of particulates*** |
| | ***Inhalation of volatiles*** | ***Inhalation of volatiles*** |
| | Exposure to indoor air from soil gas | Exposure to indoor air from soil gas |
| | Exposure to ground water contaminated by soil leachate | Exposure to ground water contaminated by soil leachate |
| | Ingestion via plant, meat, or dairy products | Inhalation of particulates from trucks and heavy equipment |
| | ***Dermal absorption*** | ***Dermal absorption*** |

Footnote:
*Exposure pathways considered in the PRG calculations are indicated in boldface italics.

## 2.0 READING THE PRG TABLE

### 2.1 General Considerations

With the exceptions described below, PRGs are chemical concentrations that correspond to fixed levels of risk (i.e.either a one-in-one million [$10^{-6}$] cancer risk or a noncarcinogenic hazard quotient of one, whichever occurs at a lower concentration) in soil, air, and water. In most cases, where a substance causes both cancer and noncancer or systemic effects, the $10^{-6}$ cancer risk will result in a more stringent criteria and consequently this value is presented in the table. PRG concentrations based on cancer risk are indicated by "ca". PRG concentrations based on noncarcinogenic health threats are indicated by "nc".

If the risk-based concentrations are to be used to screen sites, it is recommended that both cancer and noncancer-based PRGs be obtained even though the printed list contains only the more restrictive of the two values. To obtain additional values (e.g. noncancer PRGs for a carcinogenic substance), the user has the following options:

- download an electronic copy of the PRG table from EPA Region 9's homepage at http://www.epa.gov/region 9/
- download the file (PRG96.zip) from California Regional Water Board's BBS at 510.286.0404
- use the equations presented in Section 4.0 to calculate additional PRG values

It has come to my attention that some users have been multiplying the cancer PRG concentrations by 10 or 100 to set "action levels" for triggering remediation or to set less stringent cleanup levels for a specific site after considering non-risk-based factors such as (ambient levels, detection limits, or technological feasibility). This practice recognizes that there may be a range of values that may be "acceptable" for carcinogenic risk (EPA's cancer risk range is from $10^{-6}$ to $10^{-4}$). However, this practice could lead one to overlook serious noncancer health threats and it is strongly recommended that the user consult with a toxicologist or Regional risk assessor before doing this. For carcinogens, I have indicated by asterisk ("ca*") in the PRG table where the noncancer PRGs would be exceeded if the cancer value that is listed is multiplied by 100. Two stars ("ca**") indicate that the noncancer values would be exceeded if the cancer PRG were multiplied by 10. There is no range of "acceptable" noncarcinogenic "risk" so that under no circumstances should noncancer PRGs be multiplied by 10 or 100, when setting final cleanup criteria.

In general, PRG concentrations in the table are risk-based but for soil there are two important exceptions: (1) for several volatile chemicals, PRGs are based on the soil saturation equation ("sat") and (2) for relatively less toxic inorganic and semivolatile contaminants, a non-risk based "ceiling limit" concentration is given as $10^{+5}$ mg/kg ("max"). PRG concentrations that are not risk-based (i.e. either "sat" or "max") should be segregated before screening multiple

pollutant risks.

In addition to Region 9 PRGs, the PRG table also includes California EPA PRGs ("CAL-Modified PRGs") for specific chemicals where CAL-EPA values may be more restrictive than the federal values; and, soil screening levels (SSLs) for protection of groundwater (see Section 2.3 below).

## 2.2 Toxicity Values

EPA toxicity values, known as noncarcinogenic reference doses (RfD) and carcinogenic slope factors (SF) were obtained from IRIS through July 1996, HEAST through May 1995, and EPA's National Center for Environmental Assessment (NCEA, formerly ECAO). The priority among sources of toxicological constants used are as follows: (1) IRIS (indicated by "i"), (2) HEAST ("h"), (3) NCEA ("n"), and (4) withdrawn from IRIS or HEAST and under review ("x").

Route-to-route extrapolations ("r") were frequently used when there were no toxicity values available for a given route of exposure. Oral cancer slope factors ("SFo") and reference doses ("RfDo") were used for both oral and inhaled exposures for organic compounds lacking inhalation values. Inhalation slope factors ("SFi") and inhalation reference doses ("RfDi") were used for both inhaled and oral exposures for organic compounds lacking oral values. An additional route extrapolation is the use of oral toxicity values for evaluating dermal exposures. **Although route-to-route methods are a useful screening procedure, the appropriateness of these default assumptions for specific contaminants should be verified by a toxicologist.**

To help users rapidly identify substances with new PRGs, these contaminants are printed in boldface type. This version of the table contains revised toxicity values for acetaldehyde, chlorine cyanide, 1,3-dichlorobenzene, 2-dichloroethane, endosulfan, manganese, phosphoric acid, and 1,1,1-trichloroethane.

## 2.3 Soil Screening Levels

Generic soil screening levels (SSLs) for the protection of groundwater have been included in the PRG table for 100 of the most common contaminants at Superfund sites. Generic SSLs are derived using default values in standardized equations presented in *Soil Screening Guidance* (available from NTIS as document numbers PB96-963502 and PB96-963505 or EPA/540/R-95/128 and EPA/540/R-96/018).

The SSLs were developed using a default dilution-attenuation factor (DAF) of 20 to account for natural processes that reduce contaminant concentrations in the subsurface. Also included are generic SSLs that assume no dilution or attenuation between the source and the receptor well (i.e., a DAF of 1). These values can be used at sites where little or no dilution or attenuation of soil leachate concentrations is expected at a site (e.g., sites with shallow water

tables, fractured media, karst topography, or source size greater than 30 acres).

Generally, if an SSL is not exceeded for the migration to groundwater pathway, the user may eliminate this pathway from further investigation.

### 2.4 Miscellaneous

Volatile organic chemicals (VOCs) are indicated by "1" in the VOC column of the table and are defined as those chemicals having a Henry's Law constant greater than $10^{-5}$ (atm-$m^3$/mol) and a molecular weight less than 200 g/mole). These contaminants are evaluated for potential volatilization from soil / water to air using volatilization factors (see Section 4.1). Since the 1995 PRG table, 23 additional VOCs have been identified and evaluated for inhalation exposures resulting from intermedia transfer from soil and water to air. These are indicated in boldface type.

Chemical-specific dermal absorption values for contaminants in soil and dust are presented for arsenic, cadmium, pentachlorophenol, PCBs, and dioxin as recommended by EPA's Office of Research and Development (USEPA 1992a). Otherwise, default skin absorption fractions are assumed to be 0.01 and 0.10, for inorganics and organics, respectively.

## 3.0 USING THE PRG TABLE

The decision to use PRGs at a site will be driven by the potential benefits of having generic risk-based concentrations in the absence of site-specific risk assessments. The original intended use of PRGs was to provide initial cleanup goals for individual chemicals given specific medium and land-use combinations (see RAGS Part B, 1991), however risk-based PRGs actually have several uses in addition to providing initial goals. These include:

- Screening sites to determine further evaluation
- Prioritizing areas of concern at megasites (e.g. federal facilities)
- Calculating risks associated with multiple contaminants

A few basic procedures are recommended for using PRGs properly. These are briefly described below. Potential problems with the use of PRGs are also identified.

## 3.1 Developing a Conceptual Site Model

The primary condition for use of PRGs is that exposure pathways of concern and conditions at the site match those taken into account by the PRG framework. Thus, it is always necessary to develop a conceptual site model (CSM) to identify likely contaminant source areas, exposure pathways, and potential receptors. This information can be used to determine the applicability of PRGs at the site and the need for additional information. For those pathways not covered by PRGs, a risk assessment specific to these additional pathways may be necessary. Nonetheless, the PRG lookup values will still be useful in such situations for focusing further investigative efforts on the exposure pathways not addressed.

To develop a site-specific CSM, perform an extensive records search and compile existing data (e.g. available site sampling data, historical records, aerial photographs, and hydrogeologic information). Once this information is obtained, CSM worksheets such as those provided in ASTM's *Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites* (1995) can be used to tailor the generic worksheet model to a site-specific CSM. The final CSM diagram represents linkages among contaminant sources, release mechanisms, exposure pathways and routes and receptors. It summarizes our understanding of the contamination problem.

As a final check, the CSM should answer the following questions:

- Are there potential ecological concerns?
- Is there potential for land use other than those covered by the PRGs (that is, residential and industrial)?
- Are there other likely human exposure pathways that were not considered in development of the PRGs (e.g. impact to groundwater, local fish consumption; raising beef, dairy, or other livestock)?
- Are there unusual site conditions (e.g. large areas of contamination, high fugitive dust levels, potential for indoor air contamination)?

If any of these four conditions exist, the PRG may need to be adjusted to reflect this new information. Suggested references for evaluating pathways not currently evaluated by Region 9 PRG's are presented in Exhibit 3-1.

**EXHIBIT 3-1**
**SUGGESTED READINGS FOR EVALUATING SOIL CONTAMINANT PATHWAYS NOT CURRENTLY ADDRESSED BY REGION 9 PRGs**

| EXPOSURE PATHWAY | REFERENCE |
|---|---|
| Migration of contaminants to an underlying potable aquifer | *Soil Screening Guidance: User's Guide and Technical Background Document* (USEPA 1996a,b) |
| Ingestion via plant uptake | *Technical Support Document for Land Application of Sewage Sludge (USEPA 1992a)* |
| Ingestion via meat or dairy products | *Estimating Exposure to Dioxin-Like Compounds - Review Draft* (1994a) |
| Inhalation of volatiles that have migrated into basements | *Soil Screening Guidance: User's Guide and Technical Background Document* (USEPA 1996a,b) |
| Terrestrial environmental pathways | *Role of the Ecological Risk Assessment in the Baseline Risk Assessment* (USEPA 1994b) |

## 3.2 Background Levels Evaluation

A necessary step in determining the usefulness of Region 9 PRGs is the consideration of background contaminant concentrations. EPA may be concerned with two types of background at sites: naturally occurring and anthropogenic. Natural background is usually limited to metals whereas anthropogenic (i.e. human-made) background includes both organic and inorganic contaminants. Before embarking on an extensive sampling and analysis program to determine local background concentrations in the area, one should first compile existing data on the subject. Far too often there is pertinent information in the literature that gets ignored, resulting in needless expenditures of time and money.

Generally EPA does not clean up below natural background. If natural background concentrations are higher than the PRGs, the generic PRGs may not be the best tool for site decisionmaking. Or, an adjustment of the PRG may be needed. For example, naturally occurring arsenic frequently is higher than the soil PRG set equal to a one-in-one-million cancer risk (the point of departure), thus an alternative PRG for arsenic is provided in the lookup tables based on non-cancer endpoints that is still protective of cancer risks as well (i.e. falls within EPA's "acceptable" risk range). Because of the problems associated with adjusting PRGs to an alternate risk level, this procedure is not recommended without first

consulting a staff toxicologist at state and / or federal regulatory agencies.

Where anthropogenic background levels exceed PRGs and EPA has determined that a response action is necessary and feasible, EPA's goal will be to develop a comprehensive response to the widespread contamination. This will often require coordination with different authorities that have jurisdiction over the sources of contamination in the area.

### 3.3 Risk Screening

A suggested stepwise approach for screening sites with PRGs is as follows:

- Perform an extensive records search and compile existing data.

- Identify site contaminants in the PRG Table. Record the PRG concentrations for various media and note whether PRG is based on cancer risk (indicated by "ca") or noncancer hazard (indicated by "nc"). Segregate cancer PRGs from non-cancer PRGs and exclude (but don't eliminate) non-risk based PRGs ("sat" or "max").

- For cancer risk estimates, take the site-specific concentration (maximum or 95 UCL) and divide by the PRG concentrations that are designated for cancer evaluation ("ca"). Multiply this ratio by $10^{-6}$ to estimate chemical-specific risk. For multiple pollutants, simply add the risk for each chemical :

$$Risk = [(\frac{conc_x}{PRG_x}) + (\frac{conc_y}{PRG_y}) + (\frac{conc_z}{PRG_z})] \times 10^{-6}$$

- For non-cancer hazard estimates. Divide concentration term by its respective non-cancer PRG designated as "nc" and sum the ratios for multiple contaminants. [Note that carcinogens may also have an associated non-cancer PRG that is not listed in the printed copy of the table and these will also need to be obtained in order to complete the non-cancer evaluation.] The non-cancer ratio represents a hazard index (HI). A hazard index of 1 or less is generally considered safe . A ratio greater than 1 suggests further evaluation:

$$Hazard\ Index = [(\frac{conc_x}{PRG_x}) + (\frac{conc_y}{PRG_y}) + (\frac{conc_z}{PRG_z})]$$

For more information on screening site risks, the reader should contact EPA Region 9's Technical Support Team.

### 3. 4 Potential Problems

As with any risk-based tool, the potential exists for misapplication. In most cases the root cause will be a lack of understanding of the intended use of Region 9 PRGs. In order to prevent misuse of PRGs, the following should be avoided:

- Applying PRGs to a site without adequately developing a conceptual site model that identifies relevant exposure pathways and exposure scenarios,
- Not considering background concentrations when choosing PRGs as cleanup goals,
- Use of PRGs as cleanup levels without the nine-criteria analysis specified in the National Contingency Plan (or, comparable analysis for programs outside of Superfund),
- Use of PRGs as cleanup levels without verifying numbers with a toxicologist,
- Use of antiquated PRG tables that have been superseded by more recent publications,
- Not considering the effects of additivity when screening multiple chemicals, and
- Adjusting PRGs upward by factors of 10 or 100 without consulting a toxicologist.

## 4.0 TECHNICAL SUPPORT DOCUMENTATION

Region 9 PRGs consider human exposure hazards to chemicals from contact with contaminated soils, air, and water. The emphasis of the PRG equations and technical discussion are aimed at developing initial goals for soils, since this is an area where few standards exist. For air and water, additional reference concentrations or standards are available for many chemicals (e.g. non-zero MCLGs, AWQC, and NAAQS) and consequently the discussion of these media are brief.

### 4.1 Inhalation of Volatiles and Fugitive Dusts

Agency toxicity criteria indicate that risks from exposure to some chemicals via inhalation far outweigh the risk via ingestion; therefore soil PRGs have been designed to address this pathway as well. The models used to calculate PRGs for inhalation of volatiles / particulates are updates of risk assessment methods presented in RAGS Part B (USEPA 1991a) and are consistent with the *Soil Screening Guidance: User's Guide and Technical Background*

*Document* (USEPA 1996a,b).

To address the soil-to-air pathways the PRG calculations incorporate volatilization factors ($VF_s$) for volatile contaminants and particulate emission factors (PEF) for nonvolatile contaminants. These factors relate soil contaminant concentrations to air contaminant concentrations that may be inhaled on-site. The $VF_s$ and PEF equations can be broken into two separate models: an emission model to estimate emissions of the contaminant from the soil and a dispersion model to simulate the dispersion of the contaminant in the atmosphere.

It should be noted that the box model in RAGS Part B has been replaced with a dispersion term (Q/C) derived from a modeling exercise using meteorological data from 29 locations across the United States because the box model may not be applicable to a broad range of site types and meteorology and does not utilize state-of-the-art techniques developed for regulatory dispersion modeling. The dispersion model for both volatiles and particulates is the AREA-ST, an updated version of the Office of Air Quality Planning and Standards, Industrial Source Complex Model, ISC2. However, different Q/C terms are used in the VF and PEF equations. Los Angeles was selected as the 90th percentile data set for volatiles and Minneapolis was selected as the 90th percentile data set for fugitive dusts (USEPA 1996 a,b). A default source size of 0.5 acres was chosen for the PRG calculations. This is consistent with the default exposure area over which Region 9 typically averages contaminant concentrations in soils. If unusual site conditions exist such that the area source is substantially larger than the default source size assumed here, an alternative Q/C could be applied (see USEPA 1996a,b).

Volatilization Factor for Soils

Volatile chemicals, defined as those chemicals having a Henry's Law constant greater than $10^{-5}$ (atm-$m^3$/mol) and a molecular weight less than 200 g/mole, were screened for inhalation exposures using a volatilization factor for soils ($VF_s$). Please note that $VF_s$'s are available in the electronic version of the PRG table.

The emission terms used in the $VF_s$ are chemical-specific and were calculated from physical-chemical information obtained from a number of sources including *Superfund Exposure Assessment Manual* (SEAM, EPA 1988), *Subsurface Contamination Reference Guide* (EPA 1990a), *Fate and Exposure Data* (Howard 1991), and *Superfund Chemical Data Matrix* (USEPA 1994c). In those cases where Diffusivity Coefficients (Di) were not provided in existing literature, Di's were calculated using Fuller's Method described in SEAM. A surrogate term was required for some chemicals that lacked physico-chemical information. In these cases, a proxy chemical of similar structure was used that may over- or under-estimate the PRG for soils. Physico-chemical information is available in the electronic version of the PRG table. To access this information, the user should display the hidden columns in the table.

Equation 4-9 forms the basis for deriving generic soil PRGs for the inhalation pathway. The following parameters in the standardized equation can be replaced with specific site data to

develop a simple site-specific PRG

- Source area
- Average soil moisture content
- Average fraction organic carbon content
- Dry soil bulk density

The basic principle of the $VF_s$ model is applicable only if the soil contaminant concentration is at or below soil saturation. Above this level, the model cannot predict an accurate $VF_s$. If the PRG calculated using $VF_s$ was greater than the calculated "sat" (Equation 4-10), the PRG was set equal to "sat" in accordance with *Soil Screening Guidance* (USEPA 1996 a,b).

Volatilization Factor for Tap Water

For tap water, an upperbound volatilization constant ($VF_w$) is used that is based on all uses of household water (e.g showering, laundering, and dish washing). Certain assumptions were made. For example, it is assumed that the volume of water used in a residence for a family of four is 720 L/day, the volume of the dwelling is 150,000 L and the air exchange rate is 0.25 air changes/hour (Andelman in RAGS Part B). Furthermore, it is assumed that the average transfer efficiency weighted by water use is 50 percent (i.e. half of the concentration of each chemical in water will be transferred into air by all water uses). Note: the range of transfer efficiencies extends from 30% for toilets to 90% for dishwashers.

Particulate Emission Factor for Soils

Inhalation of chemicals adsorbed to respirable particles ($PM_{10}$) were assessed using a default PEF equal to $1.316 \times 10^9$ $m^3/kg$ that relates the contaminant concentration in soil with the concentration of respirable particles in the air due to fugitive dust emissions from contaminated soils. The generic PEF was derived using default values in Equation 4-11, which corresponds to a receptor point concentration of approximately 0.76 $ug/m^3$. The relationship is derived by Cowherd (1985) for a rapid assessment procedure applicable to a typical hazardous waste site where the surface contamination provides a relatively continuous and constant potential for emission over an extended period of time (e.g. years). This represents an annual average emission rate based on wind erosion that should be compared with chronic health criteria; it is not appropriate for evaluating the potential for more acute exposures.

The impact of the PEF on the resultant PRG concentration (that combines soil exposure pathways for ingestion, skin contact, and inhalation) can be assessed by downloading the PRG tables and displaying the hidden columns. With the exception of specific heavy metals, the PEF does not appear to significantly affect most soil PRGs. Equation 4-11 forms the basis for deriving a generic PEF for the inhalation pathway. For more details regarding specific parameters used in the PEF model, the reader is referred to *Soil Screening Guidance: Technical Background Document* (USEPA 1996a).

**Note: the generic PEF evaluates windborne emissions and does not consider dust emissions from traffic or other forms of mechanical disturbance that could lead to greater emissions than assumed here.**

## 4.2 Dermal Contact with Contaminants in Soil

Much uncertainty surrounds the determination of hazards associated with skin contact with soils. One important data gap is the lack of EPA verified toxicity values for the dermal route. For screening purposes it is assumed that dermal toxicity values can be route-to-route extrapolated from oral values but this may not always be an appropriate assumption and should be checked.

Thus far, chemical-specific absorption values for skin have been recommended for only five chemicals (arsenic, cadmium, pentachlorophenol, PCBs, and dioxin) by EPA's Office of Research and Development. For all other chemicals, default absorption values for inorganics and organics are assumed to be 1 and 10 percent, respectively. At 10 % skin absorption, the dermal dose is estimated to equal an ingestion dose for adults, using the best estimate default values in *Dermal Exposure Assessment: Principles and Applications* (EPA 1992). At 1 % absorption, the dermal dose is estimated to be 10% of the oral dose (i.e. based on an adult ingestion rate of 100 mg per day). Note: worker and children intake rates (50 and 200 mg per day, respectively) yield somewhat different results.

dermal dose = ingestion dose

$$C_{soil} \times ABS \times AF \times SA = C_{soil} \times IR$$

$$ABS = \frac{(100 mg/day)}{[(0.2 mg/cm^2\text{-}day)(5000 cm^2)]} = 0.10$$

## 4.3 SSLs for the Migration to Groundwater Pathway

The methodology for calculating SSLs for the migration to groundwater was developed to identify chemical concentrations in soil that have the potential to contaminate groundwater. Migration of contaminants from soil to groundwater can be envisioned as a two-stage process: (1) release of contaminant in soil leachate and (2) transport of the contaminant through the underlying soil and aquifer to a receptor well. The SSL methodology considers both of these fate and transport mechanisms.

SSLs are backcalculated from acceptable ground water concentrations (i.e. nonzero MCLGs, MCLs, or risk-based PRGs). First, the acceptable groundwater concentration is multiplied by a dilution factor to obtain a target leachate concentration. For example, if the dilution factor

is 10 and the acceptable ground water concentration is 0.05 mg/L, the target soil leachate concentration would be 0.5 mg/L. The partition equation (presented in the *Soil Screening Guidance* document) is then used to calculate the total soil concentration (i.e. SSL) corresponding to this soil leachate concentration.

The SSL methodology was designed for use during the early stages of a site evaluation when information about subsurface conditions may be limited. Because of this constraint, the methodology is based on conservative, simplifying assumptions about the release and transport of contaminants in the subsurface. For more on SSLs, and how to calculate site-specific SSLs versus generic SSLs presented in the PRG table, the reader is referred to the *Soil Screening Guidance* document (USEPA 1996a,b).

## 4.4 Exposure Factors

Default exposure factors were obtained primarily from RAGS Supplemental Guidance Standard Default *Exposure Factors* (OSWER Directive, 9285.6-03) dated March 25, 1991 and more recent information from U.S. EPA's Office of Solid Waste and Emergency Response, U.S. EPA's Office of Research and Development, and California EPA's Department of Toxic Substances Control (see Exhibit 4-1).

Because contact rates may be different for children and adults, carcinogenic risks during the first 30 years of life were calculated using age-adjusted factors ("adj"). Use of age-adjusted factors are especially important for soil ingestion exposures, which are higher during childhood and decrease with age. However, for purposes of combining exposures across pathways, additional age-adjusted factors are used for inhalation and dermal exposures. These factors approximate the integrated exposure from birth until age 30 combining contact rates, body weights, and exposure durations for two age groups - small children and adults. Age-adjusted factors were obtained from RAGS PART B or developed by analogy (see derivations next page).

For soils only, noncarcinogenic contaminants are evaluated in children separately from adults. No age-adjustment factor is used in this case. The focus on children is considered protective of the higher daily intake rates of soil by children and their lower body weight. For maintaining consistency when evaluating soils, dermal and inhalation exposures are also based on childhood contact rates.

(1) ingestion([mg•yr]/[kg•d]):

$$IFS_{adj} = \frac{ED_c \times IRS_c}{BW_c} + \frac{(ED_r - ED_c) \times IRS_a}{BW_a}$$

(2) skin contact([mg•yr]/[kg•d]):

$$SFS_{adj} = \frac{ED_c \times AF \times SA_c}{BW_c} + \frac{(ED_r - ED_c) \times AF \times SA_a}{BW_a}$$

(3) inhalation ([m³•yr]/[kg•d]):

$$InhF_{adj} = \frac{ED_c \times IRA_c}{BW_c} + \frac{(ED_r - ED_c) \times IRA_a}{BW_a}$$

## 4.5 PRG Equations

The equations used to calculate the PRGs for carcinogenic and noncarcinogenic contaminants are presented in Equations 4-1 through 4-8. The PRG equations update RAGS Part B equations. Briefly, PRGs are risk assessments run in reverse. The methodology backcalculates a soil, air, or water concentration level from a target risk (for carcinogens) or hazard quotient (for noncarcinogens). For completeness, the soil equations combine risks from ingestion, skin contact, and inhalation simultaneously. Note: the electronic version of the table also includes pathway-specific PRGs, should the user decide against combining specific exposure pathways; or, the user wants to identify the relative contribution of each pathway to exposure.

To calculate PRGs for volatile chemicals in soil, a chemical-specific volatilization factor is calculated per Equation 4-9. Because of its reliance on Henry's law, the $VF_s$ model is applicable only when the contaminant concentration in soil is at or below saturation (i.e. there is no free-phase contaminant present). Soil saturation ("sat") corresponds to the contaminant concentration in soil at which the adsorptive limits of the soil particles and the solubility limits of the available soil moisture have been reached. Above this point, pure liquid-phase contaminant is expected in the soil. If the PRG calculated using $VF_s$ was greater than the calculated sat, the PRG was set equal to sat, in accordance with *Soil Screening Guidance* (USEPA 1996 a,b). The updated equation for deriving sat is presented in Equation 4-10.

# EXHIBIT 4-1
# STANDARD DEFAULT FACTORS

| Symbol | Definition (units) | Default | Reference |
|---|---|---|---|
| CSFo | Cancer slope factor oral (mg/kg-d)-1 | – | IRIS, HEAST, or NCEA |
| CSFi | Cancer slope factor inhaled (mg/kg-d)-1 | – | IRIS, HEAST, or NCEA |
| RfDo | Reference dose oral (mg/kg-d) | – | IRIS, HEAST, or NCEA |
| RfDi | Reference dose inhaled (mg/kg-d) | – | IRIS, HEAST, or NCEA |
| TR | Target cancer risk | $10^{-4}$ | – |
| THQ | Target hazard quotient | 1 | – |
| BWa | Body weight, adult (kg) | 70 | RAGS (Part A), EPA 1989 (EPA/540/1-89/002) |
| BWc | Body weight, child (kg) | 15 | Exposure Factors , EPA 1991 (OSWER No. 9285.6-03) |
| ATc | Averaging time - carcinogens (days) | 25550 | RAGS(Part A), EPA 1989 (EPA/540/1-89/002) |
| ATn | Averaging time - noncarcinogens (days) | ED*365 | |
| SAa | 25% Surface area, adult ($cm^2$/day) | 5000 | Dermal Assessment, EPA 1992 (EPA/600/8-91/011B) |
| SAc | 25% Surface area, child ($cm^2$/day) | 2000 | Dermal Assessment, EPA 1992 (EPA/ 600/8-9/011B) |
| AF | Adherence factor (mg/$cm^2$) | 0.2 | Dermal Assessment, EPA 1992 (EPA/ 600/8-9/011B) |
| ABS | Skin absorption (unitless): | | |
| | – organics | 0.1 | PEA, Cal-EPA (DTSC, 1994) |
| | –inorganics | 0.01 | PEA, Cal-EPA (DTSC, 1994) |
| IRAa | Inhalation rate - adult ($m^3$/day) | 20 | Exposure Factors , EPA 1991 (OSWER No. 9285.6-03) |
| IRAc | Inhalation rate - child ($m^3$/day) | 10 | RAGS (Part A), EPA 1989 (EPA/540/1-89/002) |
| IRWa | Drinking water ingestion - adult (L/day | 2 | RAGS(Part A), EPA 1989 (EPA/540/1-89/002) |
| IRWc | Drinking water ingestion - child (L/day) | 1 | PEA, Cal-EPA (DTSC, 1994) |
| IRSa | Soil ingestion - adult (mg/day) | 100 | Exposure Factors , EPA 1991 (OSWER No. 9285.6-03) |
| IRSc | Soil ingestion - child (mg/day), | 200 | Exposure Factors , EPA 1991 (OSWER No. 9285.6-03) |
| IRSo | Soil ingestion - occupational (mg/day) | 50 | Exposure Factors , EPA 1991 (OSWER No. 9285.6-03) |
| EFr | Exposure frequency - residential (d/y) | 350 | Exposure Factors , EPA 1991 (OSWER No. 9285.6-03) |
| EFo | Exposure frequency - occupational (d/y) | 250 | Exposure Factors , EPA 1991 (OSWER No. 9285.6-03) |
| EDr | Exposure duration - residential (years) | 30* | Exposure Factors , EPA 1991 (OSWER No. 9285.6-03) |
| EDc | Exposure duration - child (years) | 6 | Exposure Factors , EPA 1991 (OSWER No. 9285.6-03) |
| EDo | Exposure duration - occupational (years) | 25 | Exposure Factors , EPA 1991 (OSWER No. 9285.6-03) |
| | Age-adjusted factors for carcinogens: | | |
| IFSadj | Ingestion factor, soils ([mg-yr]/[kg-d]) | 114 | RAGS(Part B) , EPA 1991 (OSWER No. 9285.7-01B) |
| SFSadj | Skin contact factor, soils ([mg-yr]/[kg-d]) | 503 | By analogy to RAGS (Part B) |
| InhFadj | Inhalation factor ([$m^3$-yr]/[kg-d]) | 11 | By analogy to RAGS (Part B) |
| IFWadj | Ingestion factor, water ([l-yr]/[kg-d]) | 1.1 | By analogy to RAGS (Part B) |
| VFw | Volatilization factor for water (L/$m^3$) | 0.5 | RAGS(Part B) , EPA 1991 (OSWER No. 9285.7-01B) |
| PEF | Particulate emission factor ($m^3$/kg) | See below | Soil Screening Guidance (EPA 1996a,b) |
| VFs | Volatilization factor for soil ($m^3$/kg) | See below | Soil Screening Guidance (EPA 1996a,b) |
| sat | Soil saturation concentration (mg/kg) | See below | Soil Screening Guidance (EPA 1996a,b) |

Footnote:
*Exposure duration for lifetime residents is assumed to be 30 years total. For carcinogens, exposures are combined for children and adults (24 years) .

## PRG EQUATIONS

Soil Equations: For soils, equations were based on three exposure routes (ingestion, skin contact, and inhalation).

**Equation 4-1: Combined Exposures to Carcinogenic Contaminants in Residential Soil**

$$C(mg/kg) = \frac{TR \times AT_c}{EF_r \left[ \left( \frac{IFS_{adj} \times CSF_o}{10^6 mg/kg} \right) + \left( \frac{SFS_{adj} \times ABS \times CSF_o}{10^6 mg/kg} \right) + \left( \frac{InhF_{adj} \times CSF_i}{VF_s^a} \right) \right]}$$

**Equation 4-2: Combined Exposures to Noncarcinogenic Contaminants in Residential Soil**

$$C(mg/kg) = \frac{THQ \times BW_c \times AT_n}{EF_r \times ED_c \left[ \left( \frac{1}{RfD_o} \times \frac{IRS_c}{10^6 mg/kg} \right) + \left( \frac{1}{RfD_o} \times \frac{SA_c \times AF \times ABS}{10^6 mg/kg} \right) + \left( \frac{1}{RfD_i} \times \frac{IRA_c}{VF_s^a} \right) \right]}$$

**Equation 4-3: Combined Exposures to Carcinogenic Contaminants in Industrial Soil**

$$C(mg/kg) = \frac{TR \times BW_a \times AT_c}{EF_o \times ED_o \left[ \left( \frac{IRS_o \times CSF_o}{10^6 mg/kg} \right) + \left( \frac{SA_a \times AF \times ABS \times CSF_o}{10^6 mg/kg} \right) + \left( \frac{IRA_a \times CSF_i}{VF_s^a} \right) \right]}$$

**Equation 4-4: Combined Exposures to Noncarcinogenic Contaminants in Industrial Soil**

$$C(mg/kg) = \frac{THQ \times BW_a \times AT_n}{EF_o \times ED_o \left[ \left( \frac{1}{RfD_o} \times \frac{IRS_o}{10^6 mg/kg} \right) + \left( \frac{1}{RfD_o} \times \frac{SA_a \times AF \times ABS}{10^6 mg/kg} \right) + \left( \frac{1}{RfD_i} \times \frac{IRA_a}{VF_s^a} \right) \right]}$$

Footnote:

[a]Use $VF_s$ for volatile chemicals (defined as having a Henry's Law Constant [atm-m$^3$/mol] greater than $10^{-4}$ and a molecular weight less tha 200 grams/mol) or PEF for non-volatile chemicals.

Tap Water Equations:

**Equation 4-5: Ingestion and Inhalation Exposures to Carcinogenic Contaminants in Water**

$$C(ug/L) = \frac{TR \times AT_c \times 1000ug/mg}{EF_r\ [(IFW_{adj} \times CSF_o) + (VF_w \times InhF_{adj} \times CSF_i)]}$$

**Equation 4-6: Ingestion and Inhalation Exposures to Noncarcinogenic Contaminants in Water**

$$C(ug/L) = \frac{THQ \times BW_a \times AT_n \times 1000ug/mg}{EF_r \times ED_r\ [(\frac{IRW_a}{RfD_o}) + (\frac{VF_w \times IRA_a}{RfD_i})]}$$

Air Equations:

**Equation 4-7: Inhalation Exposures to Carcinogenic Contaminants in Air**

$$C(ug/m^3) = \frac{TR \times AT_c \times 1000ug/mg}{EF_r \times InhF_{adj} \times CSF_i}$$

**Equation 4-8: Inhalation Exposures to Noncarcinogenic Contaminants in Air**

$$C(ug/m^3) = \frac{THQ \times RfD_i \times BW_a \times AT_n \times 1000ug/mg}{EF_r \times ED_r \times IRA_a}$$

## SOIL-TO-AIR VOLATILIZATION FACTOR ($VF_s$)

**Equation 4-9: Derivation of the Volatilization Factor**

$$VF_s(m^3/kg) = (Q/C) \times \frac{(3.14 \times D_A \times T)^{1/2}}{(2 \times \rho_b \times D_A)} \times 10^{-4}(m^2/cm^2)$$

where:

$$D_A = \frac{[(\Theta_a^{10/3} D_i H' + \Theta_w^{10/3} D_w)/n^2]}{\rho_B K_d + \Theta_w + \Theta_a H'}$$

| Parameter | Definition (units) | Default |
|---|---|---|
| $VF_s$ | Volatilization factor ($m^3$/kg) | – |
| $D_A$ | Apparent diffusivity ($cm^2$/s) | – |
| Q/C | Inverse of the mean conc. at the center of a 0.5-acre square source ($g/m^2$-s per $kg/m^3$) | 68.81 |
| T | Exposure interval (s) | $9.5 \times 10^8$ |
| $\rho_b$ | Dry soil bulk density ($g/cm^3$) | 1.5 |
| $\Theta_a$ | Air filled soil porosity ($L_{air}/L_{soil}$) | 0.28 or n-$\Theta_w$ |
| n | Total soil porosity ($L_{pore}/L_{soil}$) | 0.43 or 1 - ($\rho_b/\rho_s$) |
| $\Theta_w$ | Water-filled soil porosity ($L_{water}/L_{soil}$) | 0.15 |
| $\rho_s$ | Soil particle density ($g/cm^3$) | 2.65 |
| Di | Diffusivity in air ($cm^2$/s) | Chemical-specific |
| H | Henry's Law constant (atm-$m^3$/mol) | Chemical-specific |
| H' | Dimensionless Henry's Law constant | Calculated from H by multiplying by 41 (USEPA 1991a) |
| $D_w$ | Diffusivity in water ($cm^2$/s) | Chemical-specific |
| $K_d$ | Soil-water partition coefficient ($cm^3$/g) = $K_{oc}f_{oc}$ | Chemical-specific |
| $K_{oc}$ | Soil organic carbon-water partition coefficient ($cm^3$/g) | Chemical-specific |
| $f_{oc}$ | Fraction organic carbon in soil (g/g) | 0.006 (0.6%) |

## SOIL SATURATION CONCENTRATION (sat)

**Equation 4-10: Derivation of the Soil Saturation Limit**

$$sat = \frac{S}{\rho_b} \left(K_d \rho_b + \Theta_w + H' \Theta_a\right)$$

| Parameter | Definition (units) | Default |
|---|---|---|
| sat | Soil saturation concentration (mg/kg) | – |
| S | Solubility in water (mg/L-water) | Chemical-specific |
| $\rho_b$ | Dry soil bulk density (kg/L) | 1.5 |
| n | Total soil porosity ($L_{pore}/L_{soil}$) | 0.43 or 1 - ($\rho_b/\rho_s$) |
| $\rho_s$ | Soil particle density (kg/L) | 2.65 |
| $K_d$ | Soil-water partition coefficient (L/kg) | $K_{oc}$ x $f_{oc}$ (chemical-specific) |
| $k_{oc}$ | Soil organic carbon/water partition coefficient (L/kg) | Chemical-specific |
| $f_{oc}$ | Fraction organic carbon content of soil (g/g) | 0.006 or site-specific |
| $\Theta_w$ | Water-filled soil porosity ($L_{water}/L_{soil}$) | 0.15 |
| $\Theta_a$ | ll porosity ($L_{air}/L_{soil}$) | 0.28 or n-$\Theta_w$ |
| w | soil moisture content $_w/kg_{soil}$ or $L_{water}/kg_{soil}$) | 0.1 |
| H | ıry's Law constant (atm-m$^3$/mol) | Chemical-specific |
| H' | ıensionless Henry's Law constant | H x 41, where 41 is a units conversion factor |

## SOIL-TO-AIR PARTICULATE EMISSION FACTOR (PEF)

**Equation 4-11: Derivation of the Particulate Emission Factor**

$$PEF(m^3/kg) = Q/C \times \frac{3600 s/h}{0.036 \times (1-V) \times (U_m/U_t)^3 \times F(x)}$$

| Parameter | Definition (units) | Default |
|---|---|---|
| PEF | Particulate emission factor ($m^3$/kg) | $1.316 \times 10^9$ |
| Q/C | Inverse of the mean concentration at the center of a 0.5-acre-square source (g/$m^2$-s per kg/$m^3$) | 90.80 |
| V | Fraction of vegetative cover (unitless) | 0.5 |
| $U_m$ | Mean annual windspeed (m/s) | 4.69 |
| $U_t$ | Equivalent threshold value of windspeed at 7 m (m/s) | 11.32 |
| F(x) | Function dependent on $U_m/U_t$ derived using Cowherd (1985) (unitless) | 0.194 |

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# APPENDIX F

# CH2M HILL COLLECTED DUPLICATE SAMPLE ANALYSES

CLi Testing and Data Management Services

# Analytical Report

1101 Richfield Road ▪ Placentia, CA 92870 ▪ (714) 572-3270 ▪ Fax (714) 572-3274

CASE NARRATIVE

**SDG #: 9803.0132-HB**

**REPORT DATE:** 4/14/98

**REPORTED TO:** CH2M HILL
3 HUTTON CENTRE DRIVE
SUITE 200
SANTA ANA, CA 92707

**ATTN.:** MR. ROB LOWEY

**PROJECT #:** 137125.ED.WC.HB
**PROJECT NAME:** SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

**DATE SAMPLED:** 3/19-20/98
**DATE RECEIVED:** 3/20/98
**# OF SAMPLES:** 13
**SAMPLE MATRIX:** SOIL, WATER
**CLIENT SAMPLE ID:**

| SOIL | WATER | |
|---|---|---|
| HG20-01/CH | HG068-10-W/CH | HG20-10-W/CH |
| HG20-02/CH | HG08-10-W/CH | HG20-11-W/CH |
| HG19-01/CH | HG05-10-W/CH | HG19-10-W/CH |
| HG19-02/CH | HG05-11-W/CH | EB0320/CH |
| HG19-03/CH | | |

***NOTE: All metals are on hold as per client request.***

## IMPORTANT

***Holding time has been exceeded for 8260A soil samples. Data is hereby released at no charge. Data may be used as an approximate value. The water samples were run within holding time.***

## SAMPLE HANDLING & CONTROL STATEMENT

*The above mentioned samples were received in appropriate containers accompanied by a fully signed and dated chain-of-custody record. The containers were assigned unique identification numbers and had sufficient amount for the test requested unless otherwise noted in the accompanying laboratory report. The ice chest(s) were received under appropriate custody seals. There were no site specific quality control requirements made at the time of sample submittal.*

## QUALITY CONTROL SUMMARY STATEMENT

*Laboratory Quality Control parameters and results of instrument calibration standards were all within control limits and the analytical data hereby submitted falls within acceptable limits of accuracy and precision unless otherwise indicated. Please see the Quality Control Data submitted in this report for additional information. In addition, necessary information regarding instrument calibration, MS/MSD, LCS/LCSD, method blank, and all other pertinent Quality Control measures are hereby enclosed for review.*

**SUBMITTED BY:**

Girma Selassie
Director

CERTIFICATE OF APPROVED ANALYSIS

*The information contained in this cover sheet is an integral part of the attached analytical report.*

DOHS Lab Certificate #: 1552
Expiration Date: June 30, 1999

A2LA Certificate #: 0389.01
Expiration Date: September 30, 1996 (Re-Accreditation in process)

Approved by the State of California, Department of Health Services & A2LA-American Association for Laboratory Accreditation.
This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction or use of the Laboratory's name for advertising or quotation without authorization is prohibited.

Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0132-HB



PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

| | |
|---|---|
| MATRIX: | LIQUID |
| UNIT: | µg/l |

| | |
|---|---|
| Prepared: | 3/20/98 |
| Analyzed: | 4/2/98 |
| Analyst: | DLB |

## VOLATILE ORGANICS, 8260A

| Lab ID: | CL0669B | CL15131 | CL15132 | CL15133 | CL15134 | Reporting Limit |
|---|---|---|---|---|---|---|
| Client Sample ID: | Method Blank | HG08-10-W/CH | HG05-10-W/CH | HG05-11-W/CH | HG20-10-W/CH | |
| COMPOUNDS / D.F. | 1 | 1 | 1 | 1 | 1 | |
| 1,1,1,2-tetrachloroethane | ND | ND | ND | ND | ND | 1.0 |
| 1,1,2,2-tetrachloroethane | ND | ND | ND | ND | ND | 1.0 |
| 1,1,1-trichloroethane | ND | ND | ND | ND | ND | 1.0 |
| 1,1,2-trichloroethane | ND | ND | ND | ND | ND | 1.0 |
| 1,2,3-trichlorobenzene | ND | ND | ND | ND | ND | 1.0 |
| 1,2,3-trichloropropane | ND | ND | ND | ND | ND | 1.0 |
| 1,2,4-trichlorobenzene | ND | ND | ND | ND | ND | 1.0 |
| 1,2,4-trimethylbenzene | ND | ND | ND | ND | ND | 1.0 |
| 1,3,5-trimethylbenzene | ND | ND | ND | ND | ND | 1.0 |
| 1,1-dichloroethane | ND | ND | ND | ND | ND | 1.0 |
| 1,1-dichloroethene | ND | ND | ND | ND | ND | |
| 1,1-dichloropropene | ND | ND | ND | ND | ND | |
| 1,2-dibromo-3-chloro-propane (DBCP) | ND | ND | ND | ND | ND | 20 |
| 1,2-dibromoethane (EDB) | ND | ND | ND | ND | ND | 1.0 |
| 1,2-dichlorobenzene | ND | ND | ND | ND | ND | 1.0 |
| 1,2-dichloroethane | ND | ND | ND | ND | ND | 1.0 |
| 1,2-dichloropropane | ND | ND | ND | ND | ND | 1.0 |
| 1,3-dichlorobenzene | ND | ND | ND | ND | ND | 1.0 |
| 1,3-dichloropropane | ND | ND | ND | ND | ND | 1.0 |
| 1,4-dichlorobenzene | ND | ND | ND | ND | ND | 1.0 |
| 2,2-dichloropropane | ND | ND | ND | ND | ND | 1.0 |
| 2-butanone | ND | ND | ND | ND | ND | 5.0 |
| 2-chloroethyl vinyl ether | ND | ND | ND | ND | ND | 10 |
| 2-chlorotoluene | ND | ND | ND | ND | ND | 1.0 |
| 2-hexanone | ND | ND | ND | ND | ND | 5.0 |
| 4-chlorotoluene | ND | ND | ND | ND | ND | 1.0 |
| 4-methyl-2-pentanone | ND | ND | ND | ND | ND | 5.0 |
| acetone | ND | ND | ND | ND | ND | 10 |
| benzene | ND | ND | ND | ND | ND | 1.0 |
| bromobenzene | ND | ND | ND | ND | ND | 1.0 |
| bromochloromethane | ND | ND | ND | ND | ND | 1.0 |
| bromodichloromethane | ND | ND | ND | ND | ND | 1.0 |
| bromoform | ND | ND | ND | ND | ND | 1.0 |
| bromomethane | ND | ND | ND | ND | ND | 2.0 |
| carbon disulfide | ND | ND | ND | ND | ND | 5 |
| carbon tetrachloride | ND | ND | ND | ND | ND | 1.0 |
| chlorobenzene | ND | ND | ND | ND | ND | 1.0 |
| chloroethane | ND | ND | ND | ND | ND | 2.0 |
| chloroform | ND | ND | ND | ND | ND | |

Continued on next page...

Testing and Data Management Services

1101 Richfield Road ■ Placentia, CA 92870 ■ (714) 572-3270 ■ Fax (714) 572-3274

# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0132-H8



PROJECT #: 137125.ED.WC.H8

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

| | |
|---|---|
| MATRIX: | LIQUID |
| UNIT: | µg/l |

| | |
|---|---|
| Prepared: | 3/20/98 |
| Analyzed: | 4/2/98 |
| Analyst: | DLB |

## VOLATILE ORGANICS, 8260A Continued...

| COMPOUNDS | Lab ID: / Client Sample ID: / D.F. | CL06698 Method Blank 1 | CL15131 HG08-10-W/CH 1 | CL15132 HG05-10-W/CH 1 | CL15133 HG05-11-W/CH 1 | CL15134 HG20-10-W/CH 1 | Reporting Limit |
|---|---|---|---|---|---|---|---|
| chloromethane | | ND | ND | ND | ND | ND | 2.0 |
| cis-1,2-dichloroethene | | ND | ND | 44 | 43 | ND | 0.50 |
| cis-1,3-dichloropropene | | ND | ND | ND | ND | ND | 1.0 |
| dibromochloromethane | | ND | ND | ND | ND | ND | 1.0 |
| dibromomethane | | ND | ND | ND | ND | ND | 1.0 |
| dichlorodifluoromethane | | ND | ND | ND | ND | ND | 2.0 |
| dichlorofluoromethane | | ND | ND | ND | ND | ND | 1.0 |
| ethylbenzene | | ND | ND | ND | ND | ND | 1.0 |
| hexachlorobutadiene | | ND | ND | ND | ND | ND | 1.0 |
| isopropylbenzene | | ND | ND | ND | ND | ND | 1.0 |
| isopropyltoluene | | ND | ND | ND | ND | ND | 0.50 |
| m-&p-xylenes | | ND | ND | ND | ND | ND | 5.0 |
| methylene chloride | | ND | ND | ND | ND | ND | 20 |
| methyl t-butyl ether [mtbe] | | ND | ND | ND | ND | ND | 1.0 |
| n-butylbenzene | | ND | ND | ND | ND | ND | 1.0 |
| n-propylbenzene | | ND | ND | ND | ND | ND | 1.0 |
| naphthalene | | ND | ND | ND | ND | ND | 0.50 |
| o-xylene | | ND | ND | ND | ND | ND | 1.0 |
| sec-butylbenzene | | ND | ND | ND | ND | ND | 1.0 |
| tetrachloroethene | | ND | ND | ND | ND | ND | 1.0 |
| toluene | | ND | ND | ND | ND | ND | 1.0 |
| trans-1,2-dichloroethene | | ND | ND | 16 | 16 | ND | 0.50 |
| trans-1,3-dichloropropene | | ND | ND | ND | ND | ND | 1.0 |
| trichloroethene | | ND | ND | ND | ND | ND | 1.0 |
| trichlorofluoromethane | | ND | ND | ND | ND | ND | 2.0 |
| vinyl acetate | | ND | ND | ND | ND | ND | 10 |
| vinyl chloride | | ND | ND | ND | ND | ND | 2.0 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | | | | | Control Limit |
|---|---|---|---|---|---|---|
| dibromofluoromethane | 103 | 103 | 105 | 104 | 105 | 80-120 |
| toluene-d8 | 98 | 96 | 98 | 97 | 97 | 80-120 |
| 4-bromofluorobenzene | 92 | 87 | 84 | 86 | 89 | 80-120 |

NOTES:

*ND denotes Not Detected at the indicated Reporting limit.*

CLi Testing and Data Management Services
1101 Richfield Road ▪ Placentia, CA 92870 ▪ (714) 572-3270 ▪ Fax (714) 572-3274

# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES
ATTN.: MR. ROB LOWEY

SDG #: 9803.0132-HB



PROJECT #: 13712S.ED.WC.HB
PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

| | |
|---|---|
| MATRIX: | LIQUID |
| UNIT: | µg/l |

| | |
|---|---|
| Prepared: | 3/20/98 |
| Analyzed: | 4/2/98 |
| Analyst: | DLB |

## VOLATILE ORGANICS, 8260A

| COMPOUNDS | Lab ID: CL15135 | CL15138 | CL15142 | Reporting Limit |
|---|---|---|---|---|
| | Client Sample ID: HG20-11-W/CH | HG19-10-W/CH | EB0320/CH | |
| | D.F. 1 | 1 | 1 | |
| 1,1,1,2-tetrachloroethane | ND | ND | ND | 1.0 |
| 1,1,2,2-tetrachloroethane | ND | ND | ND | 1.0 |
| 1,1,1-trichloroethane | ND | ND | ND | 1.0 |
| 1,1,2-trichloroethane | ND | ND | ND | 1.0 |
| 1,2,3-trichlorobenzene | ND | ND | ND | 1.0 |
| 1,2,3-trichloropropane | ND | ND | ND | 1.0 |
| 1,2,4-trichlorobenzene | ND | ND | ND | 1.0 |
| 1,2,4-trimethylbenzene | ND | ND | ND | 1.0 |
| 1,3,5-trimethylbenzene | ND | ND | ND | 1.0 |
| 1,1-dichloroethane | ND | ND | ND | 1.0 |
| 1,1-dichloroethene | ND | ND | ND | |
| 1,1-dichloropropene | ND | ND | ND | |
| 1,2-dibromo-3-chloro-propane (DBCP) | ND | ND | ND | 20 |
| 1,2-dibromoethane (EDB) | ND | ND | ND | 1.0 |
| 1,2-dichlorobenzene | ND | ND | ND | 1.0 |
| 1,2-dichloroethane | ND | ND | ND | 1.0 |
| 1,2-dichloropropane | ND | ND | ND | 1.0 |
| 1,3-dichlorobenzene | ND | ND | ND | 1.0 |
| 1,3-dichloropropane | ND | ND | ND | 1.0 |
| 1,4-dichlorobenzene | ND | ND | ND | 1.0 |
| 2,2-dichloropropane | ND | ND | ND | 1.0 |
| 2-butanone | ND | ND | ND | 5.0 |
| 2-chloroethyl vinyl ether | ND | ND | ND | 10 |
| 2-chlorotoluene | ND | ND | ND | 1.0 |
| 2-hexanone | ND | ND | ND | 5.0 |
| 4-chlorotoluene | ND | ND | ND | 1.0 |
| 4-methyl-2-pentanone | ND | ND | ND | 5.0 |
| acetone | ND | ND | ND | 10 |
| benzene | ND | ND | ND | 1.0 |
| bromobenzene | ND | ND | ND | 1.0 |
| bromochloromethane | ND | ND | ND | 1.0 |
| bromodichloromethane | ND | ND | ND | 1.0 |
| bromoform | ND | ND | ND | 1.0 |
| bromomethane | ND | ND | ND | 2.0 |
| carbon disulfide | ND | ND | ND | 5 |
| carbon tetrachloride | ND | ND | ND | 1.0 |
| chlorobenzene | ND | ND | ND | 1.0 |
| chloroethane | ND | ND | ND | |
| chloroform | ND | ND | ND | |

Continued on next page...



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# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0132-HB



PROJECT #: 13712S.ED.WC.H8

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

| | |
|---|---|
| MATRIX: | LIQUID |
| UNIT: | µg/l |

| | |
|---|---|
| Prepared: | 3/20/98 |
| Analyzed: | 4/2/98 |
| Analyst: | DLB |

## VOLATILE ORGANICS, 8260A Continued...

| COMPOUNDS | Lab ID: CL15135 | CL15138 | CL15142 | Reporting Limit |
|---|---|---|---|---|
| | Client Sample ID: HG20-11-W/CH | HG19-10-W/CH | EB0320/CH | |
| | D.F. 1 | 1 | 1 | |
| chloromethane | ND | ND | ND | 2.0 |
| cis-1,2-dichloroethene | ND | ND | ND | 0.50 |
| cis-1,3-dichloropropene | ND | ND | ND | 1.0 |
| dibromochloromethane | ND | ND | ND | 1.0 |
| dibromomethane | ND | ND | ND | 1.0 |
| dichlorodifluoromethane | ND | ND | ND | 2.0 |
| dichlorofluoromethane | ND | ND | ND | 1.0 |
| ethylbenzene | ND | ND | ND | 1.0 |
| hexachlorobutadiene | ND | ND | ND | 1.0 |
| isopropylbenzene | ND | ND | ND | 1.0 |
| isopropyltoluene | ND | ND | ND | 0.50 |
| m-&p-xylenes | ND | ND | ND | 5.0 |
| methylene chloride | ND | ND | ND | 20 |
| methyl t-butyl ether [mtbe] | ND | ND | ND | 1.0 |
| n-butylbenzene | ND | ND | ND | 1.0 |
| n-propylbenzene | ND | ND | ND | 1.0 |
| naphthalene | ND | ND | ND | 0.50 |
| o-xylene | ND | ND | ND | 1.0 |
| sec-butylbenzene | ND | ND | ND | 1.0 |
| tetrachloroethene | ND | ND | ND | 1.0 |
| toluene | ND | ND | ND | 1.0 |
| trans-1,2-dichloroethene | ND | ND | ND | 0.50 |
| trans-1,3-dichloropropene | ND | ND | ND | 1.0 |
| trichloroethene | ND | ND | ND | 1.0 |
| trichlorofluoromethane | ND | ND | ND | 2.0 |
| vinyl acetate | ND | ND | ND | 10 |
| vinyl chloride | ND | ND | ND | 2.0 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | | | Control Limit |
|---|---|---|---|---|
| dibromofluoromethane | 107 | 97 | 102 | 80-120 |
| toluene-d8 | 99 | 98 | 97 | 80-120 |
| 4-bromofluorobenzene | 88 | 89 | 88 | 80-120 |

NOTES:

*ND denotes Not Detected at the indicated Reporting limit.*



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# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES
ATTN.: MR. ROB LOWEY

SDG #: 9803.0132-HB



PROJECT #: 13712S.ED.WC.HB
PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

MATRIX: LIQUID
UNIT: µg/l

Prepared: 3/20/98
Analyzed: 4/2/98
Analyst: DLB

## QUALITY CONTROL DATA, 8260A

| LABORATORY CONTROL STANDARD/DUPLICATE | SPK CONC. (µg/l) | LCS (µg/l) | LCSD (µg/l) | % LCS | % LCSD | ACP % LCS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | PRECISION | |
| 1,1-dichloroethene | 50.0 | 50.5 | 48.3 | 101 | 97 | 61-145 | 5 | 0-20 |
| mtbe | 50.0 | 55.1 | 53.4 | 110 | 107 | 76-127 | 3 | 0-15 |
| benzene | 50.0 | 48.9 | 48.8 | 98 | 98 | 71-120 | 0 | 0-20 |
| trichloroethene | 50.0 | 49.1 | 48.9 | 98 | 98 | 76-125 | 0 | 0-18 |
| toluene | 50.0 | 49.3 | 49.8 | 98 | 99 | 75-130 | 1 | 0-18 |
| chlorobenzene | 50.0 | 49.4 | 49.3 | 99 | 99 | 60-145 | 0 | 0-20 |

| AUDIT DATA | LAB ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|
| | LABORATORY CONTROL STD. | BB00395 | 152 EPA 8260 STD | 4/2/98 |

| MATRIX SPIKE/ MATRIX SPIKE DUPLICATE | SPK CONC. (µg/l) | MS (µg/l) | MSD (µg/l) | % MS | % MSD | ACP % MS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | PRECISION | |
| 1,1-dichloroethene | 50.0 | 50.7 | 49.6 | 101 | 99 | 61-145 | 2 | 0-20 |
| mtbe | 50.0 | 43.1 | 43.4 | 86 | 86 | 76-127 | 1 | 0-15 |
| benzene | 50.0 | 48.8 | 48.8 | 97 | 97 | 71-120 | 0 | 0-20 |
| trichloroethene | 50.0 | 50.5 | 49.5 | 101 | 99 | 76-125 | 2 | 0-18 |
| toluene | 50.0 | 49.6 | 50.2 | 99 | 100 | 75-130 | 1 | 0-18 |
| chlorobenzene | 50.0 | 48.7 | 49.2 | 97 | 98 | 60-145 | 1 | 0-20 |

| AUDIT DATA | LAB ID | SAMPLE ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|---|
| | CL06481S.D | AG382-10-W/CH | BB00376 | 141 EPA 8260 STD | 3/21/98 |



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# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0132-HB



PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

MATRIX: SOIL

UNIT: µg/kg

Prepared: 4/7/98

Analyzed: 4/7/98

Analyst: DLB

## VOLATILE ORGANICS, 8260A

| COMPOUNDS | Lab ID: CL067698 | CL15136 | CL15137 | CL15139 | CL15140 | Reporting Limit |
|---|---|---|---|---|---|---|
| | Client Sample ID: Method Blank | HG20-01/CH | HG20-02/CH | HG19-01/CH | HG19-02/CH | |
| | D.F. 1 | 1 | 1 | 1 | 1 | |
| 1,1,1,2-tetrachloroethane | ND | ND | ND | ND | ND | 5.0 |
| 1,1,2,2-tetrachloroethane | ND | ND | ND | ND | ND | 5.0 |
| 1,1,1-trichloroethane | ND | ND | ND | ND | ND | 5.0 |
| 1,1,2-trichloroethane | ND | ND | ND | ND | ND | 5.0 |
| 1,2,3-trichlorobenzene | ND | ND | ND | ND | ND | 5.0 |
| 1,2,3-trichloropropane | ND | ND | ND | ND | ND | 5.0 |
| 1,2,4-trichlorobenzene | ND | ND | ND | ND | ND | 5.0 |
| 1,2,4-trimethylbenzene | ND | ND | ND | ND | ND | 5.0 |
| 1,3,5-trimethylbenzene | ND | ND | ND | ND | ND | 5.0 |
| 1,1-dichloroethane | ND | ND | ND | ND | ND | 5.0 |
| 1,1-dichloroethene | ND | ND | ND | ND | ND | 5.0 |
| 1,1-dichloropropene | ND | ND | ND | ND | ND | 5.0 |
| 1,2-dibromo-3-chloro-propane (DBCP) | ND | ND | ND | ND | ND | 10 |
| 1,2-dibromoethane (EDB) | ND | ND | ND | ND | ND | 5.0 |
| 1,2-dichlorobenzene | ND | ND | ND | ND | ND | 5.0 |
| 1,2-dichloroethane | ND | ND | ND | ND | ND | 5.0 |
| 1,2-dichloropropane | ND | ND | ND | ND | ND | 5.0 |
| 1,3-dichlorobenzene | ND | ND | ND | ND | ND | 5.0 |
| 1,3-dichloropropane | ND | ND | ND | ND | ND | 5.0 |
| 1,4-dichlorobenzene | ND | ND | ND | ND | ND | 5.0 |
| 2,2-dichloropropane | ND | ND | ND | ND | ND | 5.0 |
| 2-butanone | ND | ND | ND | ND | ND | 10 |
| 2-chloroethyl vinyl ether | ND | ND | ND | ND | ND | 10 |
| 2-chlorotoluene | ND | ND | ND | ND | ND | 5.0 |
| 2-hexanone | ND | ND | ND | ND | ND | 10 |
| 4-chlorotoluene | ND | ND | ND | ND | ND | 5.0 |
| 4-methyl-2-pentanone | ND | ND | ND | ND | ND | 10 |
| acetone | ND | ND | ND | ND | ND | 20 |
| benzene | ND | ND | ND | ND | ND | 5.0 |
| bromobenzene | ND | ND | ND | ND | ND | 5.0 |
| bromochloromethane | ND | ND | ND | ND | ND | 5.0 |
| bromodichloromethane | ND | ND | ND | ND | ND | 5.0 |
| bromoform | ND | ND | ND | ND | ND | 5.0 |
| bromomethane | ND | ND | ND | ND | ND | 10 |
| carbon disulfide | ND | ND | ND | ND | ND | 5.0 |
| carbon tetrachloride | ND | ND | ND | ND | ND | 5.0 |
| chlorobenzene | ND | ND | ND | ND | ND | 5.0 |
| chloroethane | ND | ND | ND | ND | ND | 10 |
| chloroform | ND | ND | ND | ND | ND | 5.0 |

Continued on next page...

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# Analytical Report

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CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0132-HB



PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON-HUNTINGTON BEACH GEN. STATION

| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/7/98 |
| Analyzed: | 4/7/98 |
| Analyst: | DLB |

## VOLATILE ORGANICS, 8260A Continued...

| COMPOUNDS | Lab ID: / Client Sample ID: / D.F. | CL067698 Method Blank 1 | CL15136 HG20-01/CH 1 | CL15137 HG20-02/CH 1 | CL15139 HG19-01/CH 1 | CL15140 HG19-02/CH 1 | Reporting Limit |
|---|---|---|---|---|---|---|---|
| chloromethane | | ND | ND | ND | ND | ND | 10 |
| cis-1,2-dichloroethene | | ND | ND | ND | ND | ND | 5.0 |
| cis-1,3-dichloropropene | | ND | ND | ND | ND | ND | 5.0 |
| dibromochloromethane | | ND | ND | ND | ND | ND | 5.0 |
| dibromomethane | | ND | ND | ND | ND | ND | 5.0 |
| dichlorodifluoromethane | | ND | ND | ND | ND | ND | 10 |
| dichlorofluoromethane | | ND | ND | ND | ND | ND | 5.0 |
| ethylbenzene | | ND | ND | ND | ND | ND | 5.0 |
| hexachlorobutadiene | | ND | ND | ND | ND | ND | |
| isopropylbenzene | | ND | ND | ND | ND | ND | |
| isopropyltoluene | | ND | ND | ND | ND | ND | 5.0 |
| m-&p-xylenes | | ND | ND | ND | ND | ND | 5.0 |
| methylene chloride | | ND | ND | ND | ND | ND | 20 |
| methyl t-butyl ether [mtbe] | | ND | ND | ND | ND | ND | 20 |
| n-butylbenzene | | ND | ND | ND | ND | ND | 5.0 |
| n-propylbenzene | | ND | ND | ND | ND | ND | 5.0 |
| naphthalene | | ND | ND | ND | ND | ND | 5.0 |
| o-xylene | | ND | ND | ND | ND | ND | 5.0 |
| sec-butylbenzene | | ND | ND | ND | ND | ND | 5.0 |
| tetrachloroethene | | ND | ND | ND | ND | ND | 5.0 |
| toluene | | ND | ND | ND | ND | ND | 5.0 |
| trans-1,2-dichloroethene | | ND | ND | ND | ND | ND | 5.0 |
| trans-1,3-dichloropropene | | ND | ND | ND | ND | ND | 5.0 |
| trichloroethene | | ND | ND | ND | ND | ND | 5.0 |
| trichlorofluoromethane | | ND | ND | ND | ND | ND | 5.0 |
| vinyl acetate | | ND | ND | ND | ND | ND | 50 |
| vinyl chloride | | ND | ND | ND | ND | ND | 10 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | | | | | Control Limit |
|---|---|---|---|---|---|---|
| dibromofluoromethane | 103 | 101 | 102 | 101 | 103 | 80-120 |
| toluene-d8 | 88 | 87 | 88 | 89 | 88 | 80-120 |
| 4-bromofluorobenzene | 91 | 90 | 84 | 88 | 79* | 80-120 |

NOTE:

ND denotes Not Detected at the indicated Reporting limit.

* Out of criteria due to sample matrix interference. The Laboratory Control Standard (LCS) is a control sample of known interference free matrix that is [illegible] using the same reagents, preparation and analytical methods employed for this set of samples. The LCS percent recovery data verifies method and [illegible] performance and is used for validation of sample batch results. The MS/MSD results are not used to determine the acceptance or rejection of batch analyses data due to the potential impact of matrix effects arising from sample matrix interference. These results are included as sample related information only and should be evaluated accordingly.

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# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0132-HB



PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/7/98 |
| Analyzed: | 4/7/98 |
| Analyst: | DLB |

## VOLATILE ORGANICS, 8260A

| COMPOUNDS | Lab ID: CL15141<br>Client Sample ID: HG19-03/CH<br>D.F. 1 | Reporting Limit |
|---|---|---|
| 1,1,1,2-tetrachloroethane | ND | 5.0 |
| 1,1,2,2-tetrachloroethane | ND | 5.0 |
| 1,1,1-trichloroethane | ND | 5.0 |
| 1,1,2-trichloroethane | ND | 5.0 |
| 1,2,3-trichlorobenzene | ND | 5.0 |
| 1,2,3-trichloropropane | ND | 5.0 |
| 1,2,4-trichlorobenzene | ND | 5.0 |
| 1,2,4-trimethylbenzene | ND | 5.0 |
| 1,3,5-trimethylbenzene | ND | 5.0 |
| 1,1-dichloroethane | ND | 5.0 |
| 1,1-dichloroethene | ND | 5.0 |
| 1,1-dichloropropene | ND | 5.0 |
| 1,2-dibromo-3-chloro-propane (DBCP) | ND | 10 |
| 1,2-dibromoethane (EDB) | ND | 5.0 |
| 1,2-dichlorobenzene | ND | 5.0 |
| 1,2-dichloroethane | ND | 5.0 |
| 1,2-dichloropropane | ND | 5.0 |
| 1,3-dichlorobenzene | ND | 5.0 |
| 1,3-dichloropropane | ND | 5.0 |
| 1,4-dichlorobenzene | ND | 5.0 |
| 2,2-dichloropropane | ND | 5.0 |
| 2-butanone | ND | 10 |
| 2-chloroethyl vinyl ether | ND | 10 |
| 2-chlorotoluene | ND | 5.0 |
| 2-hexanone | ND | 10 |
| 4-chlorotoluene | ND | 5.0 |
| 4-methyl-2-pentanone | ND | 10 |
| acetone | ND | 20 |
| benzene | ND | 5.0 |
| bromobenzene | ND | 5.0 |
| bromochloromethane | ND | 5.0 |
| bromodichloromethane | ND | 5.0 |
| bromoform | ND | 5.0 |
| bromomethane | ND | 10 |
| carbon disulfide | ND | 5.0 |
| carbon tetrachloride | ND | 5.0 |
| chlorobenzene | ND | 5.0 |
| chloroethane | ND | 10 |
| chloroform | ND | 5.0 |

Continued on next page...

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# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0132-HB



PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/7/98 |
| Analyzed: | 4/7/98 |
| Analyst: | DLB |

## VOLATILE ORGANICS, 8260A Continued...

| COMPOUNDS | Lab ID: CL15141<br>Client Sample ID: HG19-03/CH<br>D.F. 1 | Reporting Limit |
|---|---|---|
| chloromethane | ND | 10 |
| cis-1,2-dichloroethene | ND | 5.0 |
| cis-1,3-dichloropropene | ND | 5.0 |
| dibromochloromethane | ND | 5.0 |
| dibromomethane | ND | 5.0 |
| dichlorodifluoromethane | ND | 10 |
| dichlorofluoromethane | ND | 5.0 |
| ethylbenzene | ND | 5.0 |
| hexachlorobutadiene | ND | [illegible] |
| isopropylbenzene | ND | [illegible] |
| isopropyltoluene | ND | 5.0 |
| m-&p-xylenes | ND | 5.0 |
| methylene chloride | ND | 20 |
| methyl t-butyl ether [mtbe] | ND | 20 |
| n-butylbenzene | ND | 5.0 |
| n-propylbenzene | ND | 5.0 |
| naphthalene | ND | 5.0 |
| o-xylene | ND | 5.0 |
| sec-butylbenzene | ND | 5.0 |
| tetrachloroethene | ND | 5.0 |
| toluene | ND | 5.0 |
| trans-1,2-dichloroethene | ND | 5.0 |
| trans-1,3-dichloropropene | ND | 5.0 |
| trichloroethene | ND | 5.0 |
| trichlorofluoromethane | ND | 5.0 |
| vinyl acetate | ND | 50 |
| vinyl chloride | ND | 10 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | Control Limit |
|---|---|---|
| dibromofluoromethane | 103 | 80-120 |
| toluene-d8 | 89 | 80-120 |
| 4-bromofluorobenzene | 88 | 80-120 |

NOTES:

*ND denotes Not Detected at the indicated Reporting limit.*

*This report is preceded by a cover sheet that contains vital information.*

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# Analytical Report

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CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0132-HB



PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/7/98 |
| Analyzed: | 4/7/98 |
| Analyst: | DLB |

## QUALITY CONTROL DATA, 8260A

| LABORATORY CONTROL STANDARD/DUPLICATE | SPK CONC. (µg/kg) | LCS (µg/kg) | LCSD (µg/kg) | ACCURACY % LCS | % LCSD | ACP % LCS | PRECISION RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| 1,1-dichloroethene | 50.0 | 45.1 | 45.4 | 90 | 91 | 61-145 | 0 | 0-20 |
| mtbe | 50.0 | 58.1 | 64.8 | 116 | 129 | 61-145 | 11 | 0-20 |
| benzene | 50.0 | 49.8 | 49.7 | 99 | 99 | 75-130 | 0 | 0-15 |
| trichloroethene | 50.0 | 51.5 | 51.4 | 103 | 103 | 70-130 | 0 | 0-20 |
| toluene | 50.0 | 50.4 | 51.2 | 100 | 102 | 70-130 | 1 | 0-18 |
| chlorobenzene | 50.0 | 49.9 | 49.3 | 99 | 98 | 75-130 | 1 | 0-18 |

| AUDIT DATA | LAB ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|
| | LABORATORY CONTROL STD. | B800400 | 152 EPA 8260 STD | 4/7/98 |

| MATRIX SPIKE / MATRIX SPIKE DUPLICATE | SPK CONC. (µg/kg) | MS (µg/kg) | MSD (µg/kg) | ACCURACY % MS | % MSD | ACP % MS | PRECISION RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| 1,1-dichloroethene | 50.0 | 45.5 | 45.9 | 91 | 92 | 61-145 | 1 | 0-14 |
| mtbe | 50.0 | 60.8 | 59.7 | 121 | 119 | 61-145 | 2 | 0-14 |
| benzene | 50.0 | 48.2 | 47.8 | 96 | 95 | 75-130 | 1 | 0-11 |
| trichloroethene | 50.0 | 52.7 | 51.5 | 105 | 103 | 70-130 | 2 | 0-14 |
| toluene | 50.0 | 47.3 | 46.1 | 94 | 92 | 70-130 | 3 | 0-14 |
| chlorobenzene | 50.0 | 44.6 | 45.3 | 89 | 90 | 75-130 | 1 | 0-13 |

| AUDIT DATA | LAB ID | SAMPLE ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|---|
| | CL15092 | HG10-01/CHMS | B800397 | 156 EPA 8260 STD | 4/7/98 |



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# Analytical Report

**SDG #: 9803.0125**

CASE NARRATIVE

**REPORT DATE:** 4/14/98

**REPORTED TO:** CH2M HILL
3 HUTTON CENTRE DRIVE
SUITE 200
SANTA ANA, CA 92707

**ATTN.:** MR. ROB LOWEY

**PROJECT #:** 137125.ED.WC.HB
**PROJECT NAME:** SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

**DATE SAMPLED:** 3/19/98
**DATE RECEIVED:** 3/19/98
**# OF SAMPLES:** 31
**SAMPLE MATRIX:** SOIL, WATER
**CLIENT SAMPLE ID:**

| SOIL | | WATER |
|---|---|---|
| HG09-01/CH | HG18-01/CH2.5'-3.0' | HG09-10-W/CH |
| HG09-02/CH | HG18-01/CH5.0'-5.5' | HG06A-10-W/CH |
| HG068-01/CH | HG18-02/CH11.0'-11.5' | EB0319/CH |
| HG068-02/CH | HG18-02/CH11.5'-12.0' | HG18-10-W/CH |
| HG06A-01/CH | HG16-01/CH2.5'-3.0' | HG18-11-W/CH2 |
| HG06A-02/CH | HG16-01/CH3.0'-3.5' | HG16-10-W/CH |
| HG05-01/CH | HG16-03/CH | HG16-10-W/CHMS/MSD |
| HG05-02/CH | HG10-01/CH2.5'-3.0' | RBHG-10-W/CH |
| HG08-01/CH | HG10-01/CH5.0'-5.5' | |
| HG08-02/CH | HG10-02/CH5.5'-6.0' | |
| HG08-03/CH | HG02/CH10.5'-11.0' | |

***NOTE: All metals are on hold as per client request.***

## IMPORTANT

***Holding time has been exceeded for 8260A soil samples. Data is hereby released at no charge. Data may be used as an approximate value. The water samples were run within holding time.***

## SAMPLE HANDLING & CONTROL STATEMENT

*The above mentioned samples were received in appropriate containers accompanied by a fully signed and dated chain-of-custody record. The containers were assigned unique identification numbers and had sufficient amount for the test requested unless otherwise noted in the accompanying laboratory report. The ice chest(s) were received under appropriate custody seals. There were no site specific quality control requirements made at the time of sample submittal. The samples did not exceed the holding time for the requested test parameters.*

## QUALITY CONTROL SUMMARY STATEMENT

*Laboratory Quality Control parameters and results of instrument calibration standards were all within control limits and the analytical data hereby submitted falls within acceptable limits of accuracy and precision unless otherwise indicated. Please see the Quality Control Data submitted in this report for additional information. In addition, necessary information regarding instrument calibration, MS/MSD, LCS/LCSD, method blank, and all other pertinent Quality Control measures are hereby enclosed for review.*

**SUBMITTED BY:**

Girma Selassie
Director

CERTIFICATE OF APPROVED ANALYSIS

*The information contained in this cover sheet is an integral part of the attached analytical report.*

DOHS Lab Certificate #: 1552
Expiration Date: June 30, 1999

ASLA Certificate #: 0389.01
Expiration Date: September 30, 1996 (Re-Accreditation in process)

Approved by the State of California, Department of Health Services & ASLA-American Association for Laboratory Accreditation.

CLi Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0125



PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

MATRIX: SOIL

UNIT: µg/kg

Prepared: 4/6/98

Analyzed: 4/6/98

Analyst: DLB

## VOLATILE ORGANICS, 8260A

| COMPOUNDS | Lab ID: CL067298 | CL15087 | CL15088 | CL15089 | CL15092 | Reporting Limit |
|---|---|---|---|---|---|---|
| Client Sample ID: | Method Blank | HG16-01/CH6.0'-3.5' | HG16-03/CH | HG16-02/CH | HG10-01/CH5.0'-5.5' | |
| D.F. | 1 | 1 | 1 | 1 | 1 | |
| 1,1,1,2-tetrachloroethane | ND | ND | ND | ND | ND | 5.0 |
| 1,1,2,2-tetrachloroethane | ND | ND | ND | ND | ND | 5.0 |
| 1,1,1-trichloroethane | ND | ND | ND | ND | ND | 5.0 |
| 1,1,2-trichloroethane | ND | ND | ND | ND | ND | 5.0 |
| 1,2,3-trichlorobenzene | ND | ND | ND | ND | ND | 5.0 |
| 1,2,3-trichloropropane | ND | ND | ND | ND | ND | 5.0 |
| 1,2,4-trichlorobenzene | ND | ND | ND | ND | ND | 5.0 |
| 1,2,4-trimethylbenzene | ND | ND | ND | ND | ND | 5.0 |
| 1,3,5-trimethylbenzene | ND | ND | ND | ND | ND | 5.0 |
| 1,1-dichloroethane | ND | ND | ND | ND | ND | 5.0 |
| 1,1-dichloroethene | ND | ND | ND | ND | ND | 5.0 |
| 1,1-dichloropropene | ND | ND | ND | ND | ND | 5.0 |
| 1,2-dibromo-3-chloro-propane (DBCP) | ND | ND | ND | ND | ND | 10 |
| 1,2-dibromoethane (EDB) | ND | ND | ND | ND | ND | 5.0 |
| 1,2-dichlorobenzene | ND | ND | ND | ND | ND | 5.0 |
| 1,2-dichloroethane | ND | ND | ND | ND | ND | 5.0 |
| 1,2-dichloropropane | ND | ND | ND | ND | ND | 5.0 |
| 1,3-dichlorobenzene | ND | ND | ND | ND | ND | 5.0 |
| 1,3-dichloropropane | ND | ND | ND | ND | ND | 5.0 |
| 1,4-dichlorobenzene | ND | ND | ND | ND | ND | 5.0 |
| 2,2-dichloropropane | ND | ND | ND | ND | ND | 5.0 |
| 2-butanone | ND | ND | ND | ND | ND | 10 |
| 2-chloroethyl vinyl ether | ND | ND | ND | ND | ND | 10 |
| 2-chlorotoluene | ND | ND | ND | ND | ND | 5.0 |
| 2-hexanone | ND | ND | ND | ND | ND | 10 |
| 4-chlorotoluene | ND | ND | ND | ND | ND | 5.0 |
| 4-methyl-2-pentanone | ND | ND | ND | ND | ND | 10 |
| acetone | ND | ND | ND | ND | ND | 20 |
| benzene | ND | ND | ND | ND | ND | 5.0 |
| bromobenzene | ND | ND | ND | ND | ND | 5.0 |
| bromochloromethane | ND | ND | ND | ND | ND | 5.0 |
| bromodichloromethane | ND | ND | ND | ND | ND | 5.0 |
| bromoform | ND | ND | ND | ND | ND | 5.0 |
| bromomethane | ND | ND | ND | ND | ND | 10 |
| carbon disulfide | ND | ND | ND | ND | ND | 5.0 |
| carbon tetrachloride | ND | ND | ND | ND | ND | 5.0 |
| chlorobenzene | ND | ND | ND | ND | ND | 5.0 |
| chloroethane | ND | ND | ND | ND | ND | 10 |
| chloroform | ND | ND | ND | ND | ND | 5.0 |

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Approved by the State of California, Department of Health Services & ASLA-American Association for Laboratory Accreditation.

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# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0125



PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

MATRIX: SOIL

UNIT: µg/kg

Prepared: 4/6/98

Analyzed: 4/6/98

Analyst: DLB

## VOLATILE ORGANICS, 8260A Continued...

| Lab ID: | CL067298 | CL15087 | CL15088 | CL15089 | CL15092 | Reporting Limit |
|---|---|---|---|---|---|---|
| Client Sample ID: | Method Blank | HG16-01/CH6.0'-3.5' | HG16-03/CH | HG16-02/CH | HG10-01/CH5.0'-5.5' | |
| COMPOUNDS D.F. | 1 | 1 | 1 | 1 | 1 | |
| chloromethane | ND | ND | ND | ND | ND | 10 |
| cis-1,2-dichloroethene | ND | ND | ND | ND | ND | 5.0 |
| cis-1,3-dichloropropene | ND | ND | ND | ND | ND | 5.0 |
| dibromochloromethane | ND | ND | ND | ND | ND | 5.0 |
| dibromomethane | ND | ND | ND | ND | ND | 5.0 |
| dichlorodifluoromethane | ND | ND | ND | ND | ND | 10 |
| dichlorofluoromethane | ND | ND | ND | ND | ND | 5.0 |
| ethylbenzene | ND | ND | ND | ND | ND | [illegible] |
| hexachlorobutadiene | ND | ND | ND | ND | ND | [illegible] |
| isopropylbenzene | ND | ND | ND | ND | ND | 5.0 |
| isopropyltoluene | ND | ND | ND | ND | ND | 5.0 |
| m-&p-xylenes | ND | ND | ND | ND | ND | 5.0 |
| methylene chloride | ND | ND | ND | ND | ND | 20 |
| methyl t-butyl ether [mtbe] | ND | ND | ND | ND | ND | 20 |
| n-butylbenzene | ND | ND | ND | ND | ND | 5.0 |
| n-propylbenzene | ND | ND | ND | ND | ND | 5.0 |
| naphthalene | ND | ND | ND | ND | ND | 5.0 |
| o-xylene | ND | ND | ND | ND | ND | 5.0 |
| sec-butylbenzene | ND | ND | ND | ND | ND | 5.0 |
| tetrachloroethene | ND | ND | ND | ND | ND | 5.0 |
| toluene | ND | ND | ND | ND | ND | 5.0 |
| trans-1,2-dichloroethene | ND | ND | ND | ND | ND | 5.0 |
| trans-1,3-dichloropropene | ND | ND | ND | ND | ND | 5.0 |
| trichloroethene | ND | ND | ND | ND | ND | 5.0 |
| trichlorofluoromethane | ND | ND | ND | ND | ND | 5.0 |
| vinyl acetate | ND | ND | ND | ND | ND | 50 |
| vinyl chloride | ND | ND | ND | ND | ND | 10 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | | | | | Control Limit |
|---|---|---|---|---|---|---|
| dibromofluoromethane | 101 | 101 | 102 | 89 | 102 | 80-120 |
| toluene-d8 | 88 | 89 | 86 | 82 | 88 | 80-120 |
| 4-bromofluorobenzene | 84 | 84 | 81 | 88 | 85 | 80-120 |

NOTES:

*ND denotes Not Detected at the indicated Reporting limit.*

Testing and Data Management Services

# Analytical Report

1101 Richfield Road ▪ Placentia, CA 92870 ▪ (714) 572-3270 ▪ Fax (714) 572-3274

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0125



PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/6/98 |
| Analyzed: | 4/6/98 |
| Analyst: | DLB |

## VOLATILE ORGANICS, 8260A

| COMPOUNDS | Lab ID: CL15094<br>Client Sample ID: HG10-02/CH10.5'-11.0'<br>D.F. 1 | Reporting Limit |
|---|---|---|
| 1,1,1,2-tetrachloroethane | ND | 5.0 |
| 1,1,2,2-tetrachloroethane | ND | 5.0 |
| 1,1,1-trichloroethane | ND | 5.0 |
| 1,1,2-trichloroethane | ND | 5.0 |
| 1,2,3-trichlorobenzene | ND | 5.0 |
| 1,2,3-trichloropropane | ND | 5.0 |
| 1,2,4-trichlorobenzene | ND | 5.0 |
| 1,2,4-trimethylbenzene | ND | 5.0 |
| 1,3,5-trimethylbenzene | ND | 5.0 |
| 1,1-dichloroethane | ND | 5.0 |
| 1,1-dichloroethene | ND | 5.0 |
| 1,1-dichloropropene | ND | 5.0 |
| 1,2-dibromo-3-chloro-propane (DBCP) | ND | 10 |
| 1,2-dibromoethane (EDB) | ND | 5.0 |
| 1,2-dichlorobenzene | ND | 5.0 |
| 1,2-dichloroethane | ND | 5.0 |
| 1,2-dichloropropane | ND | 5.0 |
| 1,3-dichlorobenzene | ND | 5.0 |
| 1,3-dichloropropane | ND | 5.0 |
| 1,4-dichlorobenzene | ND | 5.0 |
| 2,2-dichloropropane | ND | 5.0 |
| 2-butanone | ND | 10 |
| 2-chloroethyl vinyl ether | ND | 10 |
| 2-chlorotoluene | ND | 5.0 |
| 2-hexanone | ND | 10 |
| 4-chlorotoluene | ND | 5.0 |
| 4-methyl-2-pentanone | ND | 10 |
| acetone | ND | 20 |
| benzene | ND | 5.0 |
| bromobenzene | ND | 5.0 |
| bromochloromethane | ND | 5.0 |
| bromodichloromethane | ND | 5.0 |
| bromoform | ND | 5.0 |
| bromomethane | ND | 10 |
| carbon disulfide | ND | 5.0 |
| carbon tetrachloride | ND | 5.0 |
| chlorobenzene | ND | 5.0 |
| chloroethane | ND | 10 |
| chloroform | ND | 5.0 |

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Approved by the State of California, Department of Health Services & AZLA-American Association for Laboratory Accreditation.

CLi Testing and Data Management Services

# Analytical Report

1101 Richfield Road ▪ Placentia, CA 92870 ▪ (714) 572-3270 ▪ Fax (714) 572-3274

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0125



PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/6/98 |
| Analyzed: | 4/6/98 |
| Analyst: | DLB |

## VOLATILE ORGANICS, 8260A Continued...

| COMPOUNDS | Lab ID: CL15094<br>Client Sample ID: HG10-02/CH10.5'-11.0'<br>D.F. 1 | Reporting Limit |
|---|---|---|
| chloromethane | ND | 10 |
| cis-1,2-dichloroethene | ND | 5.0 |
| cis-1,3-dichloropropene | ND | 5.0 |
| dibromochloromethane | ND | 5.0 |
| dibromomethane | ND | 5.0 |
| dichlorodifluoromethane | ND | 10 |
| dichlorofluoromethane | ND | 5.0 |
| ethylbenzene | ND | 5.0 |
| hexachlorobutadiene | ND | [illegible] |
| isopropylbenzene | ND | [illegible] |
| isopropyltoluene | ND | 5.0 |
| m-&p-xylenes | ND | 5.0 |
| methylene chloride | ND | 20 |
| methyl t-butyl ether [mtbe] | ND | 20 |
| n-butylbenzene | ND | 5.0 |
| n-propylbenzene | ND | 5.0 |
| naphthalene | ND | 5.0 |
| o-xylene | ND | 5.0 |
| sec-butylbenzene | ND | 5.0 |
| tetrachloroethene | ND | 5.0 |
| toluene | ND | 5.0 |
| trans-1,2-dichloroethene | ND | 5.0 |
| trans-1,3-dichloropropene | ND | 5.0 |
| trichloroethene | ND | 5.0 |
| trichlorofluoromethane | ND | 5.0 |
| vinyl acetate | ND | 50 |
| vinyl chloride | ND | 10 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | Control Limit |
|---|---|---|
| dibromofluoromethane | 102 | 80-120 |
| toluene-d8 | 83 | 80-120 |
| 4-bromofluorobenzene | 79* | 80-120 |

NOTES:

*ND denotes Not Detected at the indicated Reporting limit.*

** Out of criteria due to sample matrix interference. The Laboratory Control Standard (LCS) is a control sample of known interference free matrix that is a[illegible] using the same reagents, preparation and analytical methods employed for this set of samples. The LCS percent recovery data verifies method and system performance and is used for validation of sample batch results. The MS/MSD results are not used to determine the acceptance or rejection of batch analyses data due to the potential impact of matrix effects arising from sample matrix interference. These results are included as sample related information only and should be evaluated accordingly.*

CLi Testing and Data Management Services

# Analytical Report

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CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0125



PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/6/98 |
| Analyzed: | 4/6/98 |
| Analyst: | DLB |

## QUALITY CONTROL DATA, 8260A

| LABORATORY CONTROL STANDARD/DUPLICATE | SPK CONC. (µg/kg) | LCS (µg/kg) | LCSD (µg/kg) | % LCS | % LCSD | ACP % LCS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | PRECISION | |
| 1,1-dichloroethene | 50.0 | 46.2 | 45.3 | 92 | 91 | 61-145 | 2 | 0-20 |
| mtbe | 50.0 | 67.4 | 63.3 | 134 | 126 | 61-145 | 6 | 0-20 |
| benzene | 50.0 | 49.6 | 48.6 | 99 | 97 | 75-130 | 2 | 0-15 |
| trichloroethene | 50.0 | 52.6 | 51.6 | 105 | 103 | 70-130 | 2 | 0-20 |
| toluene | 50.0 | 50..4 | 49.1 | 101 | 98 | 70-130 | 2 | 0-18 |
| chlorobenzene | 50.0 | 49.2 | 46.4 | 98 | 93 | 75-130 | 6 | 0-18 |

| AUDIT DATA | LAB ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|
| | LABORATORY CONTROL STD. | B800397 | 156 EPA 8260A STD | 4/6/98 |

| MATRIX SPIKE/ MATRIX SPIKE DUPLICATE | SPK CONC. (µg/kg) | MS (µg/kg) | MSD (µg/kg) | % MS | % MSD | ACP % MS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | PRECISION | |
| 1,1-dichloroethene | 50.0 | 45.5 | 45.9 | 91 | 92 | 61-145 | 1 | 0-14 |
| mtbe | 50.0 | 60.8 | 59.7 | 121 | 119 | 61-145 | 2 | 0-14 |
| benzene | 50.0 | 48.2 | 47.8 | 96 | 95 | 75-130 | 1 | 0-11 |
| trichloroethene | 50.0 | 52.7 | 51.5 | 105 | 103 | 70-130 | 2 | 0-14 |
| toluene | 50.0 | 47.3 | 46.1 | 94 | 92 | 70-130 | 3 | 0-14 |
| chlorobenzene | 50.0 | 44.6 | 45.3 | 89 | 90 | 75-130 | 1 | 0-13 |

| AUDIT DATA | LAB ID | SAMPLE ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|---|
| | CL15092 | HG10-01/CHMS | B800397 | 156 EPA 8260 STD | 4/6/98 |

*This report is preceded by a cover sheet that contains vital information.*

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# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0125



PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

MATRIX: LIQUID

UNIT: µg/l

Prepared: 3/19/98

Analyzed: 4/2/98

Analyst: DLB

## VOLATILE ORGANICS, 8260A

| COMPOUNDS | Lab ID: CL06698 | CL15066 | CL15077 | CL15084 | Reporting Limit |
|---|---|---|---|---|---|
| Client Sample ID: | Method Blank | HG09-10-W/CH | EB0319/CH | HG16-10-W/CH | |
| D.F. | 1 | 1 | 1 | 1 | |
| 1,1,1,2-tetrachloroethane | ND | ND | ND | ND | 1.0 |
| 1,1,2,2-tetrachloroethane | ND | ND | ND | ND | 1.0 |
| 1,1,1-trichloroethane | ND | ND | ND | ND | 1.0 |
| 1,1,2-trichloroethane | ND | ND | ND | ND | 1.0 |
| 1,2,3-trichlorobenzene | ND | ND | ND | ND | 1.0 |
| 1,2,3-trichloropropane | ND | ND | ND | ND | 1.0 |
| 1,2,4-trichlorobenzene | ND | ND | ND | ND | 1.0 |
| 1,2,4-trimethylbenzene | ND | ND | ND | ND | 1.0 |
| 1,3,5-trimethylbenzene | ND | ND | ND | ND | 1.0 |
| 1,1-dichloroethane | ND | ND | ND | ND | 1.0 |
| 1,1-dichloroethene | ND | ND | ND | ND | 1.0 |
| 1,1-dichloropropene | ND | ND | ND | ND | 1.0 |
| 1,2-dibromo-3-chloro-propane (DBCP) | ND | ND | ND | ND | 20 |
| 1,2-dibromoethane (EDB) | ND | ND | ND | ND | 1.0 |
| 1,2-dichlorobenzene | ND | ND | ND | ND | 1.0 |
| 1,2-dichloroethane | ND | ND | ND | ND | 1.0 |
| 1,2-dichloropropane | ND | ND | ND | ND | 1.0 |
| 1,3-dichlorobenzene | ND | ND | ND | ND | 1.0 |
| 1,3-dichloropropane | ND | ND | ND | ND | 1.0 |
| 1,4-dichlorobenzene | ND | ND | ND | ND | 1.0 |
| 2,2-dichloropropane | ND | ND | ND | ND | 1.0 |
| 2-butanone | ND | ND | ND | ND | 5.0 |
| 2-chloroethyl vinyl ether | ND | ND | ND | ND | 10 |
| 2-chlorotoluene | ND | ND | ND | ND | 1.0 |
| 2-hexanone | ND | ND | ND | ND | 5.0 |
| 4-chlorotoluene | ND | ND | ND | ND | 1.0 |
| 4-methyl-2-pentanone | ND | ND | ND | ND | 5.0 |
| acetone | ND | ND | ND | ND | 10 |
| benzene | ND | ND | ND | ND | 1.0 |
| bromobenzene | ND | ND | ND | ND | 1.0 |
| bromochloromethane | ND | ND | ND | ND | 1.0 |
| bromodichloromethane | ND | ND | ND | ND | 1.0 |
| bromoform | ND | ND | ND | ND | 1.0 |
| bromomethane | ND | ND | ND | ND | 2.0 |
| carbon disulfide | ND | ND | ND | ND | 5 |
| carbon tetrachloride | ND | ND | ND | ND | 1.0 |
| chlorobenzene | ND | ND | ND | ND | 1.0 |
| chloroethane | ND | ND | ND | ND | 2.0 |
| chloroform | ND | ND | ND | ND | 1.0 |

Continued on next page...

Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0125



PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

MATRIX: LIQUID

UNIT: µg/l

Prepared: 3/19/98

Analyzed: 4/2/98

Analyst: DLB

## VOLATILE ORGANICS, 8260A Continued...

| Lab ID: | CL06698 | CL15066 | CL15077 | CL15084 | Reporting Limit |
|---|---|---|---|---|---|
| Client Sample ID: | Method Blank | HG09-10-W/CH | E80319/CH | HG16-10-W/CH | |
| COMPOUNDS / D.F. | 1 | 1 | 1 | 1 | |
| chloromethane | ND | ND | ND | ND | 2.0 |
| cis-1,2-dichloroethene | ND | ND | ND | ND | 0.50 |
| cis-1,3-dichloropropene | ND | ND | ND | ND | 1.0 |
| dibromochloromethane | ND | ND | ND | ND | 1.0 |
| dibromomethane | ND | ND | ND | ND | 1.0 |
| dichlorodifluoromethane | ND | ND | ND | ND | 2.0 |
| dichlorofluoromethane | ND | ND | ND | ND | 1.0 |
| ethylbenzene | ND | ND | ND | ND | 1.0 |
| hexachlorobutadiene | ND | ND | ND | ND | 1.0 |
| isopropylbenzene | ND | ND | ND | ND | 1.0 |
| isopropyltoluene | ND | ND | ND | ND | 0.50 |
| m-&p-xylenes | ND | ND | ND | ND | 5.0 |
| methylene chloride | ND | ND | ND | ND | 20 |
| methyl t-butyl ether [mtbe] | ND | ND | ND | ND | 1.0 |
| n-butylbenzene | ND | ND | ND | ND | 1.0 |
| n-propylbenzene | ND | ND | ND | ND | 1.0 |
| naphthalene | ND | ND | ND | ND | 0.50 |
| o-xylene | ND | ND | ND | ND | 1.0 |
| sec-butylbenzene | ND | ND | ND | ND | 1.0 |
| tetrachloroethene | ND | ND | ND | ND | 1.0 |
| toluene | ND | ND | ND | ND | 1.0 |
| trans-1,2-dichloroethene | ND | ND | ND | ND | 0.50 |
| trans-1,3-dichloropropene | ND | ND | ND | ND | 1.0 |
| trichloroethene | ND | ND | ND | ND | 1.0 |
| trichlorofluoromethane | ND | ND | ND | ND | 2.0 |
| vinyl acetate | ND | ND | ND | ND | 10 |
| vinyl chloride | ND | ND | ND | ND | 2.0 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | | | | Control Limit |
|---|---|---|---|---|---|
| dibromofluoromethane | 103 | 104 | 104 | 104 | 80-120 |
| toluene-d8 | 98 | 98 | 98 | 98 | 80-120 |
| 4-bromofluorobenzene | 92 | 93 | 93 | 97 | 80-120 |

NOTES:

*ND denotes Not Detected at the indicated Reporting limit.*

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# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES
ATTN.: MR. ROB LOWEY

SDG #: 9803.0125



PROJECT #: 137125.ED.WC.HB
PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

MATRIX: LIQUID
UNIT: µg/l

Prepared: 3/19/98
Analyzed: 4/2/98
Analyst: DLB

## QUALITY CONTROL DATA, 8260A

| LABORATORY CONTROL STANDARD/DUPLICATE | SPK CONC. (µg/l) | LCS (µg/l) | LCSD (µg/l) | % LCS | % LCSD | ACP % LCS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | PRECISION | |
| 1,1-dichloroethene | 50.0 | 50.5 | 48.3 | 101 | 97 | 61-145 | 5 | 0-20 |
| mtbe | 50.0 | 55.1 | 53.4 | 110 | 107 | 76-127 | 3 | 0-15 |
| benzene | 50.0 | 48.9 | 48.8 | 98 | 98 | 71-120 | 0 | 0-20 |
| trichloroethene | 50.0 | 49.1 | 48.9 | 98 | 98 | 76-125 | 0 | 0-18 |
| toluene | 50.0 | 49.3 | 49.8 | 98 | 99 | 75-130 | 1 | 0-18 |
| chlorobenzene | 50.0 | 49.4 | 49.3 | 99 | 99 | 60-145 | 0 | 0-20 |

| AUDIT DATA | LAB ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|
| | LABORATORY CONTROL STD. | 8800395 | 152 EPA 8260 STD | 4/2/98 |

| MATRIX SPIKE/ MATRIX SPIKE DUPLICATE | SPK CONC. (µg/l) | MS (µg/l) | MSD (µg/l) | % MS | % MSD | ACP % MS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | PRECISION | |
| 1,1-dichloroethene | 50.0 | 50.7 | 49.6 | 101 | 99 | 61-145 | 2 | 0-20 |
| mtbe | 50.0 | 43.1 | 43.4 | 86 | 86 | 76-127 | 1 | 0-15 |
| benzene | 50.0 | 48.8 | 48.8 | 97 | 97 | 71-120 | 0 | 0-20 |
| trichloroethene | 50.0 | 50.5 | 49.5 | 101 | 99 | 76-125 | 2 | 0-18 |
| toluene | 50.0 | 49.6 | 50.2 | 99 | 100 | 75-130 | 1 | 0-18 |
| chlorobenzene | 50.0 | 48.7 | 49.2 | 97 | 98 | 60-145 | 1 | 0-20 |

| AUDIT DATA | LAB ID | SAMPLE ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|---|
| | CL06481S.D | AG382-10-W/CH | 8800376 | 141 EPA 8260 STD | 3/21/98 |



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# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0125



PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

MATRIX: LIQUID

UNIT: µg/l

Prepared: 3/18/98

Analyzed: 3/21/98

Analyst: DLB

## VOLATILE ORGANICS, 8260A

| COMPOUNDS | Lab ID: / Client Sample ID: / D.F. | CL064808 Method Blank 1 | CL15078 HG18-10-W/CH 1 | CL5079 HG18-11-W/CH 1 | CL15085 HG16-10-W/CHMS/MSD 1 | CL15090 RBHG-10-W/CH 1 | Reporting Limit |
|---|---|---|---|---|---|---|---|
| 1,1,1,2-tetrachloroethane | | ND | ND | ND | ND | ND | 1.0 |
| 1,1,2,2-tetrachloroethane | | ND | ND | ND | ND | ND | 1.0 |
| 1,1,1-trichloroethane | | ND | ND | ND | ND | ND | 1.0 |
| 1,1,2-trichloroethane | | ND | ND | ND | ND | ND | 1.0 |
| 1,2,3-trichlorobenzene | | ND | ND | ND | ND | ND | 1.0 |
| 1,2,3-trichloropropane | | ND | ND | ND | ND | ND | 1.0 |
| 1,2,4-trichlorobenzene | | ND | ND | ND | ND | ND | 1.0 |
| 1,2,4-trimethylbenzene | | ND | ND | ND | ND | ND | 1.0 |
| 1,3,5-trimethylbenzene | | ND | ND | ND | ND | ND | 1.0 |
| 1,1-dichloroethane | | ND | ND | ND | ND | ND | 1.0 |
| 1,1-dichloroethene | | ND | ND | ND | ND | ND | 1.0 |
| 1,1-dichloropropene | | ND | ND | ND | ND | ND | 1.0 |
| 1,2-dibromo-3-chloro-propane (DBCP) | | ND | ND | ND | ND | ND | 20 |
| 1,2-dibromoethane (EDB) | | ND | ND | ND | ND | ND | 1.0 |
| 1,2-dichlorobenzene | | ND | ND | ND | ND | ND | 1.0 |
| 1,2-dichloroethane | | ND | ND | ND | ND | ND | 1.0 |
| 1,2-dichloropropane | | ND | ND | ND | ND | ND | 1.0 |
| 1,3-dichlorobenzene | | ND | ND | ND | ND | ND | 1.0 |
| 1,3-dichloropropane | | ND | ND | ND | ND | ND | 1.0 |
| 1,4-dichlorobenzene | | ND | ND | ND | ND | ND | 1.0 |
| 2,2-dichloropropane | | ND | ND | ND | ND | ND | 1.0 |
| 2-butanone | | ND | ND | ND | ND | ND | 5.0 |
| 2-chloroethyl vinyl ether | | ND | ND | ND | ND | ND | 10 |
| 2-chlorotoluene | | ND | ND | ND | ND | ND | 1.0 |
| 2-hexanone | | ND | ND | ND | ND | ND | 5.0 |
| 4-chlorotoluene | | ND | ND | ND | ND | ND | 1.0 |
| 4-methyl-2-pentanone | | ND | ND | ND | ND | ND | 5.0 |
| acetone | | ND | ND | ND | ND | ND | 10 |
| benzene | | ND | ND | ND | ND | ND | 1.0 |
| bromobenzene | | ND | ND | ND | ND | ND | 1.0 |
| bromochloromethane | | ND | ND | ND | ND | ND | 1.0 |
| bromodichloromethane | | ND | ND | ND | ND | ND | 1.0 |
| bromoform | | ND | ND | ND | ND | ND | 1.0 |
| bromomethane | | ND | ND | ND | ND | ND | 2.0 |
| carbon disulfide | | ND | ND | ND | ND | ND | 5 |
| carbon tetrachloride | | ND | ND | ND | ND | ND | 1.0 |
| chlorobenzene | | ND | ND | ND | ND | ND | 1.0 |
| chloroethane | | ND | ND | ND | ND | ND | 2.0 |
| chloroform | | ND | ND | ND | ND | ND | 1.0 |

Continued on next page...



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# Analytical Report

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0125



PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

| | |
|---|---|
| MATRIX: | LIQUID |
| UNIT: | µg/l |

| | |
|---|---|
| Prepared: | 3/18/98 |
| Analyzed: | 3/21/98 |
| Analyst: | DLB |

## VOLATILE ORGANICS, 8260A Continued...

| Lab ID: / Client Sample ID: / COMPOUNDS / D.F. | CL064808 Method Blank 1 | CL15078 HG18-10-W/CH 1 | CL5079 HG18-11-W/CH 1 | CL15085 HG16-10-W/CHMS/MSD 1 | CL15090 RBHG-10-W/CH 1 | Reporting Limit |
|---|---|---|---|---|---|---|
| chloromethane | ND | ND | ND | ND | ND | 2.0 |
| cis-1,2-dichloroethene | ND | ND | ND | ND | ND | 0.50 |
| cis-1,3-dichloropropene | ND | ND | ND | ND | ND | 1.0 |
| dibromochloromethane | ND | ND | ND | ND | ND | 1.0 |
| dibromomethane | ND | ND | ND | ND | ND | 1.0 |
| dichlorodifluoromethane | ND | ND | ND | ND | ND | 2.0 |
| dichlorofluoromethane | ND | ND | ND | ND | ND | 1.0 |
| ethylbenzene | ND | ND | ND | ND | ND | 1.0 |
| hexachlorobutadiene | ND | ND | ND | ND | ND | 1.0 |
| isopropylbenzene | ND | ND | ND | ND | ND | 1.0 |
| isopropyltoluene | ND | ND | ND | ND | ND | 0.50 |
| m-&p-xylenes | ND | ND | ND | ND | ND | |
| methylene chloride | ND | ND | ND | ND | ND | |
| methyl t-butyl ether (mtbe) | ND | ND | ND | ND | ND | 1.0 |
| n-butylbenzene | ND | ND | ND | ND | ND | 1.0 |
| n-propylbenzene | ND | ND | ND | ND | ND | 1.0 |
| naphthalene | ND | ND | ND | ND | ND | 0.50 |
| o-xylene | ND | ND | ND | ND | ND | 1.0 |
| sec-butylbenzene | ND | ND | ND | ND | ND | 1.0 |
| tetrachloroethene | ND | ND | ND | ND | ND | 1.0 |
| toluene | ND | ND | ND | ND | ND | 1.0 |
| trans-1,2-dichloroethene | ND | ND | ND | ND | ND | 0.50 |
| trans-1,3-dichloropropene | ND | ND | ND | ND | ND | 1.0 |
| trichloroethene | ND | ND | ND | ND | ND | 1.0 |
| trichlorofluoromethane | ND | ND | ND | ND | ND | 2.0 |
| vinyl acetate | ND | ND | ND | ND | ND | 10 |
| vinyl chloride | ND | ND | ND | ND | ND | 2.0 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | | | | | Control Limit |
|---|---|---|---|---|---|---|
| dibromofluoromethane | 103 | 107 | 107 | 107 | 107 | 80-120 |
| toluene-d8 | 100 | 98 | 99 | 98 | 100 | 80-120 |
| 4-bromofluorobenzene | 91 | 107 | 97 | 105 | 99 | 80-120 |

NOTES:

*ND denotes Not Detected at the indicated Reporting limit.*



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CLi Testing and Data Management Services

# Analytical Report

1101 Richfield Road ▪ Placentia, CA 92870 ▪ (714) 572-3270 ▪ Fax (714) 572-3274

CLIENT: CH2M HILL ANALYTICAL SERVICES

ATTN.: MR. ROB LOWEY

SDG #: 9803.0125



PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON–HUNTINGTON BEACH GEN. STATION

| | |
|---|---|
| MATRIX: | LIQUID |
| UNIT: | µg/l |

| | |
|---|---|
| Prepared: | 3/18/98 |
| Analyzed: | 3/21/98 |
| Analyst: | DLB |

## QUALITY CONTROL DATA, 8260A

| LABORATORY CONTROL STANDARD/DUPLICATE | SPK CONC. (µg/l) | LCS (µg/l) | LCSD (µg/l) | % LCS | % LCSD | ACP % LCS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | PRECISION | |
| 1,1-dichloroethene | 50.0 | 49.0 | 48.9 | 98 | 98 | 61-145 | 0 | 0-20 |
| mtbe | 50.0 | 39.5 | 43.9 | 79 | 88 | 76-127 | 11 | 0-15 |
| benzene | 50.0 | 48.3 | 48.2 | 96 | 96 | 71-120 | 0 | 0-20 |
| trichloroethene | 50.0 | 49.4 | 49.8 | 99 | 100 | 76-125 | 1 | 0-18 |
| toluene | 50.0 | 49.1 | 49.8 | 97 | 99 | 75-130 | 1 | 0-18 |
| chlorobenzene | 50.0 | 48.1 | 48.3 | 96 | 96 | 60-145 | 0 | 0-20 |

| AUDIT DATA | LAB ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|
| | LABORATORY CONTROL STD. | 8800376 | 141 EPA 8260 STD | 3/21/98 |

| MATRIX SPIKE/ MATRIX SPIKE DUPLICATE | SPK CONC. (µg/l) | MS (µg/l) | MSD (µg/l) | % MS | % MSD | ACP % MS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | PRECISION | |
| 1,1-dichloroethene | 50.0 | 50.7 | 49.6 | 101 | 99 | 61-145 | 2 | 0-20 |
| mtbe | 50.0 | 43.1 | 43.4 | 86 | 86 | 76-127 | 1 | 0-15 |
| benzene | 50.0 | 48.8 | 48.8 | 97 | 97 | 71-120 | 0 | 0-20 |
| trichloroethene | 50.0 | 50.5 | 49.5 | 101 | 99 | 76-125 | 2 | 0-18 |
| toluene | 50.0 | 49.6 | 50.2 | 99 | 100 | 75-130 | 1 | 0-18 |
| chlorobenzene | 50.0 | 48.7 | 49.2 | 97 | 98 | 60-145 | 1 | 0-20 |

| AUDIT DATA | LAB ID | SAMPLE ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|---|
| | CL06481S.D | AG382-10-W/CH | 8800376 | 141 EPA 8260 STD | 3/21/98 |

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# Analytical Report

CLIENT: CH2M HILL
ATTN.: MR. ROB LOWEY
PROJECT #: 137125.ED.WC.HB
PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125

MATRIX: SOIL
UNIT: µg/kg

Prepared: 4/2/98
Analyzed: 4/4/98
Analyst: JC

## PCBs, - 8080

| Lab ID | Client Sample ID | D.F. | PCB-1016 | PCB-1221 | PCB-1232 | PCB-1242 | PCB-1248 | PCB-1254 | PCB-1260 | Surrogate Spike: Tetrachloro-xylene (TCX) (75-125) | Surrogate Spike: Decachlorobiphen (DCB) (75-125) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MB80404/3550 | METHOD BLANK | 1 | ND | ND | ND | ND | ND | ND | ND | 84 | 84 |
| CL15067 | HG06B-01/CH | 1 | ND | ND | ND | ND | ND | ND | ND | 93 | 108 |
| CL15068 | HG06B-02/CH | 1 | ND | ND | ND | ND | ND | ND | ND | 112 | 112 |
| CL15069 | HG06A-01/CH | 1 | ND | ND | ND | ND | ND | ND | ND | 95 | 87 |
| CL15070 | HG06A-02/CH | 1 | ND | ND | ND | ND | ND | ND | ND | 88 | 90 |
| *Reporting Limit* | | | 4 | 8 | 4 | 4 | 4 | 4 | 4 | | |

## QUALITY CONTROL DATA, -8080

| LABORATORY CONTROL STANDARD/DUPLICATE | SPK CONC. (µg/kg) | MS (µg/kg) | % MS | MSD (µg/kg) | % MSD | ACP % MS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | PRECISION | |
| PCB-1248 | 50 | 54 | 108 | 59 | 118 | 80-120 | 5 | 0-25 |

| AUDIT DATA | LAB ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|
| | LABORATORY CONTROL STANDARD | CB-040498 | PCB1248 | 4/4/98 |

| MATRIX SPIKE/ MATRIX SPIKE DUPLICATE | SPK. CONC (µg/kg) | MS CONC. (µg/kg) | MS (µg/kg) | % MS | MSD (µg/kg) | % MSD | ACP % MS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | | PRECISION | |
| PCB-1248 | 46 | 50.0 | 53.4 | 98 | 50.6 | 92 | 80-120 | 5 | 0-25 |

| AUDIT DATA | LAB ID | SAMPLE ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|---|
| | CL14996 | AG07-01 | CB-040498 | PCB1248 | 4/4/98 |

NOTES:
*ND denotes Not Detected at the indicated detection limit.*



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# Analytical Report

CLIENT: CH2M HILL

ATTN.: MR. ROB LOWEY

SDG #: 9803.0125

PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

MATRIX: WATER

UNIT: µg/l

Prepared: 4/2/98

Analyzed: 4/4/98

Analyst: JC

## PCBs, - 8080

| Lab ID | Client Sample ID | D.F. | PCB-1016 | PCB-1221 | PCB-1232 | PCB-1242 | PCB-1248 | PCB-1254 | PCB-1260 | Surrogate Spike: Tetrachloro-xylene (TCX) (73-125) | Surrogate Spike: Decachlorobiphe (DCB) (73-125) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MB80404/3510 | METHOD BLANK | 1 | ND | ND | ND | ND | ND | ND | ND | 119 | 117 |
| CLT507T | HG06A-10-W/CH. | 1 | ND | ND | ND | ND | ND | ND | ND | 102 | 116 |
| CL15077 | EB0319/CH | 1 | ND | ND | ND | ND | ND | ND | ND | 106 | 86 |
| *Reporting Limit* | | | 4 | 8 | 4 | 4 | 4 | 4 | 4 | | |

## QUALITY CONTROL DATA, -8080

| LABORATORY CONTROL STANDARD/DUPLICATE | SPK CONC. (µg/l) | MS (µg/l) | % MS | MSD (µg/l) | % MSD | ACCURACY: ACP % MS | PRECISION: RPD | PRECISION: ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| PCB-1248 | 1.00 | 1.12 | 112 | 1.18 | 118 | 80-120 | 5 | 0-25 |

| AUDIT DATA | LAB ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|
| | LABORATORY CONTROL STANDARD | C8-040498 | PCB1248 | 4/4/98 |

| MATRIX SPIKE/ MATRIX SPIKE DUPLICATE | SPK. CONC (µg/kg) | MS CONC. (µg/kg) | MS (µg/kg) | % MS | MSD (µg/kg) | % MSD | ACCURACY: ACP % MS | PRECISION: RPD | PRECISION: ACP % RPD |
|---|---|---|---|---|---|---|---|---|---|
| PCB-1248 | 4.6 | 50.0 | 53.4 | 98 | 50.6 | 92 | 80-120 | 5 | 0-25 |

| AUDIT DATA | LAB ID | SAMPLE ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|---|
| | CL14996 | AG07-01 | C8-040498 | PCB1248 | 4/4/98 |

NOTES:

*ND denotes Not Detected at the indicated detection limit.*

*This report is preceded by a cover sheet that contains vital information.*

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# Analytical Report

CLIENT: CH2M HILL

ATTN.: MR. ROB LOWEY

PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/4/98 |
| Analyzed: | 4/7/98 |
| Analyst: | SDS |

## SEMI-VOLATILE ORGANICS, EPA-8270

| Lab ID: | CL022418 | CL15064 | CL15065 | CL15067 | CL15068 | Detection Limits |
|---|---|---|---|---|---|---|
| Client Sample ID: | Method Blank | HG09-01/CH | HG09-02/CH | HG068-01/CH | HG068-02/CH | |
| COMPOUNDS: D.F. | 1 | 1 | 1 | 1 | 1 | |
| 2,4,5-Trichlorophenol | ND | ND | ND | ND | ND | 1600 |
| 2,4,6-Trichlorophenol | ND | ND | ND | ND | ND | 330 |
| 2,6-Dichlorophenol | ND | ND | ND | ND | ND | 330 |
| 2,4-Dimethylphenol | ND | ND | ND | ND | ND | 330 |
| 2,4-Dinitrophenol | ND | ND | ND | ND | ND | 1600 |
| 2,4-Dinitrotoluene | ND | ND | ND | ND | ND | 330 |
| 2,6-Dinitrotoluene | ND | ND | ND | ND | ND | 330 |
| 2-Chloronaphthalene | ND | ND | ND | ND | ND | 330 |
| 2-Chlorophenol | ND | ND | ND | ND | ND | 330 |
| 2-Methylnaphthalene | ND | ND | ND | ND | ND | 330 |
| 2-Methylphenol | ND | ND | ND | ND | ND | 330 |
| 2-Nitroaniline | ND | ND | ND | ND | ND | 1600 |
| 2-Nitrophenol | ND | ND | ND | ND | ND | 330 |
| 3,3'-Dichlorobenzidine | ND | ND | ND | ND | ND | 660 |
| 3-Nitroaniline | ND | ND | ND | ND | ND | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ND | ND | ND | ND | 1600 |
| 4-Bromophenyl phenyl ether | ND | ND | ND | ND | ND | 330 |
| 4-Chloro-3-methylphenol | ND | ND | ND | ND | ND | 660 |
| 4-Chloroaniline | ND | ND | ND | ND | ND | 330 |
| 4-Chlorophenyl phenyl ether | ND | ND | ND | ND | ND | 330 |
| 4-Methylphenol | ND | ND | ND | ND | ND | 330 |
| 4-Nitroaniline | ND | ND | ND | ND | ND | 1600 |
| 4-Nitrophenol | ND | ND | ND | ND | ND | 1600 |
| Acenaphthene | ND | ND | ND | ND | ND | 330 |
| Acenaphthylene | ND | ND | ND | ND | ND | 330 |
| Anthracene | ND | ND | ND | ND | ND | 330 |
| Benzo [a] anthracene | ND | ND | ND | ND | ND | 330 |
| Benzo [a] pyrene | ND | ND | ND | ND | ND | 330 |
| Benzo [b] fluoranthene | ND | ND | ND | ND | ND | 330 |
| Benzo [g,h,i] perylene | ND | ND | ND | ND | ND | 330 |
| Benzo [k] fluoranthene | ND | ND | ND | ND | ND | 330 |
| bis-(2-Chloroethoxy)-methane | ND | ND | ND | ND | ND | 330 |
| bis-(2-Chloroethyl) | ND | ND | ND | ND | ND | 330 |
| bis (2-Ethylhexyl)-phthalate | ND | ND | ND | ND | ND | 330 |
| Butyl benzyl phthalate | ND | ND | ND | ND | ND | 330 |
| Carbazole | ND | ND | ND | ND | ND | 330 |

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# Analytical Report

CLIENT: CH2M HILL
ATTN.: MR. ROB LOWEY
PROJECT #: 13712S.ED.WC.HB
PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/4/98 |
| Analyzed: | 4/7/98 |
| Analyst: | SDS |

## SEMI-VOLATILE ORGANICS, EPA-8270 Continued...

| Lab ID: | CL022418 | CL15064 | CL15065 | CL15067 | CL15068 | Detection Limits |
|---|---|---|---|---|---|---|
| Client Sample ID: | Method Blank | HG09-01/CH | HG09-02/CH | HG068-01/CH | HG068-02/CH | |
| COMPOUNDS: D.F.: | 1 | 1 | 1 | 1 | 1 | |
| Chrysene | ND | ND | ND | ND | ND | 330 |
| Di-n-butyl phthalate | ND | ND | ND | ND | ND | 330 |
| Di-n-octyl phthalate | ND | ND | ND | ND | ND | 330 |
| Dibenz [a,h] anthracene | ND | ND | ND | ND | ND | 330 |
| Dibenzofuran | ND | ND | ND | ND | ND | 330 |
| Diethyl phthalate | ND | ND | ND | ND | ND | 330 |
| Dimethyl phthalate | ND | ND | ND | ND | ND | 330 |
| Fluoranthene | ND | ND | ND | ND | ND | 330 |
| Fluorene | ND | ND | ND | ND | ND | 330 |
| Hexachlorobenzene | ND | ND | ND | ND | ND | 330 |
| Hexachlorobutadiene | ND | ND | ND | ND | ND | 330 |
| Hexachlorocyclopentadiene | ND | ND | ND | ND | ND | 1600 |
| Hexachloroethane | ND | ND | ND | ND | ND | 330 |
| Indeno [1,2,3-c,d]pyrene | ND | ND | ND | ND | ND | 330 |
| Isophorone | ND | ND | ND | ND | ND | 330 |
| N-Nitroso-di-n-propylamine | ND | ND | ND | ND | ND | 330 |
| N-Nitrosodiphenylamine | ND | ND | ND | ND | ND | 330 |
| Naphthalene | ND | ND | ND | ND | ND | 330 |
| Nitrobenzene | ND | ND | ND | ND | ND | 330 |
| Pentachlorophenol | ND | ND | ND | ND | ND | 1600 |
| Phenanthrene | ND | ND | ND | ND | ND | 330 |
| Pyrene | ND | ND | ND | ND | ND | 330 |
| Phenol | ND | ND | ND | ND | ND | 330 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | | | | | Control Limit |
|---|---|---|---|---|---|---|
| 2-Fluorophenol | 70 | 54 | 61 | 61 | 56 | 25-121 |
| Phenol-d5 | 70 | 58 | 62 | 65 | 60 | 24-113 |
| Nitrobenzene-d5 | 75 | 61 | 66 | 70 | 59 | 23-120 |
| 2-Fluorobiphenyl | 84 | 68 | 73 | 76 | 70 | 30-115 |
| 2,4,6-Tribromophenol | 80 | 81 | 82 | 82 | 83 | 19-122 |
| Terphenyl-d14 | 97 | 89 | 80 | 87 | 83 | 18-137 |

NOTES:

*ND denotes Not Detected at the indicated detection limit.*



Approved by the State of California, Department of Health Services & A2LA-American Association for Laboratory Accreditation.

Testing and Data Management Services

1101 Richfield Road ▪ Placentia, CA 92870 ▪ (714) 572-3270 ▪ Fax (714) 572-3274

# Analytical Report

CLIENT: CH2M HILL
ATTN.: MR. ROB LOWEY
PROJECT #: 137125.ED.WC.HB
PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/4/98 |
| Analyzed: | 4/7/98 |
| Analyst: | SDS |

## SEMI-VOLATILE ORGANICS, EPA-8270

| Lab ID: | CL15069 | CL15070 | CL15072 | CL15073 | CL15074 | Detection Limits |
|---|---|---|---|---|---|---|
| Client Sample ID: | HG06A-01/CH | HG06A-02/CH | HG05-01/CH | HG05-02/CH | HG08-01/CH | |
| COMPOUNDS: D.F. | 1 | 1 | 1 | 1 | 1 | |
| 2,4,5-Trichlorophenol | ND | ND | ND | ND | ND | 1600 |
| 2,4,6-Trichlorophenol | ND | ND | ND | ND | ND | 330 |
| 2,6-Dichlorophenol | ND | ND | ND | ND | ND | 330 |
| 2,4-Dimethylphenol | ND | ND | ND | ND | ND | 330 |
| 2,4-Dinitrophenol | ND | ND | ND | ND | ND | 1600 |
| 2,4-Dinitrotoluene | ND | ND | ND | ND | ND | 330 |
| 2,6-Dinitrotoluene | ND | ND | ND | ND | ND | 330 |
| 2-Chloronaphthalene | ND | ND | ND | ND | ND | 330 |
| 2-Chlorophenol | ND | ND | ND | ND | ND | 330 |
| 2-Methylnaphthalene | ND | ND | ND | ND | ND | 330 |
| 2-Methylphenol | ND | ND | ND | ND | ND | 330 |
| 2-Nitroaniline | ND | ND | ND | ND | ND | 1600 |
| 2-Nitrophenol | ND | ND | ND | ND | ND | 330 |
| 3,3'-Dichlorobenzidine | ND | ND | ND | ND | ND | 660 |
| 3-Nitroaniline | ND | ND | ND | ND | ND | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ND | ND | ND | ND | 1600 |
| 4-Bromophenyl phenyl ether | ND | ND | ND | ND | ND | 330 |
| 4-Chloro-3-methylphenol | ND | ND | ND | ND | ND | 660 |
| 4-Chloroaniline | ND | ND | ND | ND | ND | 330 |
| 4-Chlorophenyl phenyl ether | ND | ND | ND | ND | ND | 330 |
| 4-Methylphenol | ND | ND | ND | ND | ND | 330 |
| 4-Nitroaniline | ND | ND | ND | ND | ND | 1600 |
| 4-Nitrophenol | ND | ND | ND | ND | ND | 1600 |
| Acenaphthene | ND | ND | ND | ND | ND | 330 |
| Acenaphthylene | ND | ND | ND | ND | ND | 330 |
| Anthracene | ND | ND | ND | ND | ND | 330 |
| Benzo [a] anthracene | ND | ND | ND | ND | ND | 330 |
| Benzo [a] pyrene | ND | ND | ND | ND | ND | 330 |
| Benzo [b] fluoranthene | ND | ND | ND | ND | ND | 330 |
| Benzo [g,h,i] perylene | ND | ND | ND | ND | ND | 330 |
| Benzo [k] fluoranthene | ND | ND | ND | ND | ND | 330 |
| bis-(2-Chloroethoxy)-methane | ND | ND | ND | ND | ND | 330 |
| bis-(2-Chloroethyl) | ND | ND | ND | ND | ND | 330 |
| bis (2-Ethylhexyl)-phthalate | ND | ND | ND | ND | ND | 330 |
| Butyl benzyl phthalate | ND | ND | ND | ND | ND | 330 |
| Carbazole | ND | ND | ND | ND | ND | 330 |

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Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL
ATTN.: MR. ROB LOWEY
PROJECT #: 137125.ED.WC.HB
PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/4/98 |
| Analyzed: | 4/7/98 |
| Analyst: | SDS |

## SEMI-VOLATILE ORGANICS, EPA-8270 Continued...

| Lab ID: | CL15069 | CL15070 | CL15072 | CL15073 | CL15074 | Detection Limits |
|---|---|---|---|---|---|---|
| Client Sample ID: | HG06A-01/CH | HG06A-02/CH | HG05-01/CH | HG05-02/CH | HG08-01/CH | |
| COMPOUNDS: D.F.: | 1 | 1 | 1 | 1 | 1 | |
| Chrysene | ND | ND | ND | ND | ND | 330 |
| Di-n-butyl phthalate | ND | ND | ND | ND | ND | 330 |
| Di-n-octyl phthalate | ND | ND | ND | ND | ND | 330 |
| Dibenz [a,h] anthracene | ND | ND | ND | ND | ND | 330 |
| Dibenzofuran | ND | ND | ND | ND | ND | 330 |
| Diethyl phthalate | ND | ND | ND | ND | ND | 330 |
| Dimethyl phthalate | ND | ND | ND | ND | ND | 330 |
| Fluoranthene | ND | ND | ND | ND | ND | 330 |
| Fluorene | ND | ND | ND | ND | ND | 330 |
| Hexachlorobenzene | ND | ND | ND | ND | ND | 330 |
| Hexachlorobutadiene | ND | ND | ND | ND | ND | 330 |
| Hexachlorocyclopentadiene | ND | ND | ND | ND | ND | 1600 |
| Hexachloroethane | ND | ND | ND | ND | ND | 330 |
| Indeno [1,2,3-c,d]pyrene | ND | ND | ND | ND | ND | 330 |
| Isophorone | ND | ND | ND | ND | ND | 330 |
| N-Nitroso-di-n-propylamine | ND | ND | ND | ND | ND | 330 |
| N-Nitrosodiphenylamine | ND | ND | ND | ND | ND | 330 |
| Naphthalene | ND | ND | ND | ND | ND | 330 |
| Nitrobenzene | ND | ND | ND | ND | ND | 330 |
| Pentachlorophenol | ND | ND | ND | ND | ND | 1600 |
| Phenanthrene | ND | ND | ND | ND | ND | 330 |
| Pyrene | ND | ND | ND | ND | ND | 330 |
| Phenol | ND | ND | ND | ND | ND | 330 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | | | | | Control Limit |
|---|---|---|---|---|---|---|
| 2-Fluorophenol | 55 | 55 | 65 | 58 | 58 | 25-121 |
| Phenol-d5 | 57 | 56 | 68 | 59 | 59 | 24-113 |
| Nitrobenzene-d5 | 63 | 65 | 68 | 65 | 61 | 23-120 |
| 2-Fluorobiphenyl | 70 | 71 | 73 | 72 | 70 | 30-115 |
| 2,4,6-Tribromophenol | 82 | 80 | 80 | 78 | 79 | 19-122 |
| Terphenyl-d14 | 83 | 78 | 79 | 86 | 80 | 18-137 |

NOTES:

*ND denotes Not Detected at the indicated detection limit.*



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# Analytical Report

CLIENT: CH2M HILL
ATTN.: MR. ROB LOWEY
PROJECT #: 137125.ED.WC.HB
PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



| MATRIX: | SOIL |
|---|---|
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/4/98 |
| Analyzed: | 4/6/98 |
| Analyst: | SDS |

## SEMI-VOLATILE ORGANICS, EPA-8270

| Lab ID: | CL15075 | CL15076 | CL15081 | CL15083 | CL15087 | Detection Limits |
|---|---|---|---|---|---|---|
| Client Sample ID: | HG08-02/CH | HG08-03/CH | HG18-01/CH5.0'-5.5' | HG18-02/CH11.5-12.0' | HG16-01/CH3.0'-3.5' | |
| COMPOUNDS: D.F.: | 1 | 1 | 1 | 1 | 5* | |
| 2,4,5-Trichlorophenol | ND | ND | ND | ND | ND | 1600 |
| 2,4,6-Trichlorophenol | ND | ND | ND | ND | ND | 330 |
| 2,6-Dichlorophenol | ND | ND | ND | ND | ND | 330 |
| 2,4-Dimethylphenol | ND | ND | ND | ND | ND | 330 |
| 2,4-Dinitrophenol | ND | ND | ND | ND | ND | 1600 |
| 2,4-Dinitrotoluene | ND | ND | ND | ND | ND | 330 |
| 2,6-Dinitrotoluene | ND | ND | ND | ND | ND | 330 |
| 2-Chloronaphthalene | ND | ND | ND | ND | ND | 330 |
| 2-Chlorophenol | ND | ND | ND | ND | ND | 330 |
| 2-Methylnaphthalene | ND | ND | ND | ND | ND | 330 |
| 2-Methylphenol | ND | ND | ND | ND | ND | 330 |
| 2-Nitroaniline | ND | ND | ND | ND | ND | 1600 |
| 2-Nitrophenol | ND | ND | ND | ND | ND | 330 |
| 3,3'-Dichlorobenzidine | ND | ND | ND | ND | ND | 660 |
| 3-Nitroaniline | ND | ND | ND | ND | ND | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ND | ND | ND | ND | 1600 |
| 4-Bromophenyl phenyl ether | ND | ND | ND | ND | ND | 330 |
| 4-Chloro-3-methylphenol | ND | ND | ND | ND | ND | 650 |
| 4-Chloroaniline | ND | ND | ND | ND | ND | 330 |
| 4-Chlorophenyl phenyl ether | ND | ND | ND | ND | ND | 330 |
| 4-Methylphenol | ND | ND | ND | ND | ND | 330 |
| 4-Nitroaniline | ND | ND | ND | ND | ND | 1600 |
| 4-Nitrophenol | ND | ND | ND | ND | ND | 1600 |
| Acenaphthene | ND | ND | ND | ND | ND | 330 |
| Acenaphthylene | ND | ND | ND | ND | ND | 330 |
| Anthracene | ND | ND | ND | ND | ND | 330 |
| Benzo [a] anthracene | ND | ND | ND | ND | ND | 330 |
| Benzo [a] pyrene | ND | ND | ND | ND | ND | 330 |
| Benzo [b] fluoranthene | ND | ND | ND | ND | ND | 330 |
| Benzo [g,h,i] perylene | ND | ND | ND | ND | ND | 330 |
| Benzo [k] fluoranthene | ND | ND | ND | ND | ND | 330 |
| bis-(2-Chloroethoxy)-methane | ND | ND | ND | ND | ND | 330 |
| bis-(2-Chloroethyl) | ND | ND | ND | ND | ND | 330 |
| bis (2-Ethylhexyl)-phthalate | ND | ND | ND | ND | ND | 330 |
| Butyl benzyl phthalate | ND | ND | ND | ND | ND | 330 |
| Carbazole | ND | ND | ND | ND | ND | 330 |

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Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL
ATTN.: MR. ROB LOWEY
PROJECT #: 13712S.ED.WC.HB
PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/4/98 |
| Analyzed: | 4/6/98 |
| Analyst: | SDS |

## SEMI-VOLATILE ORGANICS, EPA-8270 Continued...

| Lab ID: | CL15075 | CL15076 | CL15081 | CL15083 | CL15087 | Detection Limits |
|---|---|---|---|---|---|---|
| Client Sample ID: | HG08-02/CH | HG08-03/CH | HG18-01/CH5.0'-5.5' | HG18-02/CH11.5'-12.0' | HG16-01/CH3.0'-3.5' | |
| COMPOUNDS: D.F.: | 1 | 1 | 1 | 1 | 5* | |
| Chrysene | ND | ND | ND | ND | ND | 330 |
| Di-n-butyl phthalate | ND | ND | ND | ND | ND | 330 |
| Di-n-octyl phthalate | ND | ND | ND | ND | ND | 330 |
| Dibenz [a,h] anthracene | ND | ND | ND | ND | ND | 330 |
| Dibenzofuran | ND | ND | ND | ND | ND | 330 |
| Diethyl phthalate | ND | ND | ND | ND | ND | 330 |
| Dimethyl phthalate | ND | ND | ND | ND | ND | 330 |
| Fluoranthene | 500 | ND | ND | ND | 1800 | 330 |
| Fluorene | ND | ND | ND | ND | ND | 330 |
| Hexachlorobenzene | ND | ND | ND | ND | ND | 330 |
| Hexachlorobutadiene | ND | ND | ND | ND | ND | 330 |
| Hexachlorocyclopentadiene | ND | ND | ND | ND | ND | 1600 |
| Hexachloroethane | ND | ND | ND | ND | ND | 330 |
| Indeno [1,2,3-c,d]pyrene | ND | ND | ND | ND | ND | 330 |
| Isophorone | ND | ND | ND | ND | ND | 330 |
| N-Nitroso-di-n-propylamine | ND | ND | ND | ND | ND | 330 |
| N-Nitrosodiphenylamine | ND | ND | ND | ND | ND | 330 |
| Naphthalene | ND | ND | ND | ND | ND | 330 |
| Nitrobenzene | ND | ND | ND | ND | ND | 330 |
| Pentachlorophenol | ND | ND | ND | ND | ND | 1600 |
| Phenanthrene | ND | ND | ND | ND | ND | 330 |
| Pyrene | 540 | ND | ND | ND | 1900 | 330 |
| Phenol | ND | ND | ND | ND | ND | 330 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | | | | | Control Limit |
|---|---|---|---|---|---|---|
| 2-Fluorophenol | 66 | 55 | 57 | 51 | 65 | 25-121 |
| Phenol-d5 | 71 | 59 | 58 | 55 | 68 | 24-113 |
| Nitrobenzene-d5 | 67 | 62 | 62 | 57 | 67 | 23-120 |
| 2-Fluorobiphenyl | 73 | 67 | 72 | 66 | 80 | 30-115 |
| 2,4,6-Tribromophenol | 79 | 83 | 81 | 71 | 68 | 19-122 |
| Terphenyl-d14 | 81 | 84 | 83 | 80 | 82 | 18-137 |

*NOTES:*

*ND denotes Not Detected at the indicated detection limit.*

** Sample was diluted due to viscosity.*



Approved by the State of California, Department of Health Services & ASTM-American Association for Laboratory Accreditation.
The report is submitted for the exclusive use of the client to whom it is addressed.

Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL

ATTN.: MR. ROB LOWEY

PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/4/98 |
| Analyzed: | 4/6/98 |
| Analyst: | SDS |

## SEMI-VOLATILE ORGANICS, EPA-8270

| Lab ID: | CL15088 | CL15089 | CL15092 | CL15094 | Detection Limits |
|---|---|---|---|---|---|
| Client Sample ID: | HG16-03/CH | HG16-02/CH | HG10-01/CH5.0'-5.5' | HG10-02/CH10.5'-11.0' | |
| COMPOUNDS: D.F.: | 1 | 1 | 1 | 1 | |
| 2,4,5-Trichlorophenol | ND | ND | ND | ND | 1600 |
| 2,4,6-Trichlorophenol | ND | ND | ND | ND | 330 |
| 2,6-Dichlorophenol | ND | ND | ND | ND | 330 |
| 2,4-Dimethylphenol | ND | ND | ND | ND | 330 |
| 2,4-Dinitrophenol | ND | ND | ND | ND | 1600 |
| 2,4-Dinitrotoluene | ND | ND | ND | ND | 330 |
| 2,6-Dinitrotoluene | ND | ND | ND | ND | 330 |
| 2-Chloronaphthalene | ND | ND | ND | ND | 330 |
| 2-Chlorophenol | ND | ND | ND | ND | 330 |
| 2-Methylnaphthalene | ND | ND | ND | ND | 330 |
| 2-Methylphenol | ND | ND | ND | ND | 330 |
| 2-Nitroaniline | ND | ND | ND | ND | 1600 |
| 2-Nitrophenol | ND | ND | ND | ND | 330 |
| 3,3'-Dichlorobenzidine | ND | ND | ND | ND | 660 |
| 3-Nitroaniline | ND | ND | ND | ND | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ND | ND | ND | 1600 |
| 4-Bromophenyl phenyl ether | ND | ND | ND | ND | 330 |
| 4-Chloro-3-methylphenol | ND | ND | ND | ND | 660 |
| 4-Chloroaniline | ND | ND | ND | ND | 330 |
| 4-Chlorophenyl phenyl ether | ND | ND | ND | ND | 330 |
| 4-Methylphenol | ND | ND | ND | ND | 330 |
| 4-Nitroaniline | ND | ND | ND | ND | 1600 |
| 74-Nitrophenol | ND | ND | ND | ND | 1600 |
| Acenaphthene | ND | ND | ND | ND | 330 |
| Acenaphthylene | ND | ND | ND | ND | 330 |
| Anthracene | ND | ND | ND | ND | 330 |
| Benzo [a] anthracene | ND | ND | ND | ND | 330 |
| Benzo [a] pyrene | ND | ND | ND | ND | 330 |
| Benzo [b] fluoranthene | ND | ND | ND | ND | 330 |
| Benzo [g,h,i] perylene | ND | ND | ND | ND | 330 |
| Benzo [k] fluoranthene | ND | ND | ND | ND | 330 |
| bis-(2-Chloroethoxy)-methane | ND | ND | ND | ND | 330 |
| bis-(2-Chloroethyl) | ND | ND | ND | ND | 330 |
| bis (2-Ethylhexyl)-phthalate | ND | ND | ND | ND | 330 |
| Butyl benzyl phthalate | ND | ND | ND | ND | 330 |
| Carbazole | ND | ND | ND | ND | 330 |

Continued on next page...



Approved by the State of California, Department of Health Services & ASL/American Association for Laboratory Accreditation.
This report is submitted for the exclusive use of the client to whom it is addressed. Results relate only to the items tested.

Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL

ATTN.: MR. ROB LOWEY

PROJECT #: 137125.ED.WC.H8

PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/4/98 |
| Analyzed: | 4/6/98 |
| Analyst: | SDS |

## SEMI-VOLATILE ORGANICS, EPA-8270 Continued...

| Lab ID: | CL15088 | CL15089 | CL15092 | CL15094 | Detection Limits |
|---|---|---|---|---|---|
| Client Sample ID: | HG16-03/CH | HG16-02/CH | HG10-01/CH5.0'-5.5' | HG10-02/CH10.5'-11.0' | |
| COMPOUNDS: D.F.: | 1 | 1 | 1 | 1 | |
| Chrysene | ND | ND | ND | ND | 330 |
| Di-n-butyl phthalate | ND | ND | ND | ND | 330 |
| Di-n-octyl phthalate | ND | ND | ND | ND | 330 |
| Dibenz [a,h] anthracene | ND | ND | ND | ND | 330 |
| Dibenzofuran | ND | ND | ND | ND | 330 |
| Diethyl phthalate | ND | ND | ND | ND | 330 |
| Dimethyl phthalate | ND | ND | ND | ND | 330 |
| Fluoranthene | ND | ND | ND | ND | 330 |
| Fluorene | ND | ND | ND | ND | 330 |
| Hexachlorobenzene | ND | ND | ND | ND | 330 |
| Hexachlorobutadiene | ND | ND | ND | ND | 330 |
| Hexachlorocyclopentadiene | ND | ND | ND | ND | 1600 |
| Hexachlorethane | ND | ND | ND | ND | 330 |
| Indeno [1,2,3-c,d]pyrene | ND | ND | ND | ND | 330 |
| Isophorone | ND | ND | ND | ND | 330 |
| N-Nitroso-di-n-propylamine | ND | ND | ND | ND | 330 |
| N-Nitrosodiphenylamine | ND | ND | ND | ND | 330 |
| Naphthalene | ND | ND | ND | ND | 330 |
| Nitrobenzene | ND | ND | ND | ND | 330 |
| Pentachlorophenol | ND | ND | ND | ND | 1600 |
| Phenanthrene | ND | ND | ND | ND | 330 |
| Pyrene | ND | ND | ND | ND | 330 |
| Phenol | ND | ND | ND | ND | 330 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | | | | Control Limit |
|---|---|---|---|---|---|
| 2-Fluorophenol | 55 | 52 | 58 | 60 | 25-121 |
| Phenol-d5 | 54 | 55 | 60 | 63 | 24-113 |
| Nitrobenzene-d5 | 60 | 59 | 61 | 65 | 23-120 |
| 2-Fluorobiphenyl | 68 | 68 | 74 | 78 | 30-115 |
| 2,4,6-Tribromophenol | 77 | 76 | 76 | 82 | 19-122 |
| Terphenyl-d14 | 80 | 76 | 80 | 83 | 18-137 |

*NOTES:*

*ND denotes Not Detected at the indicated detection limit.*

*This report is preceded by a cover sheet that contains vital information.*

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Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL

ATTN.: MR. ROB LOWEY

PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



| MATRIX: | SOIL |
|---|---|
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/4/98 |
| Analyzed: | 4/6/98 |
| Analyst: | SDS |

## QUALITY CONTROL DATA, EPA-8270

| LABORATORY CONTROL STANDARD/DUPLICAT | SPK CONC. (µg/kg) | LCS (µg/kg) | LCSD (µg/kg) | % LCS | % LCSD | ACP % LCS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | PRECISION | |
| Phenol | 200 | 119 | 135 | 59 | 68 | 26-90 | 13 | 0-35 |
| 2-Chlorophenol | 200 | 137 | 160 | 69 | 80 | 25-102 | 15 | 0-50 |
| 1,4-dichlorobenzene | 100 | 70 | 81 | 70 | 81 | 28-104 | 15 | 0-27 |
| n-Nitroso-di-n-propylamine | 100 | 84 | 89 | 84 | 89 | 41-126 | 6 | 0-38 |
| 1,2,4-Trichlorobenzene | 100 | 72 | 81 | 72 | 81 | 38-107 | 11 | 0-23 |
| 4-chloro-3-methylphenol | 200 | 158 | 172 | 79 | 86 | 26-103 | 8 | 0-33 |
| Acenaphthene | 100 | 76 | 81 | 76 | 81 | 31-137 | 6 | 0-19 |
| 4-Nitrophenol | 200 | 144 | 159 | 72 | 79 | 11-114 | 10 | 0-50 |
| 2,4-Dinitrotoluene | 100 | 82 | 88 | 82 | 88 | 28-89 | 7 | 0-47 |
| Pentachlorophenol | 200 | 163 | 164 | 81 | 82 | 17-109 | 1 | [illegible] |
| Pyrene | 100 | 96 | 97 | 96 | 97 | 35-142 | 2 | [illegible] |

| AUDIT DATA | LAB ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|
| | LABORATORY CONTROL STANDARD | 1025 | 131 | 4/6/98 |

| MATRIX SPIKE/ MATRIX SPIKE DUPLICATE | SPK CONC. (µg/kg) | MS (µg/kg) | MSD (µg/kg) | % MS | % MSD | ACP % MS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | PRECISION | |
| Phenol | 200 | 114 | 117 | 57 | 59 | 26-90 | 3 | 0-35 |
| 2-Chlorophenol | 200 | 133 | 127 | 67 | 64 | 25-102 | 5 | 0-50 |
| 1,4-dichlorobenzene | 100 | 68 | 63 | 68 | 63 | 28-104 | 8 | 0-27 |
| n-Nitroso-di-n-propylamine | 100 | 76 | 71 | 76 | 71 | 41-126 | 8 | 0-38 |
| 1,2,4-Trichlorobenzene | 100 | 70 | 66 | 70 | 66 | 38-107 | 7 | 0-23 |
| 4-chloro-3-methylphenol | 200 | 151 | 117 | 75 | 59 | 26-103 | 25 | 0-33 |
| Acenaphthene | 100 | 76 | 72 | 76 | 72 | 31-137 | 5 | 0-19 |
| 4-Nitrophenol | 200 | 142 | 155 | 71 | 77 | 11-114 | 9 | 0-50 |
| 2,4-Dinitrotoluene | 100 | 82 | 80 | 82 | 80 | 28-89 | 2 | 0-47 |
| Pentachlorophenol | 200 | 157 | 151 | 79 | 75 | 17-109 | 4 | 0-47 |
| Pyrene | 100 | 90 | 87 | 89 | 87 | 35-142 | 2 | 0-36 |

| AUDIT DATA | LAB ID | SAMPLE ID | BATCH # | QC STD # | ANALYZED |
|---|---|---|---|---|---|
| | CL15073 | HG05-02-MS | 1025 | 131 | 4/6/98 |



Approved by the State of California, Department of Health Services & ACLA-American Association for Laboratory Accreditation.

Testing and Data Management Services

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# Analytical Report

CASE NARRATIVE

**SDG #: 9803.0125**

**REPORT DATE:** 4/19/98

**REPORTED TO:** CH2M HILL
3 HUTTON CENTRE DRIVE
SUITE 200
SANTA ANA, CA 92707

**ATTN.:** MR. ROB LOWEY

**PROJECT #:** 13712S.ED.WC.HB
**PROJECT NAME:** SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

**DATE SAMPLED:** 3/19/98
**DATE RECEIVED:** 3/19/98
**# OF SAMPLES:** 31
**SAMPLE MATRIX:** SOIL, WATER
**CLIENT SAMPLE ID:**

| SOIL | | WATER |
|---|---|---|
| HG09-01/CH | HG18-01/CH5.0'-5.5' | HG09-10-W/CH |
| HG09-02/CH | HG18-02/CH11.0'-11.5' | HG06A-10-W/CH |
| HG06B-01/CH | HG18-02/CH11.5'-12.0' | EB0319/CH |
| HG06B-02/CH | HG16-01/CH2.5'-3.0' | HG18-10-W/CH |
| HG06A-01/CH | HG16-01/CH3.0'-3.5' | HG18-11-W/CH2 |
| HG06A-02/CH | HG16-03/CH | HG16-10-W/CH |
| HG05-01/CH | HG16-02/CH | HG16-10-W/CHMS/MSD |
| HG05-02/CH | HG10-01/CH2.5'-3.0' | RBHG-10-W/CH |
| HG08-01/CH | HG10-01/CH5.0'-5.5' | |
| HG08-02/CH | HG10-02/CH5.5'-6.0' | |
| HG08-03/CH | HG02/CH10.5'-11.0' | |
| HG18-01/CH2.5'-3.0' | | |

*NOTE: All metals are on hold as per client request.*

## SAMPLE HANDLING & CONTROL STATEMENT

*The above mentioned samples were received in appropriate containers accompanied by a fully signed and dated chain-of-custody record. The containers were assigned unique identification numbers and had sufficient amount for the test requested unless otherwise noted in the accompanying laboratory report. The ice chest(s) were received under appropriate custody seals. There were no site specific quality control requirements made at the time of sample submittal. The samples did not exceed the holding time for the requested test parameters.*

## QUALITY CONTROL SUMMARY STATEMENT

*Laboratory Quality Control parameters and results of instrument calibration standards were all within control limits and the analytical data hereby submitted falls within acceptable limits of accuracy and precision unless otherwise indicated. Please see the Quality Control Data submitted in this report for additional information. In addition, necessary information regarding instrument calibration, MS/MSD, LCS/LCSD, method blank, and all other pertinent Quality Control measures are hereby enclosed for review.*

**SUBMITTED BY:**

Girma Selassie
Director

CERTIFICATE OF APPROVED ANALYSIS

*The information contained in this cover sheet is an integral part of the attached analytical report.*

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# Analytical Report

CLIENT: CH2M HILL

ATTN.: MR. ROB LOWEY

SDG #: 9803.0125

PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

MATRIX: LIQUID

UNIT: mg/l

## [$C_{10}$-$C_{40}$]

| Lab ID: | CL15066 | CL15071 | CL15077 | CL15078 | CL15085 | CL15090 | Reporti Limit |
|---|---|---|---|---|---|---|---|
| Client Sample ID: | HG09-10-W/CH | HG06A-10-W/CH | EB0319/CH | HG18-10-W/CH | HG16-10-W/CHMS/MSD | RBHG-10-W/CH | |
| Compounds: D.F.: | 1 | 1 | 1 | 1 | 1 | 1 | |
| $C_{10}$-$C_{15}$ | 170 | 108 | 63 | 116 | 490 | 109 | 10 |
| $C_{16}$-$C_{19}$ | 235 | 130 | 110 | 188 | 323 | ND | 10 |
| $C_{20}$-$C_{23}$ | 209 | 82 | ND | 70 | 210 | ND | 10 |
| $C_{24}$-$C_{27}$ | 101 | 63 | ND | 128 | 227 | ND | 10 |
| $C_{28}$-$C_{35}$ | 36 | 12 | ND | 33 | 217 | ND | 10 |
| $C_{36}$-$C_{39}$ | ND | 12 | ND | 19 | 118 | ND | 10 |
| $C_{40}$-$C_{43}$ | ND | 60 | ND | ND | 32 | 21 | 10 |

| Surrogate Spiked | SURROGATE % RECOVERY | | | | | | Con' Lin |
|---|---|---|---|---|---|---|---|
| Chlorobenzene | 153* | 123 | 104 | 101 | 117 | 82 | |

*ND denotes Not Detected at the Indicated Reporting Limit.*

NOTES:

** Out of criteria due to sample matrix interference. The Laboratory Control Standard (LCS) is a control sample of known interference free matrix that is analyzed usi the same reagents, preparation and analytical methods employed for this set of samples. The LCS percent recovery data verifies method and system performan and is used for validation of sample batch results. The MS/MSD results are not used to determine the acceptance or rejection of batch analyses data due to t potential impact of matrix effects arising from sample matrix interference. These results are included as sample related information only and should be evaluat accordingly.*

*This report is preceded by a cover sheet that contains vital information.*

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# Analytical Report

CLIENT: CH2M HILL

ATTN.: MR. ROB LOWEY

PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



MATRIX: SOIL

UNIT: mg/kg

## [$C_{10}$-$C_{40}$]

| Lab ID: | CL15064 | CL15065 | CL15067 | CL15068 | CL15069 | CL15070 | Reporting Limit |
|---|---|---|---|---|---|---|---|
| Client Sample ID: | HG09-01/CH | HG09-02/CH | HG06B-01/CH | HG06B-02/CH | HG06A-01/CH | HG06A-02/CH | |
| Compounds: D.F.: | 1 | 1 | 1 | 1 | 1 | 1 | |
| $C_{10}$-$C_{15}$ | 102 | 109 | | | 35 | ND | 10 |
| $C_{16}$-$C_{19}$ | 116 | ND | | | ND | ND | 10 |
| $C_{20}$-$C_{23}$ | 31 | 16 | | | ND | 11 | 10 |
| $C_{24}$-$C_{27}$ | ND | 69 | | | ND | 20 | 10 |
| $C_{28}$-$C_{35}$ | 13 | ND | | | ND | ND | 10 |
| $C_{36}$-$C_{39}$ | ND | ND | | | ND | ND | 10 |
| $C_{40}$-$C_{43}$ | ND | ND | | | ND | ND | 10 |

| Surrogate Spiked | SURROGATE % RECOVERY | | | | | Control Lim. |
|---|---|---|---|---|---|---|
| Chlorobenzene | 164* | 93 | | | 118 | 82 | 60-150 |

*ND denotes Not Detected at the Indicated Reporting Limit.*

NOTES:

** Out of criteria due to sample matrix interference. The Laboratory Control Standard (LCS) is a control sample of known interference free matrix that is analyzed usir the same reagents, preparation and analytical methods employed for this set of samples. The LCS percent recovery data verifies method and system performanc and is used for validation of sample batch results. The MS/MSD results are not used to determine the acceptance or rejection of batch analyses data due to tl potential impact of matrix effects arising from sample matrix interference. These results are included as sample related information only and should be evaluat accordingly.*

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# Analytical Report

CLIENT: CH2M HILL

ATTN.: MR. ROB LOWEY

PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



MATRIX: SOIL

UNIT: mg/kg

## [$C_{10}$-$C_{40}$]

| Lab ID: | CL15072 | CL15073 | CL15074 | CL15075 | CL15076 | CL15081 | Reporting Limit |
|---|---|---|---|---|---|---|---|
| Client Sample ID: | HG05-01/CH | HG05-02/CH | HG08-01/CH | HG08-02/CH | HG08-03/CH | HG18-01/CH5.0'-5.5' | |
| Compounds: D.F.: | 1 | 1 | 1 | 1 | 1 | 1 | |
| $C_{10}$-$C_{15}$ | 77 | 30 | ND | 23 | ND | 31 | 10 |
| $C_{16}$-$C_{19}$ | 110 | ND | ND | 81 | ND | 12 | 10 |
| $C_{20}$-$C_{23}$ | 16 | ND | ND | 118 | ND | 10 | 10 |
| $C_{24}$-$C_{27}$ | ND | ND | ND | 268 | 26 | ND | 10 |
| $C_{28}$-$C_{35}$ | ND | ND | ND | 1320 | 35 | ND | 10 |
| $C_{36}$-$C_{39}$ | 19 | ND | ND | 1070 | 123 | 11 | 10 |
| $C_{40}$-$C_{43}$ | 95 | ND | ND | 940 | 184 | ND | 10 |

| Surrogate Spiked | SURROGATE % RECOVERY | | | | | | Co[illegible] |
|---|---|---|---|---|---|---|---|
| Chlorobenzene | 147 | 112 | 85 | 68 | 82 | 97 | 60-[illegible] |

*ND denotes Not Detected at the Indicated Reporting Limit.*

*This report is preceded by a cover sheet that contains vital information.*

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Testing and Data Management Services

# Analytical Report

1101 Richfield Road ■ Placentia, CA 92870 ■ (714) 572-3270 ■ Fax (714) 572-3274

CLIENT: CH2M HILL
ATTN.: MR. ROB LOWEY
PROJECT #: 13712S.ED.WC.HB
PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



MATRIX: SOIL
UNIT: mg/kg

## [$C_{10}$-$C_{40}$]

| Lab ID: | CL15083 | CL15087 | CL15088 | CL15089 | CL15092 | CL15094 | Reporting Limit |
|---|---|---|---|---|---|---|---|
| Client Sample ID: | HG18-02/CH11.5'-12.0' | HG18-01/CH3.0'-3.5' | HG16-03/CH | HG16-02/CH | HG10-01/CH5.0'-5.5' | HG02/CH10.5'-11.0' | |
| Compounds: D.F.: | 1 | 1 | 1 | 1 | 1 | 1 | |
| $C_{10}$-$C_{15}$ | 61 | ND | 42 | | 90 | ND | 10 |
| $C_{16}$-$C_{19}$ | 12 | 83 | 12 | | 112 | ND | 10 |
| $C_{20}$-$C_{23}$ | 38 | 240 | ND | | 15 | ND | 10 |
| $C_{24}$-$C_{27}$ | ND | 650 | ND | | 38 | ND | 10 |
| $C_{28}$-$C_{36}$ | ND | 2510 | ND | | 11 | 68 | 10 |
| $C_{36}$-$C_{39}$ | ND | 1014 | ND | | 12 | 107 | 10 |
| $C_{40}$-$C_{43}$ | ND | 933 | ND | | 34 | 161 | 10 |

| Surrogate Spiked | SURROGATE % RECOVERY | | | | | Control Lim |
|---|---|---|---|---|---|---|
| Chlorobenzene | 92 | 89 | 120 | | 129 | 84 | 60-150 |

*ND denotes Not Detected at the Indicated Reporting Limit.*



Approved by the State of California, Department of Health Services & ASTA-American Association for Laboratory Accreditation.

CLI Testing and Data Management Services
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# Analytical Report

CLIENT: CH2M HILL
ATTN.: MR. ROB LOWEY
PROJECT #: 137125.ED.WC.H8
PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



MATRIX: LIQUID
UNIT: µg/l

Prepared: 4/17/98
Analyzed: 4/17/98
Analyst: LR*

## SEMI-VOLATILE ORGANICS, EPA-8270

| L&R ID: | 8W-1585 | 8W-1590 | 8W-1582 | 8W-1600 | |
|---|---|---|---|---|---|
| CLI Lab ID: | METHOD BLANK | CL15066 | CL15077 | CL15078 | |
| Client Sample ID: | ——— | HG09-10-W/CH | EB0319-CH | HG18-10-W/CH | Reporting Limit |
| COMPOUNDS: D.F.: | 1 | 1 | 1 | 1 | |
| 2,4,5-Trichlorophenol | ND | ND | ND | ND | 10 |
| 2,4,6-Trichlorophenol | ND | ND | ND | ND | 10 |
| 2,6-Dichlorophenol | ND | ND | ND | ND | 10 |
| 2,4-Dimethylphenol | ND | ND | ND | ND | 10 |
| 2,4-Dinitrophenol | ND | ND | ND | ND | 50 |
| 2,4-Dinitrotoluene | ND | ND | ND | ND | 10 |
| 2,6-Dinitrotoluene | ND | ND | ND | ND | 10 |
| 2-Chloronaphthalene | ND | ND | ND | ND | 10 |
| 2-Chlorophenol | ND | ND | ND | ND | 10 |
| 2-Methylnaphthalene | ND | ND | ND | ND | 10 |
| 2-Methylphenol | ND | ND | ND | ND | 10 |
| 2-Nitroaniline | ND | ND | ND | ND | 10 |
| 2-Nitrophenol | ND | ND | ND | ND | 50 |
| 3,3'-Dichlorobenzidine | ND | ND | ND | ND | 50 |
| 3-Nitroaniline | ND | ND | ND | ND | 50 |
| 4,6-Dinitro-2-methylphenol | ND | ND | ND | ND | 50 |
| 4-Bromophenyl phenyl ether | ND | ND | ND | ND | 10 |
| 4-Chloro-3-methylphenol | ND | ND | ND | ND | 10 |
| 4-Chloroaniline | ND | ND | ND | ND | 10 |
| 4-Chlorophenyl phenyl ether | ND | ND | ND | ND | 10 |
| 4-Methylphenol | ND | ND | ND | ND | 10 |
| 4-Nitroaniline | ND | ND | ND | ND | 10 |
| 4-Nitrophenol | ND | ND | ND | ND | 50 |
| Acenaphthene | ND | ND | ND | ND | 50 |
| Acenaphthylene | ND | ND | ND | ND | 10 |
| Anthracene | ND | ND | ND | ND | 10 |
| Benzo [a] anthracene | ND | ND | ND | ND | 10 |
| Benzo [a] pyrene | ND | ND | ND | ND | 10 |
| Benzo [b] fluoranthene | ND | ND | ND | ND | 10 |
| Benzo [g,h,i] perylene | ND | ND | ND | ND | 10 |
| Benzo [k] fluoranthene | ND | ND | ND | ND | 10 |
| bis-(2-Chloroethoxy)-methane | ND | ND | ND | ND | 10 |
| bis-(2-Chloroethyl) | ND | ND | ND | ND | 10 |
| bis (2-Ethylhexyl)-phthalate | ND | 10 | ND | 56 | 10 |
| Butyl benzyl phthalate | ND | ND | ND | ND | 10 |
| Carbazole | ND | ND | ND | ND | 10 |

Continued on next page...

Testing and Data Management Services

# Analytical Report

1101 Richfield Road ▪ Placentia, CA 92870 ▪ (714) 572-3270 ▪ Fax (714) 572-3274

CLIENT: CH2M HILL
ATTN.: MR. ROB LOWEY
PROJECT #: 13712S.ED.WC.HB
PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9802.0125



| | |
|---|---|
| MATRIX: | LIQUID |
| UNIT: | µg/l |

| | |
|---|---|
| Prepared: | 4/17/98 |
| Analyzed: | 4/17/98 |
| Analyst: | LR* |

## SEMI-VOLATILE ORGANICS, EPA-8270 Continued...

| L&R ID: | 8W-1585 | 8W-1590 | 8W-1582 | 8W-1600 | |
|---|---|---|---|---|---|
| CLI Lab ID: | METHOD BLANK | CL15066 | CL15077 | CL15078 | |
| Client Sample ID: | ——— | HG09-10-W/CH | EB0319-CH | HG18-10-W/CH | Reporting Limit |
| COMPOUNDS: D.F.: | 1 | 1 | 1 | 1 | |
| Chrysene | ND | ND | ND | ND | 10 |
| Di-n-butyl phthalate | ND | ND | ND | ND | 10 |
| Di-n-octyl phthalate | ND | ND | ND | ND | 10 |
| Dibenz [a,h] anthracene | ND | ND | ND | ND | 10 |
| Dibenzofuran | ND | ND | ND | ND | 10 |
| Diethyl phthalate | ND | ND | ND | ND | 10 |
| Dimethyl phthalate | ND | ND | ND | ND | 10 |
| Fluoranthene | ND | ND | ND | ND | 10 |
| Fluorene | ND | ND | ND | ND | 10 |
| Hexachlorobenzene | ND | ND | ND | ND | 1.0 |
| Hexachlorobutadiene | ND | ND | ND | ND | 10 |
| Hexachlorocyclopentadiene | ND | ND | ND | ND | 50 |
| Hexachloroethane | ND | ND | ND | ND | 10 |
| Indeno [1,2,3-c,d]pyrene | ND | ND | ND | ND | 10 |
| Isophorone | ND | ND | ND | ND | 10 |
| N-Nitroso-di-n-propylamine | ND | ND | ND | ND | 10 |
| N-Nitrosodiphenylamine | ND | ND | ND | ND | 10 |
| Naphthalene | ND | ND | ND | ND | 10 |
| Nitrobenzene | ND | ND | ND | ND | 10 |
| Pentachlorophenol | ND | ND | ND | ND | 50 |
| Phenanthrene | ND | ND | ND | ND | 10 |
| Pyrene | ND | ND | ND | ND | 10 |
| Phenol | ND | ND | ND | ND | 10 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | | | | Control Limit |
|---|---|---|---|---|---|
| 2-Fluorophenol | 40 | 24 | 0 | 21 | 21-110 |
| Phenol-d5 | 72 | 12 | 0 | 18 | 10-110 |
| Nitrobenzene-d5 | 62 | 48 | 0 | 54 | 35-114 |
| 2-Fluorobiphenyl | 66 | 65 | 0 | 52 | 43-116 |
| 2,4,6-Tribromophenol | 100 | 36 | 0 | 49 | 10-123 |
| Terphenyl-d14 | 114 | 94 | 0 | 52 | 33-141 |

NOTES:

*ND denotes Not Detected at the indicated detection limit.*

** Sample(s) were analyzed by Lee & Ro Environmental Laboratories.*

Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL
ATTN.: MR. ROB LOWEY
PROJECT #: 137125.ED.WC.HB
PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



| | |
|---|---|
| MATRIX: | LIQUID |
| UNIT: | µg/l |

| | |
|---|---|
| Prepared: | 4/17/98 |
| Analyzed: | 4/17/98 |
| Analyst: | LR* |

## SEMI-VOLATILE ORGANICS, EPA-8270

| L&R ID: | 8W-1594 | 8W-1586 | Reporting Limit |
|---|---|---|---|
| CLI Lab ID: | CL15079 | CL15084 | |
| Client Sample ID: | HG18-11-W/CH | HG16-10-W/CH | |
| COMPOUNDS: D.F.: | 1 | 1 | |
| 2,4,5-Trichlorophenol | ND | ND | 10 |
| 2,4,6-Trichlorophenol | ND | ND | 10 |
| 2,6-Dichlorophenol | ND | ND | 10 |
| 2,4-Dimethylphenol | ND | ND | 10 |
| 2,4-Dinitrophenol | ND | ND | 50 |
| 2,4-Dinitrotoluene | ND | ND | 10 |
| 2,6-Dinitrotoluene | ND | ND | 10 |
| 2-Chloronaphthalene | ND | ND | 10 |
| 2-Chlorophenol | ND | ND | 10 |
| 2-Methylnaphthalene | ND | ND | 10 |
| 2-Methylphenol | ND | ND | 10 |
| 2-Nitroaniline | ND | ND | 10 |
| 2-Nitrophenol | ND | ND | 50 |
| 3,3'-Dichlorobenzidine | ND | ND | 50 |
| 3-Nitroaniline | ND | ND | 50 |
| 4,6-Dinitro-2-methylphenol | ND | ND | 50 |
| 4-Bromophenyl phenyl ether | ND | ND | 10 |
| 4-Chloro-3-methylphenol | ND | ND | 10 |
| 4-Chloroaniline | ND | ND | 10 |
| 4-Chlorophenyl phenyl ether | ND | ND | 10 |
| 4-Methylphenol | ND | ND | 10 |
| 4-Nitroaniline | ND | ND | 10 |
| 4-Nitrophenol | ND | ND | 50 |
| Acenaphthene | ND | ND | 50 |
| Acenaphthylene | ND | ND | 10 |
| Anthracene | ND | ND | 10 |
| Benzo [a] anthracene | ND | ND | 10 |
| Benzo [a] pyrene | ND | ND | 10 |
| Benzo [b] fluoranthene | ND | ND | 10 |
| Benzo [g,h,i] perylene | ND | ND | 10 |
| Benzo [k] fluoranthene | ND | ND | 10 |
| bis-(2-Chloroethoxy)-methane | ND | ND | 10 |
| bis-(2-Chloroethyl) | ND | ND | 10 |
| bis (2-Ethylhexyl)-phthalate | ND | ND | 10 |
| Butyl benzyl phthalate | ND | ND | 10 |
| Carbazole | ND | ND | 10 |

Continued on next page...



Accepted by the State of California, Department of Health Services & ACLA-American Association for Laboratory Accreditation.

Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL
ATTN.: MR. ROB LOWEY
PROJECT #: 137125.ED.WC.H8
PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



| | |
|---|---|
| MATRIX: | LIQUID |
| UNIT: | µg/l |

| | |
|---|---|
| Prepared: | 4/17/98 |
| Analyzed: | 4/17/98 |
| Analyst: | LR* |

## SEMI-VOLATILE ORGANICS, EPA-8270 Continued...

| | | | |
|---|---|---|---|
| | L&R ID: | SW-1594 | SW-1586 | |
| | CLI Lab ID: | CL15079 | CL15084 | |
| | Client Sample ID: | HG18-11-W/CH | HG16-10-W/CH | Reporting Limit |
| COMPOUNDS: | D.F.: | 1 | 1 | |
| Chrysene | | ND | ND | 10 |
| Di-n-butyl phthalate | | ND | ND | 10 |
| Di-n-octyl phthalate | | ND | ND | 10 |
| Dibenz [a,h] anthracene | | ND | ND | 10 |
| Dibenzofuran | | ND | ND | 10 |
| Diethyl phthalate | | ND | ND | 10 |
| Dimethyl phthalate | | ND | ND | 10 |
| Fluoranthene | | ND | ND | 10 |
| Fluorene | | ND | ND | 10 |
| Hexachlorobenzene | | ND | ND | 1.0 |
| Hexachlorobutadiene | | ND | ND | 10 |
| Hexachlorocyclopentadiene | | ND | ND | 50 |
| Hexachloroethane | | ND | ND | 10 |
| Indeno [1,2,3-c,d]pyrene | | ND | ND | 10 |
| Isophorone | | ND | ND | 10 |
| N-Nitroso-di-n-propylamine | | ND | ND | 10 |
| N-Nitrosodiphenylamine | | ND | ND | 10 |
| Naphthalene | | ND | ND | 10 |
| Nitrobenzene | | ND | ND | 10 |
| Pentachlorophenol | | ND | ND | 50 |
| Phenanthrene | | ND | ND | 10 |
| Pyrene | | ND | ND | 10 |
| Phenol | | ND | ND | 10 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | | Control Limit |
|---|---|---|---|
| 2-Fluorophenol | 34 | 26 | 21-110 |
| Phenol-d5 | 28 | 14 | 10-110 |
| Nitrobenzene-d5 | 57 | 42 | 35-114 |
| 2-Fluorobiphenyl | 58 | 46 | 43-116 |
| 2,4,6-Tribromophenol | 68 | 48 | 10-123 |
| Terphenyl-d14 | 59 | 79 | 33-141 |

NOTES:

*ND denotes Not Detected at the indicated detection limit.*

** Sample(s) were analyzed by Lee & Ro Environmental Laboratories.*

CLi Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL

ATTN.: MR. ROB LOWEY

PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON - HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0125



| | |
|---|---|
| MATRIX: | LIQUID |
| UNIT: | µg/l |

| | |
|---|---|
| Prepared: | 4/17/98 |
| Analyzed: | 4/17/98 |
| Analyst: | LR* |

## QUALITY CONTROL DATA, EPA-8270

| LABORATORY CONTROL STANDARD/DUPLICAT | SPK CONC. (µg/l) | LCS (µg/l) | LCSD (µg/l) | % LCS | % LCSD | ACP % LCS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | PRECISION | |
| Phenol | 200 | 167 | 159 | 84 | 80 | 12-110 | 5 | 0-42 |
| 2-Chlorophenol | 200 | 188 | 177 | 94 | 89 | 27-123 | 6 | 0-40 |
| 1,4-dichlorobenzene | 100 | 79 | 76 | 79 | 76 | 36-97 | 4 | 0-28 |
| n-Nitroso-di-n-propylamine | 100 | 79 | 79 | 79 | 79 | 41-116 | 0 | 0-38 |
| 1,2,4-Trichlorobenzene | 100 | 90 | 87 | 90 | 87 | 39-98 | 3 | 0-28 |
| 4-chloro-3-methylphenol | 200 | 180 | 171 | 90 | 86 | 23-97 | 5 | 0-42 |
| Acenaphthene | 100 | 77 | 76 | 77 | 76 | 46-118 | 1 | 0-31 |
| 4-Nitrophenol | 200 | 98 | 105 | 49 | 53 | 10-80 | 7 | 0-50 |
| 2,4-Dinitrotoluene | 100 | 27 | 29 | 27 | 29 | 24-96 | 7 | 0-[illegible] |
| Pentachlorophenol | 200 | 143 | 143 | 72 | 72 | 9-103 | 0 | 0[illegible] |
| Pyrene | 100 | 115 | 110 | 115 | 110 | 26-127 | 4 | 0-3[illegible] |

| MATRIX SPIKE/MATRIX SPIKE DUPLICATE | SPK CONC. (µg/l) | MS (µg/l) | MSD (µg/l) | % MS | % MSD | ACP % MS | RPD | ACP % RPD |
|---|---|---|---|---|---|---|---|---|
| | ACCURACY | | | | | | PRECISION | |
| Phenol | 200 | 60 | 81 | 30 | 41 | 12-110 | 30 | 0-42 |
| 2-Chlorophenol | 200 | 92 | 137 | 46 | 69 | 27-123 | 39 | 0-40 |
| 1,4-dichlorobenzene | 100 | 53 | 57 | 53 | 57 | 36-97 | 7 | 0-28 |
| n-Nitroso-di-n-propylamine | 100 | 49 | 66 | 49 | 66 | 41-116 | 30 | 0-38 |
| 1,2,4-Trichlorobenzene | 100 | 55 | 70 | 55 | 70 | 39-98 | 24 | 0-28 |
| 4-chloro-3-methylphenol | 200 | 121 | 148 | 61 | 74 | 23-97 | 20 | 0-42 |
| Acenaphthene | 100 | 49 | 64 | 49 | 64 | 46-118 | 27 | 0-31 |
| 4-Nitrophenol | 200 | 43 | 44 | 22 | 22 | 10-80 | 2 | 0-50 |
| 2,4-Dinitrotoluene | 100 | 25 | 28 | 25 | 28 | 24-96 | 11 | 0-38 |
| Pentachlorophenol | 200 | 105 | 144 | 53 | 72 | 9-103 | 31 | 0-50 |
| Pyrene | 100 | 82 | 100 | 82 | 100 | 26-127 | 20 | 0-31 |

| AUDIT DATA | LAB ID | SAMPLE ID | BATCH # | ANALYZED |
|---|---|---|---|---|
| | CL15085 | 8W-1587, 8W-1588 | MS/MSD | 4/17/98 |

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# Analytical Report

CLIENT: CH2M HILL
ATTN.: MR. ROB LOWEY
PROJECT #: 13712S.ED.WC.HB
PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0132-HB



| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/17/98 |
| Analyzed: | 4/17/98 |
| Analyst: | LR* |

## SEMI-VOLATILE ORGANICS, EPA-8270

| L&R ID: | 8W-1599 | 8W-1596 | Reporting Limit |
|---|---|---|---|
| CLI Lab ID: | METHOD BLANK | CL15141 | |
| Client Sample ID: | ——— | AG19-03/CH | |
| COMPOUNDS: D.F.: | 1 | 2 | |
| 2,4,5-Trichlorophenol | ND | ND | 1600 |
| 2,4,6-Trichlorophenol | ND | ND | 330 |
| 2,6-Dichlorophenol | ND | ND | 330 |
| 2,4-Dimethylphenol | ND | ND | 330 |
| 2,4-Dinitrophenol | ND | ND | 1600 |
| 2,4-Dinitrotoluene | ND | ND | 330 |
| 2,6-Dinitrotoluene | ND | ND | 330 |
| 2-Chloronaphthalene | ND | ND | 330 |
| 2-Chlorophenol | ND | ND | 330 |
| 2-Methylnaphthalene | ND | ND | 330 |
| 2-Methylphenol | ND | ND | 330 |
| 2-Nitroaniline | ND | ND | 1600 |
| 2-Nitrophenol | ND | ND | 330 |
| 3,3'-Dichlorobenzidine | ND | ND | 660 |
| 3-Nitroaniline | ND | ND | 1600 |
| 4,6-Dinitro-2-methylphenol | ND | ND | 1600 |
| 4-Bromophenyl phenyl ether | ND | ND | 330 |
| 4-Chloro-3-methylphenol | ND | ND | 660 |
| 4-Chloroaniline | ND | ND | 330 |
| 4-Chlorophenyl phenyl ether | ND | ND | 330 |
| 4-Methylphenol | ND | ND | 330 |
| 4-Nitroaniline | ND | ND | 1600 |
| 74-Nitrophenol | ND | ND | 1600 |
| Acenaphthene | ND | ND | 330 |
| Acenaphthylene | ND | ND | 330 |
| Anthracene | ND | ND | 330 |
| Benzo [a] anthracene | ND | ND | 330 |
| Benzo [a] pyrene | ND | ND | 330 |
| Benzo [b] fluoranthene | ND | ND | 330 |
| Benzo [g,h,i] perylene | ND | ND | 330 |
| Benzo [k] fluoranthene | ND | ND | 330 |
| bis-(2-Chloroethoxy)-methane | ND | ND | 330 |
| bis-(2-Chloroethyl) | ND | ND | 330 |
| bis (2-Ethylhexyl)-phthalate | ND | ND | 330 |
| Butyl benzyl phthalate | ND | ND | 330 |
| Carbazole | ND | ND | 330 |

Continued on next page...

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# Analytical Report

CLIENT: CH2M HILL

ATTN.: MR. ROB LOWEY

PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0132-HB



| | |
|---|---|
| MATRIX: | SOIL |
| UNIT: | µg/kg |

| | |
|---|---|
| Prepared: | 4/17/98 |
| Analyzed: | 4/17/98 |
| Analyst: | LR* |

## SEMI-VOLATILE ORGANICS, EPA-8270 Continued...

| L&R ID: | 8W-1599 | 8W-1596 | |
|---|---|---|---|
| CLI Lab ID: | METHOD BLANK | CL15141 | |
| Client Sample ID: | ——— | AG19-03/CH | Reporting Limit |
| COMPOUNDS: D.F.: | 1 | 2 | |
| Chrysene | ND | 365 | 330 |
| Di-n-butyl phthalate | ND | ND | 330 |
| Di-n-octyl phthalate | ND | ND | 330 |
| Dibenz [a,h] anthracene | ND | ND | 330 |
| Dibenzofuran | ND | ND | 330 |
| Diethyl phthalate | ND | ND | 330 |
| Dimethyl phthalate | ND | ND | [illegible] |
| Fluoranthene | ND | ND | |
| Fluorene | ND | ND | |
| Hexachlorobenzene | ND | ND | 330 |
| Hexachlorobutadiene | ND | ND | 330 |
| Hexachlorocyclopentadiene | ND | ND | 1600 |
| Hexachloroethane | ND | ND | 330 |
| Indeno [1,2,3-c,d]pyrene | ND | ND | 330 |
| Isophorone | ND | ND | 330 |
| N-Nitroso-di-n-propylamine | ND | ND | 330 |
| N-Nitrosodiphenylamine | ND | ND | 330 |
| Naphthalene | ND | ND | 330 |
| Nitrobenzene | ND | ND | 330 |
| Pentachlorophenol | ND | ND | 1600 |
| Phenanthrene | ND | ND | 330 |
| Pyrene | ND | 483 | 330 |
| Phenol | ND | ND | 330 |

| SURROGATE SPIKE | % SURROGATE RECOVERY | | Control Limit |
|---|---|---|---|
| 2-Fluorophenol | 85 | 92 | 25-121 |
| Phenol-d5 | 76 | 80 | 24-113 |
| Nitrobenzene-d5 | 77 | 93 | 23-120 |
| 2-Fluorobiphenyl | 88 | 101 | 30-115 |
| 2,4,6-Tribromophenol | 101 | 105 | 19-122 |
| Terphenyl-d14 | 110 | 108 | 18-137 |

NOTES:

*ND denotes Not Detected at the indicated detection limit.*

** Sample(s) were analyzed by Lee & Ro Environmental Laboratories.*

Testing and Data Management Services

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# Analytical Report

CASE NARRATIVE

**SDG #: 9803.0132-HB**

**REPORT DATE:** 4/19/98

**REPORTED TO:** CH2M HILL
3 HUTTON CENTRE DRIVE
SUITE 200
SANTA ANA, CA 92707

**ATTN.:** MR. ROB LOWEY

**PROJECT #:** 137125.ED.WC.HB
**PROJECT NAME:** SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

**DATE SAMPLED:** 3/19-20/98
**DATE RECEIVED:** 3/20/98
**# OF SAMPLES:** 13
**SAMPLE MATRIX:** SOIL, LIQUID
**CLIENT SAMPLE ID:**

| SOIL | WATER |
|---|---|
| HG20-01/CH | HG06B-10-W/CH |
| HG20-02/CH | HG08-10-W/CH |
| HG19-01/CH | HG05-10-W/CH |
| HG19-02/CH | HG05-11-W/CH |
| HG19-03/CH | HG20-10-W/CH |
| | HG20-11-W/CH |
| | HG19-10-W/CH |
| | EB0320/CH |

***NOTE: All metals are on hold as per client request.***

## SAMPLE HANDLING & CONTROL STATEMENT

*The above mentioned samples were received in appropriate containers accompanied by a fully signed and dated chain-of-custody record. The containers were assigned unique identification numbers and had sufficient amount for the test requested unless otherwise noted in the accompanying laboratory report. The ice chest(s) were received under appropriate custody seals. There were no site specific quality control requirements made at the time of sample submittal. The samples did not exceed the holding time for the requested test parameters.*

## QUALITY CONTROL SUMMARY STATEMENT

*Laboratory Quality Control parameters and results of instrument calibration standards were all within control limits and the analytical data hereby submitted falls within acceptable limits of accuracy and precision unless otherwise indicated. Please see the Quality Control Data submitted in this report for additional information. In addition, necessary information regarding instrument calibration, MS/MSD, LCS/LCSD, method blank, and all other pertinent Quality Control measures are hereby enclosed for review.*

**SUBMITTED BY:**

Girma Selassie
Director

CERTIFICATE OF APPROVED ANALYSIS

*The information contained in this cover sheet is an integral part of the attached analytical report.*

Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL

ATTN.: MR. ROB LOWEY

PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0132-HB



| MATRIX: | LIQUID |
|---|---|
| UNIT: | mg/l |

## [$C_{10}$-$C_{40}$]

| Lab ID: | CL15130 | CL15131 | CL15132 | CL15133 | CL15134 | Reporting Limit |
|---|---|---|---|---|---|---|
| Client Sample ID: | HG068-10-W/CH | HG08-10-W/CH | HG05-10-W/CH | HG05-11-W/CH | HG20-10-W/CH | |
| Compounds: D.F.: | 1 | 1 | 1 | 1 | 1 | |
| $C_{10}$-$C_{15}$ | 264 | 205 | 40 | 160 | 20 | 10 |
| $C_{16}$-$C_{19}$ | 261 | 232 | 132 | 209 | 111 | 10 |
| $C_{20}$-$C_{23}$ | 145 | 114 | 19 | 113 | ND | 10 |
| $C_{24}$-$C_{27}$ | 125 | 126 | 19 | 87 | ND | 10 |
| $C_{28}$-$C_{36}$ | 80 | 48 | ND | 69 | ND | 10 |
| $C_{36}$-$C_{39}$ | 26 | 23 | ND | 24 | ND | 10 |
| $C_{40}$-$C_{43}$ | ND | ND | ND | ND | ND | 10 |

| Surrogate Spiked | SURROGATE % RECOVERY | | | | | Control Lim |
|---|---|---|---|---|---|---|
| Chlorobenzene | 75 | 83 | 95 | 93 | 91 | [illegible] |

*ND denotes Not Detected at the indicated Reporting Limit.*

*This report is preceded by a cover sheet that contains vital information.*

Approved by the State of California, Department of Health Services & ASLA-American Association for Laboratory Accreditation.

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Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL

ATTN.: MR. ROB LOWEY

PROJECT #: 137125.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

SDG #: 9803.0132-HB



MATRIX: LIQUID
UNIT: mg/l

## [$C_{10}$-$C_{40}$]

| Lab ID: | CL15135 | CL15138 | CL15142 | Reporting Limit |
|---|---|---|---|---|
| Client Sample ID: | HG20-11-W/CH | HG19-10-W/CH | EB0320/CH | |
| Compounds: D.F.: | 1 | 1 | 1 | |
| $C_{10}$-$C_{18}$ | 154 | 192 | 52 | 10 |
| $C_{19}$-$C_{19}$ | 192 | 237 | 108 | 10 |
| $C_{20}$-$C_{23}$ | 80 | 133 | ND | 10 |
| $C_{24}$-$C_{27}$ | 50 | 81 | ND | 10 |
| $C_{28}$-$C_{35}$ | 38 | 48 | ND | 10 |
| $C_{36}$-$C_{39}$ | 14 | 12 | ND | 10 |
| $C_{40}$-$C_{43}$ | ND | ND | ND | 10 |

| Surrogate Spiked | SURROGATE % RECOVERY | | | Control Limit |
|---|---|---|---|---|
| Chlorobenzene | 95 | 109 | 90 | 60-150 |

*ND denotes Not Detected at the indicated Reporting Limit.*



Approved by the State of California, Department of Health Services & A2LA-American Association for Laboratory Accreditation.

Testing and Data Management Services

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# Analytical Report

CLIENT: CH2M HILL

ATTN.: MR. ROB LOWEY

SDG #: 9803.0132-HB

PROJECT #: 13712S.ED.WC.HB

PROJECT NAME: SO. CALIF. EDISON – HUNTINGTON BEACH GEN. STATION

MATRIX: SOIL

UNIT: mg/kg

## [$C_{10}$-$C_{40}$]

| Lab ID: | CL15137 | CL15139 | CL15140 | Reporting Limit |
|---|---|---|---|---|
| Client Sample ID: | HG20-02/CH | HG19-01/CH | HG19-02/CH | |
| Compounds: D.F.: | 1 | 1 | 1 | |
| $C_{10}$-$C_{15}$ | 19 | 312 | 348 | 10 |
| $C_{16}$-$C_{19}$ | 112 | 230 | 172 | 10 |
| $C_{20}$-$C_{23}$ | ND | 416 | 117 | 10 |
| $C_{24}$-$C_{27}$ | 17 | 1030 | 34 | 10 |
| $C_{28}$-$C_{35}$ | ND | 3000 | 22 | 10 |
| $C_{36}$-$C_{39}$ | 17 | 1100 | 77 | 10 |
| $C_{40}$-$C_{43}$ | 13 | 1130 | 42 | |

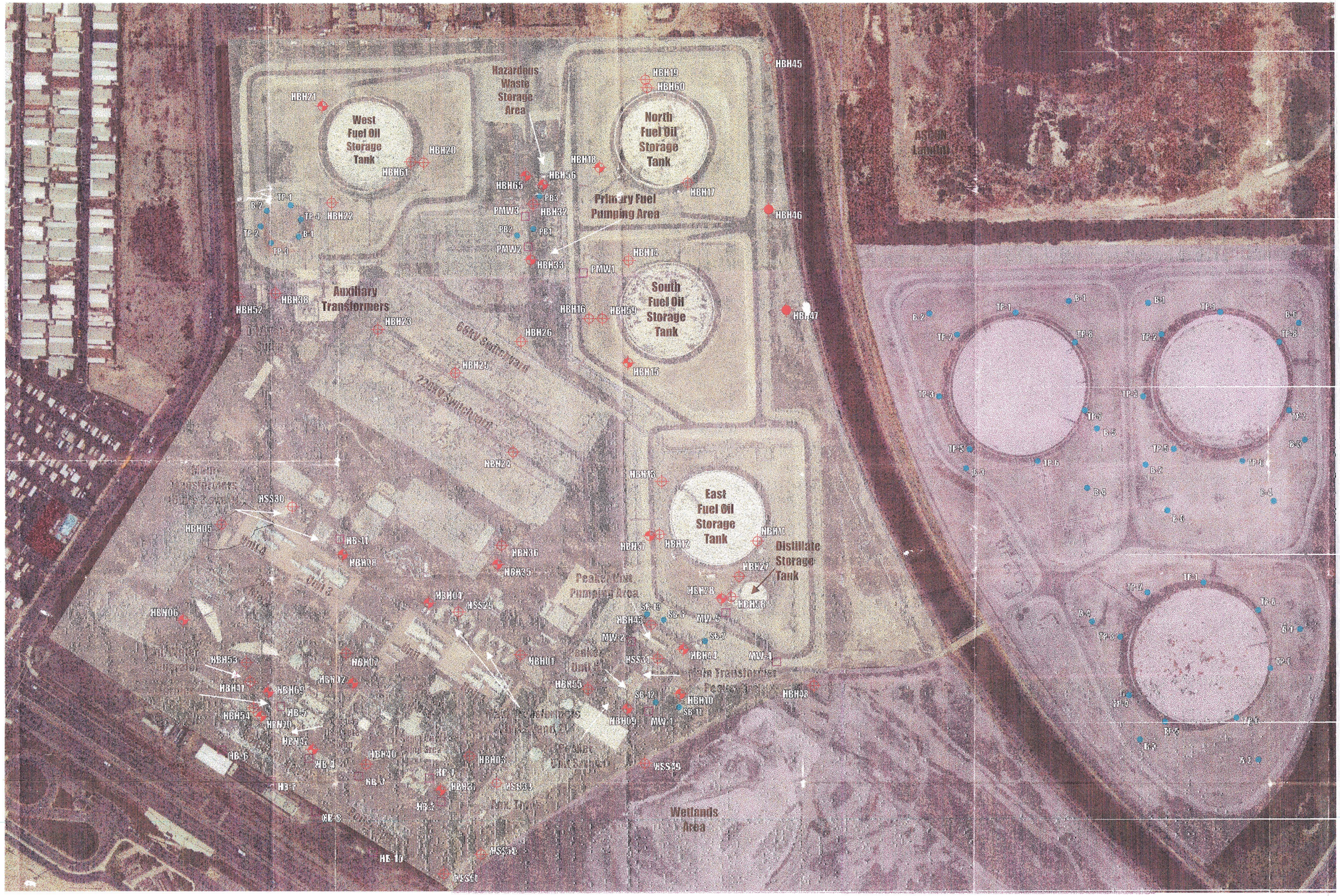
| Surrogate Spiked | SURROGATE % RECOVERY | | | Control Limit |
|---|---|---|---|---|
| Chlorobenzene | 90 | 162* | 226* | 60-150 |

*ND denotes Not Detected at the Indicated Reporting Limit.*

*NOTES:*

** The high surrogate recoveries for some samples can be directly attributed to sample matrix interference. All other batch QC recoveries indicate acceptable method and system performance.*

Approved by the State of California, Department of Health Services & AZLA-American Association for Laboratory Accreditation.
This report is submitted for the exclusive use of the client to whom it is prepared. [illegible]




LEGEND

- EXISTING SOIL BORING DATA
- EXISTING MONITORING WELL
- PHASE II SOIL SAMPLING LOCATION
- PHASE II GROUNDWATER SAMPLING LOCATION
- PHASE II SOIL AND GROUNDWATER SAMPLING LOCATION
- PHASE II SOIL SAMPLING LOCATION HBH45 NOT COMPLETED
- PROPERTY TO BE SOLD (APPROXIMATE)
- PROPERTY TO BE RETAINED (APPROXIMATE)

**PLATE 1**

Sample Location Map
Huntington Beach Generating Station
Edison Phase II ESA

SOURCE: HUNTINGTON BEACH GENERATING STATION PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT, JUNE 1997. PREPARED BY CH2M HILL.

CH2MHILL