CDM

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September 27, 2007

CDM Project File: 5000-55353

Ms. Ana Townsend
California Regional Water Quality Control Board - Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, California 90013

Subject: Pre-Remediation Activities Documentation Report
Boeing Realty Corporation, Former C-6 Facility
19503 South Normandie Avenue
Los Angeles, California (Site)
SLIC # 410

Dear Ms. Townsend:

On behalf of Boeing Realty Corporation (BRC), Camp Dresser & McKee Inc. (CDM) is submitting this Pre-Remediation Activities Documentation Report (Report) documenting the activities conducted to date and the status of the remaining activities associated with the Pre-Remediation Work Plan (Work Plan) (CDM, February 14, 2006) approved by the California Regional Water Quality Control Board - Los Angeles Region (LARWQCB) on February 23, 2006 for the above-referenced Site.

Since the submittal of the Work Plan, BRC has reevaluated and changed the overall remediation approach at the Site. An Addendum to Building 1/36 (Parcel C) Source-Area Groundwater In-Situ Reactive Zone Pilot Study Workplan (Workplan Addendum, CDM, February 1, 2007) was submitted to and approved by the LARWQCB (letter dated April 3, 2007) to implement a pilot biorecirculation study at the Building 1/36 area. The proposed pilot study consisted of semi-continuous amendment injections at low operating pressures and bioaugmentation to promote the complete biodegradation of contaminants. The pilot study was initiated in September 2007 under an individual Waste Discharge Requirements (WDR) Permit issued for the Site by the LARWQCB (August 10, 2007). As indicated in the Workplan Addendum and the LARWQCB April 3, 2007 approval letter, this Report is being submitted in lieu of the Remedial Action Plan (RAP) which was originally planned to be submitted following the completion of pre-remediation activities as outlined in the Work Plan.

As a result of the change in the remedial approach approved by the LARWQCB, some of the pre-remediation activities have been completed while others have been either delayed or eliminated.

The pre-remediation activities completed to date include:

- Existing remediation infrastructure evaluation using existing data;
- Installation of new groundwater wells; and
- Electron donor evaluation and treatability study.

The pre-remediation activities that have been either delayed or eliminated include:

- Hydraulic testing of existing remediation infrastructure;
- Aquifer performance testing;
- Groundwater modeling; and
- Electron donor injection testing.

These are discussed in the following sections.

# 1.0 Completed Activities

## 1.1 Existing Remediation Infrastructure Evaluation

CDM performed a detailed evaluation of the existing remediation infrastructure at the Site to determine its usability for certain remediation techniques such as biorecirculation. To this end, we reviewed pre-existing documents and data, including pre-injection test and well installation and development data.

### Former Building 2

The acceptability assessment of the 169 amendment wells in Former Building 2 area was based on flow rates, injection volumes, injection pressures, and field personnel observations during injection. These field observations included:

- observations of surface leakage;
- observations of siphoning during injection and after flow ceased;

- observed halts in flow during injection testing; and
- changes in performance after bleeding wellhead pressure.

This evaluation of the 169 wells indicated that 17 wells are acceptable for use without further testing, 18 wells are not acceptable because of previous surface leakage, and 134 wells will require additional field hydraulic testing prior to use, as discussed in Section 2.1.

### Former Building 1/36

The acceptability assessment of the 163 amendment wells installed in the Former Building 1/36 area were based primarily on the results of prior brief water injection testing activities and a review of the well installation and development data. The criteria for evaluation consisted of the following:

- Whether the well had received any water injection testing;
- Ability to sustain measurable flows;
- Water levels during injection ; and
- Water level recovery rates after injection ceased.

This evaluation indicated that 131 of the 163 wells are acceptable for use without further testing. Of the remaining 32 wells, 14 wells have had no testing done, while 18 wells had a combination of poor recovery, higher than anticipated water level rise during testing, and inability to sustain more than 5 gallons per minute (gpm). These remaining 32 wells may require additional field hydraulic testing prior to use, as discussed in Section 2.1.

## 1.2 Groundwater Well Installation

The Work Plan called for the installation of two extraction wells to facilitate aquifer testing in locations that are potentially suitable for incorporation into the remedial design. A total of six wells (five C-Sand wells and one B-Sand well) were installed in October and November 2006. Two wells (one B-Sand and one C-sand) were installed in the northern parcel (Former Building 1/36) instead of the one well (B-Sand only) originally proposed in the Work Plan. A total of four C-Sand wells were installed in the southern parcel (Former Building 2). Appendix A contains a well completion report documenting the field installation procedures along with the well construction logs for all the wells.

As documented in our letter to LARWQCB (Notifications of Deviations to Pre-Remediation Work Plan, CDM, October 12, 2006), CDM anticipates that these changes would serve to facilitate the future implementation of groundwater remediation. Based on the change in

remedial approach, the B-Sand well EWB001 is currently being used as an extraction well for the pilot biorecirculation test at Former Building 1/36, while the rest of the wells are being used as routine monitoring wells.

## 1.3 Electron Donor Evaluation and Treatability Study

CDM conducted an electron donor evaluation to identify the most suitable electron donor compound(s) for use in the remediation of volatile organic compound (VOC)-impacted groundwater at the Site. In order to appropriately consider the factors that affect electron donor selection, the evaluation was conducted in two phases: a background "paper" evaluation; and a laboratory treatability study.

### 1.3.1 Electron Donor Evaluation (Paper Study)

A preliminary "paper" evaluation was conducted in order to determine which donors would be suitable for additional testing. Appendix B contains a report documenting the results of the paper evaluation and providing recommendations for donors to be further evaluated in the electron donor laboratory treatability study. The "paper" evaluation provided the following recommendations:

- Perform laboratory treatability study to further evaluate the following electron donors: Citrate; Whey powder; Lactate; JRW proprietary fermentation mother liquor; Whey powder plus JRW nutrient; and Newman Zone.

- Each of these donors should be tested with no bioaugmentation culture, with a culture from SiRem, and with a culture from Shaw. In addition, the microcosm should be spiked with 1,1,1-trichloroethane (1,1,1-TCA) and chloroform as appropriate to allow an assessment of the degradative capabilities of the cultures toward these compounds, as well as the extent to which these compounds inhibit chloroethene degradation. The spike concentrations to be selected would be representative of the site groundwater based on the most recent groundwater sampling data available at the time of the laboratory study (March 2006).

### 1.3.2 Electron Donor Laboratory Treatability Study

A laboratory treatability study was conducted to evaluate six electron donors (selected based on the Paper Study) and two bioaugmentation cultures for potential use at the Site. Appendix C contains a document which describes the treatability testing methodologies; summarizes the results of the laboratory treatability study with detailed charts and tables; and provides conclusions and recommendations for electron donor use and bioaugmentation at the Site. Key recommendations from the treatability study are summarized below:

- Based on the lab study results and the economic analysis presented in the Technical Memorandum, whey was the preferred donor for the pilot study, with lactate as a backup should logistical issues (i.e. mixing, storage, handling, etc) or technical performance issues (e.g., solids plugging of injection wells) be encountered with whey.

- Newman Zone was recommended for slug injections, if planned at the Site. Methane production should be taken into account and at the minimum monitored in the field when using Newman Zone.

- Shaw SDC-9™ culture is the recommended choice for bioaugmentation.

Based on subsequent evaluations, lactate was selected over Newman Zone as the donor of choice for slug injections at the Site. This was based on minimizing potential formation plugging issues that could be associated with Newman Zone in similar lithologies, the longer than expected half-life of lactate based on the previous injections at Former Building 2, and the results of the treatability study.

# 2.0 Delayed or Eliminated Activities

The status of the activities under this task along with the rationale for the changes is described in the following sections.

## 2.1 Hydraulic testing of existing remediation infrastructure

It is recommended to defer the field hydraulic testing of the existing 32 amendment wells at Former Building 1/36 pending the completion of the ongoing pilot study for the following reasons:

- The ongoing biorecirculation pilot study at Former Building 1/36 will provide us with some data on biofouling and other potential well problems that could be anticipated with a full-scale system.

- Based on the ultimate remedy for the Site, we may not need some or all of the 32 wells.

Hydraulic testing of the existing infrastructure at Former Building 2 is still recommended <u>but only</u> for certain remediation techniques such as biorecirculation. Hydraulic testing is not required prior to its use for other remediation techniques such as slug injections.

## 2.2 Aquifer Performance Testing

Aquifer performance testing is not recommended for Former Building 1/36 at this point, because hydraulic data obtained during the ongoing pilot study along with the historical slug

test and aquifer performance test data is expected to provide adequate information on the groundwater hydraulics.

Given the change in the remedial approach at the Site, no remediation activities are currently planned for the Former Building 2 area that would require aquifer test data. As a result aquifer performance testing activities at the Former Building 2 area are being delayed indefinitely.

## 2.3 Groundwater Modeling

Given the change in the remedial approach at the Site, a preliminary groundwater model was sufficient for designing the pilot study at Former Building 1/36. As with aquifer performance testing, groundwater modeling activities for the Former Building 2 area are being delayed indefinitely.

## 2.4 Electron Donor Injection Testing

The biorecirculation pilot study at Former Building 1/36 is expected to provide data that would have been provided by electron donor injection testing. Therefore, electron donor injection testing as proposed in the Work Plan is being eliminated.

If you have any questions or concerns regarding this report, please call the undersigned at (949) 752-5452 or Joe Weidmann at (805) 563-8600.

Very truly yours,

Ravi Subramanian

Ravi Subramanian, P.E
Principal

Attachments

Cc: Robert Scott, BRC
Mario Stavale, BRC
Joe Weidmann, Haley & Aldrich, Inc.

# Appendix A

# Appendix A

# WELL COMPLETION REPORT

CDM

CDM

# Appendix A

# Well Completion Report
# Remediation of Volatile Organic Compounds
# Former C-6 Facility, Los Angeles, California

## 1.0 Introduction

This report documents the installation of six groundwater wells at the Boeing Realty Corporation (BRC) former C-6 Facility located in Los Angeles, California (Figure 1).

### 1.1 Background

Camp Dresser & McKee Inc. (CDM) prepared a document titled "Pre-Remediation Workplan" (Workplan, CDM. 2006) which was approved by the Los Angeles Regional Water Quality Control Board (LARWQCB) on February 23, 2006. The Workplan proposed the installation of two groundwater wells at the site; one to be completed in the B-Sand and one in the C-Sand. As documented in CDM's letter to LARWQCB (Notifications of Deviations to Pre-Remediation Work Plan, CDM, October 12, 2006), the scope of work was increased to include of total of six wells, two targeting the B-Sand and four targeting the C-Sand.

Two wells, one B-Sand and one C-Sand, were proposed for installation at Former Building 1/36 (1451 West Knox Street), currently owned by BRC and leased to a tenant. This property has been redeveloped and has one warehouse occupying the western portion of the property. The remaining four C-Sand wells were proposed for installation at Former Building 2 (1452 West Knox Street). This property has been sold and redeveloped, with two warehouses occupying the major portion of the property. Well locations are shown on Figure 2.

## 2.0 Introduction

Field methodology is described in the following sections. All field work was conducted by Avocet Environmental, Inc. (Avocet) under the direct supervision of a State of California Professional Geologist. Field activities were performed in general accordance with the methods, procedures, and specifications provided by CDM. The specific well locations were identified and marked in white paint during a site visit on October 5, 2006 that involved representatives of BRC, Haley & Aldrich (H&A), CDM, and Avocet.

### 2.1 Pre-Field Activities

#### 2.1.1 Health and Safety Plan

Field activities were conducted in accordance with Avocet's Health and Safety Plan for Groundwater Well Installation (Avocet, October 4, 2006).

### 2.1.2 Permitting

Prior to well installation activities, well construction permits were obtained from the County of Los Angeles, Department of Health Services. Copies of the well permits are included in Attachment A.

### 2.1.3 Utility Clearance

Underground Service Alert of Southern California (known as DigAlert) was contacted on October 11, 2006 for utility clearance at the proposed boring locations. In addition to DigAlert notification, each sampling location was surveyed for subsurface obstructions, using geophysics (GEOVision), and copies of utility drawings for the properties were downloaded from the Boeing Environmental Data Management System and reviewed for potential conflicts. As a final precaution, three hand-auger borings were excavated in a triangular pattern to depths of 10 feet at each location prior to drilling.

## 2.2 Well Installation

### 2.2.1 Drilling and Sampling

Well drilling activities were conducted between October 17 and November 9, 2006. Drilling was subcontracted to Cascade Drilling, Inc. (Cascade), of La Habra, California, a California-licensed well drilling contractor (C57 License No. 717510). The wells were drilled using the sonic drilling method. This method utilized high-frequency resonant energy to advance a core barrel and conductor casing into the underlying Bellflower aquitard. Initially, a 6-inch-diameter core barrel was used to pilot the boring and collect a continuous soil core. However, the 6-inch diameter core barrel proved inadequate to advance the 10-inch diameter conductor casing required to seal off the B-Sand, so a larger, 8-inch-diameter core barrel was fabricated, which improved production (The conductor casing, rather than the core barrel, was being relied upon to do too much of the drilling and frequently became plugged with soil requiring that it be removed from the ground and manually cleared).

In the five C-Sand wells, an outer steel conductor casing was advanced through the B-Sand to depths ranging from 78.5 to 87 feet below ground surface (bgs) and sealed off using coated bentonite pellets in a fine-grained interval separating the B- and C-Sands (Table 1). Once the outer conductor casing was set and sealed, a nominal 8-inch-diameter (inner) steel casing was advanced through the conductor and seal to the total depth of boring to keep the borehole open while the core barrel was repeatedly returned to the surface for sample extrusion.

Although the drilling method provides a continuous core of the penetrated formation, only that portion of the core collected below a depth of 50 feet was logged in detail by a California Professional Geologist in accordance with the Unified Soil Classification System (USCS). Copies of the boring logs prepared by the geologist are included in Attachment B. The continuous core was screened at regular intervals for organic vapors using a MiniRAE 2000

photoionization detector (PID), calibrated daily to a 100 parts per million (ppm) isobutylene standard, and the readings were recorded on the field boring logs. The soil types encountered during drilling consisted largely of olive-brown, silt, silt/sand mixtures, and fine-grained, poorly graded sand. Groundwater was encountered during drilling at depths ranging from 56.5 to 67 feet bgs (median 61.5 feet bgs).

### 2.2.2 Treatability Sampling

As indicated in the Workplan, soil and groundwater samples were collected for laboratory treatability testing. On Monday, October 23, 2006, existing monitoring well IRZCMW003 was purged for sampling using low-flow methods. The well was purged using a QED Environmental Systems SamplePro™ portable groundwater sampling bladder pump, new polyethylene tubing, a digital flow controller, and MicroPurge™ flow cell. The compressed gas actuated bladder pump was installed with the intake positioned near the mid-point of the 4-inch diameter well screen (92 to 117 feet bgs) at a depth of 105 feet bgs. The well was then purged at an average rate of about 150 milliliters per minute (ml/min) while continuously monitoring the amount of drawdown caused by the pumping. Drawdown in the well was negligible at this production rate. During purging, the pump discharge tubing was connected to a calibrated in-line flow cell to monitor for parameter stabilization. Probes in the flow cell monitored temperature, pH, dissolved oxygen (DO), electrical conductivity (EC), and oxidation-reduction potential (ORP). The Purge Scan™ technology automatically signaled when pH, DO, EC, and ORP had stabilized. The parameter stabilization range criteria for three consecutive measurements, taken a minimum of two minutes apart, were as follows: +/-0.2 pH units; +/-0.2 milligrams per liter (mg/l) DO; +/-0.02 millisiemens per centimeter (mS/cm) EC; and +/-20 millivolts (mV) ORP. After the parameters had stabilized, the flow cell was disconnected and groundwater samples were collected. Twelve 1-liter containers and three 40-milliliter VOAs were collected. Ten of the 1-liter containers and all of the VOAs were carefully packed into coolers with ice and shipped via overnight delivery to CDM's Environmental Treatability Laboratory in Bellevue, Washington. The two extra 1- liter containers were stored on ice to be used in packaging the soil treatability samples.

Treatability samples of the B- and C-Sands were collected from the boring for well MWC024 on October 24 and 25, 2006. The samples were collected using 3-inch- diameter by 30-inch-long steel Shelby tubes. Lithologic conditions in the nearby boring for well EWC002 suggested that significant B- and C-Sand intervals would be encountered at depths of about 65 to 70 and 110 to 115 feet bgs, respectively. The boring for well MWC024 was carefully logged as these intervals were approached, and once the sand intervals were encountered, preparations were made for sampling. The samples were collected by attaching a Shelby tube to the end of the drill rod using a special adapter, lowering the sampler through the water column to the soil interface, and driving the sampler into the native formation. Since the sample was collected through standing water, which would displace atmospheric air from the sampler, pre-purging of the tube with argon was not performed. Upon removal from the

borehole, the tube was quickly sealed with Teflon paper and plastic caps wrapped with Parafilm. As requested by the laboratory, the 30-inch Shelby tube was then cut into 12-inch-long sections and 1 to 2 inches of soil was removed from each end and replaced with groundwater collected from well IRZCMW003 on October 23, 2006. The ends of the tube were resealed, packed into coolers with ice, and shipped via overnight delivery to CDM's Environmental Treatability Laboratory in Bellevue, Washington. Two 12-inch-long samples were collected from each of three intervals, two in the B-Sand (64.5 to 66.5 feet bgs and 68 to 70 feet bgs) and one in the C-Sand (114.5 to 116.5 feet bgs).

### 2.2.3 Well Construction

Final well completion details were based on the location-specific subsurface conditions as documented in the field lithologic logs. The as-built well construction details are summarized in Table 1. Four-inch-diameter Schedule 80 PVC casing and screen were used to construct the five C-Sand wells (EWC002, MWC024, IWC002, IWC001, and EWC001), and six-inch-diameter Schedule 80 PVC casing and screen were used to construct the one B-Sand well (EWB001). The screened portion of the well casings ranged from 20 to 30 feet in length and consists of 0.02-inch machine-slotted PVC.

The filter pack consisted of #3 Monterey sand that extends from the bottom of the well to 3 feet above the top of the screened interval. Prior to placement of the annular seal, the wells were surged to settle the filter pack. The annular space above the filter pack was sealed with 4 to 5 feet of coated bentonite pellets followed by Portland-bentonite grout placed via tremie pipe. Each well was fitted with an expandable locking well cap and encased in a traffic-rated, flush mounted well box. Well construction details are included in Table 1 and copies of the boring logs and well construction diagrams are included in Attachment B.

### 2.2.4 Well Development

The wells were developed on November 7, 8, and 14, 2006, in accordance with the methods and procedures described in the Workplan. Prior to development, water levels were gauged in each new well and several surrounding wells, and the total depth of each casing was measured using a Solinst water level meter. At the time of development, static water levels were measured in six wells surrounding the four new wells in the Former Building 2 area. However, wells surrounding the two new Former Building 1/36 area wells were locked and could not be accessed for monitoring. The wells were surged/swabbed using a vented surge block and then bailed using a 3.5-inch-diameter stainless steel bailer to remove solids. The wells were then purged using a submersible pump at rates varying from 3 to 15 gallons per minute (gpm); typically the wells yielded between 4 and 5 gpm without substantial drawdown. During purging, the depth-to-water was intermittently gauged and water quality parameters, including temperature, specific conductivity, pH, and turbidity, were measured using a Hanna or Hydac Combo Meter and LaMotte 2020 Turbidimeter. These measurements were recorded on Well Development Forms, copies of which are presented in Attachment C.

Purging continued until the temperature, specific conductance, and pH measurements stabilized and the turbidity decreased below 50 NTUs (nephelometric turbidity units). Purge water was stored in 4,000-gallon Baker tanks.

### 2.2.5 Decontamination

All drilling, development, and sampling equipment was decontaminated between borings and wells, as appropriate. Large equipment was decontaminated in a portable decontamination trailer and small equipment was cleaned using a three-bucket wash with non-phosphate soap.

### 2.2.6 Investigation-Derived Wastes

Investigation-derived waste (IDW) generated during well installation activities included soil cuttings, equipment decontamination rinsate, and purge/development water. These materials were placed into three roll-off soil bins and two 4,000-gallon Baker tanks supplied by American Integrated Services (AIS). Soil and liquid samples were collected from the bins and drums for profiling purposes and submitted to Severn Trent Laboratories (STL), of Santa Ana, California, for analysis. Upon receipt and review of the analytical data (Attachment D), the soil was classified as non-hazardous waste. On November 21, 2006, AIS transported the bins to TPS Technologies in Adelanto, California. The liquid in the Baker tanks, however, was classified as hazardous due to elevated concentrations of trichloroethylene (>500 micrograms per liter [µg/l]) and 1,1-dichloroethylene (>700 µg/l). On December 4, 2006, AIS transported the liquids to U.S. Filter Recovery Services in Vernon, California. Copies of the manifests for the IDW are included as Attachment E.

## 2.3 Survey

On November 21, 2006, KDM Meridian (KDM), of Lake Forest, California, a licensed land surveyor, surveyed the well locations and wellhead elevations. All horizontal coordinates reference the California Coordinate System (CCS), 83 North American Datum. Elevations reference the National Geodetic Vertical Datum (NGVD) of 1988. The survey coordinates are summarized in Table 1 and the surveyors report is attached as Attachment F.

# 3.0 Discussion

Six groundwater wells (EWC002, MWC024, IWC002, IWC001, EWC001, and EWB001) were installed to support ongoing remediation and monitoring activities associated with the BRC Former C-6 Facility in Los Angeles, California. One of the wells (EWB001) was installed in the B-Sand (first encountered groundwater) and five of the wells (EWC002, MWC024, IWC002, IWC001, and EWC001) were installed in the C-Sand. Groundwater in the B-Sand was encountered at depths ranging from 56.5 to 67 feet bgs (median depth of 61.5 feet bgs). Soil above the B-Sand was comprised largely of light brown to olive-brown inter-layered silt and clay with subordinate amounts of fine-grained sand and silt/sand mixtures. The B-Sand was

comprised largely of olive-brown, fine-grained, poorly graded sand, with prominent interlayers of silt and silty sand. The transition between the B- and C-Sands was gradational and variable between borings, but was generally indicated by a marked increase in the occurrence of fine-grained sediments (silt and clay) between the depths of 80 and 90 feet bgs. The outer conductor casing was generally set and sealed within this interval to prevent communication between the B- and C-Sand aquifers. In several of the borings, this transition was accompanied by the appearance of abundant shell (mollusk) fragments, suggesting a change from marine to continental depositional conditions. Like the B-Sand, the C-Sand also consists largely of poorly graded sand with subordinate interlayers of silt and silty sand, but is somewhat coarser, with localized gravelly intervals.

## 4.0 References

Avocet Environmental, Inc. (Avocet). 2006. "Health and Safety Plan (HASP), Groundwater Well Installation, Boeing Realty Corporation Former C-6 Facility, Los Angeles, California". October 4.

CDM. 2006. "Pre-Remediation Workplan, Boeing Realty Corporation , Former C-6 Facility, 19503 South Normandie Avenue, Los Angeles, California". February 14.

## Attachments

Table 1 - Well Construction Details
Figure 1 - Site Location Map
Figure 2 - Well Location Map
Attachment A - Well Construction Permit
Attachment B - Boring Logs
Attachment C - Well Development Forms
Attachment D - Laboratory Analytical Reports
Attachment E - Waste Manifests
Attachment F - Survey Reports

# *Tables*

AVOCET
ENVIRONMENTAL, INC.

**Table 1**
**Well Construction Details**
Boeing Realty Corporation Former C-6 Facility
Los Angeles, California

| Well I.D. | Water-Bearing Unit | Northing[1] | Easting[1] | Elevation (feet amsl)[2] | Boring Depth (feet bgs) | Conductor Casing Depth (feet bgs) | Screened Interval (feet bgs) | Filter Pack Interval (feet bgs) | Bentonite Chip Seal Inteval (feet bgs) | Grout Seal Inteval (feet bgs) | Casing Diameter (inches) | Casing Type | Slot Size (inches) | Date Installed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EWC002 | C-Sand | 1768367.68 | 6470266.69 | 51.76 | 125 | 85 | 96 - 121 | 93 - 123 | 88 - 93 | 3 - 88 | 4 | Sch 80 PVC | 0.02 | 10/20/06 |
| MWC024 | C-Sand | 1768408.81 | 6470265.98 | 51.64 | 125 | 81 | 96 - 121 | 93 - 122.5 | 89 - 93 | 3 - 89 | 4 | Sch 80 PVC | 0.02 | 10/26/06 |
| IWC002 | C-Sand | 1768669.11 | 6470239.20 | 51.56 | 125 | 82 | 96 - 116 | 93 - 118.5 | 88.5 - 93 | 3 - 88.5 | 4 | Sch 80 PVC | 0.02 | 10/31/06 |
| IWC001 | C-Sand | 1768452.84 | 6470121.09 | 53.60 | 125 | 78.5 | 95 - 115 | 92 - 118 | 88.5 - 92 | 3 - 88.5 | 4 | Sch 80 PVC | 0.02 | 11/02/06 |
| EWC001 | C-Sand | 1769705.98 | 6470359.29 | 52.59 | 125 | 87 | 97 - 122 | 94 - 123 | 90 - 94 | 3 - 90 | 4 | Sch 80 PVC | 0.02 | 11/08/06 |
| EWB001 | B-Sand | 1769603.92 | 6470380.97 | 53.01 | 90 | NA | 59.2 - 89.2 | 56 - 90 | 53 - 56 | 3 - 53 | 6 | Sch 80 PVC | 0.02 | 11/09/06 |

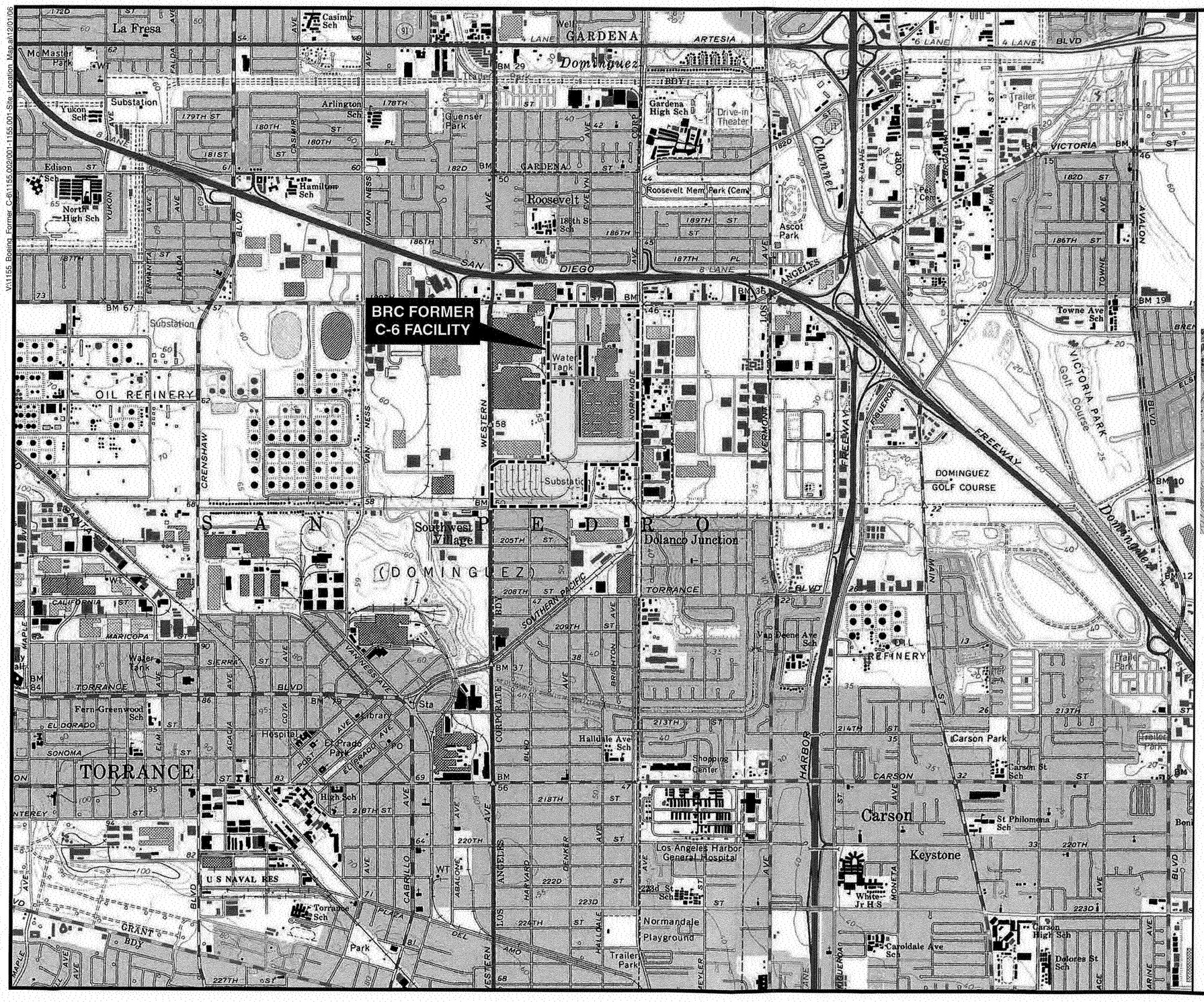
Notes: (1) The North American Datum of 1983 (NAD83, Zone 5, 2002.00 Epoch, Feet) was used for the horizontal adjustments
(2) The National Geodetic Vertical Datum of 1988 (NGVD88, feet above mean sea level [feet amsl]) was used for the vertical adjustments.

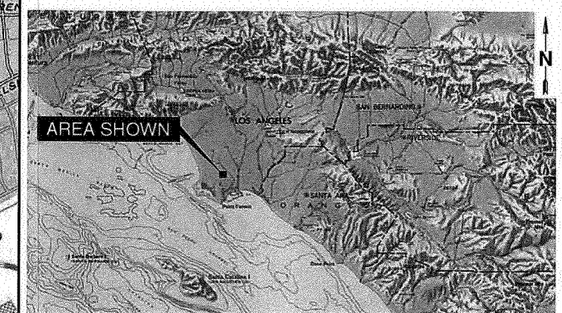
AVOCET ENVIRONMENTAL, INC.

BOE-C6-0186761

# *Figures*

AVOCET
ENVIRONMENTAL, INC.




**SITE VICINITY MAP**

NOT TO SCALE

REFERENCE:
7.5 MINUTE U.S.G.S. TOPOGRAPHIC
MAP OF TORRANCE, CALIFORNIA
DATED: 1964
PHOTOREVISED: 1981

0 2000 4000 FEET

APPROXIMATE
SCALE

FIGURE 1

**SITE LOCATION MAP**

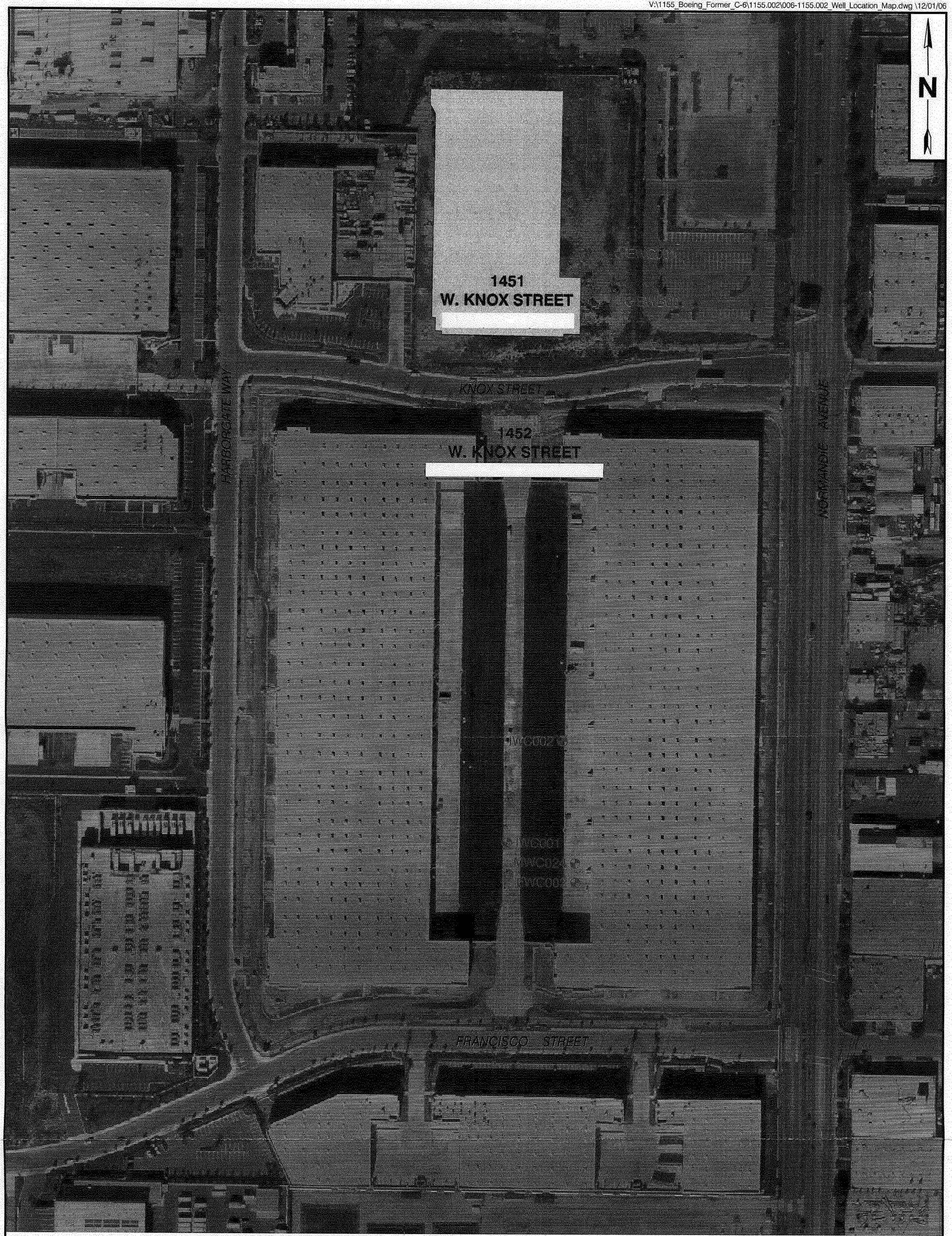
FORMER BRC C-6 FACILITY
LOS ANGELES, CALIFORNIA

AVOCET
ENVIRONMENTAL, INC.

V:\1155 Boeing Former C-6\1155.002\001-1155.001-Site Location Map.ai\12/01/06

BOE-C6-0186763

V:\1155_Boeing_Former_C-6\1155.002\006-1155.002_Well_Location_Map.dwg \12/01/06




REFERENCE:
U.S.G.S. AERIAL PHOTOGRAPH.
DATED: 03/29/2004

0 200 400 FEET
SCALE

**LEGEND**

| | |
|---|---|
| EWC001 | APPROXIMATE WELL LOCATION |
| — — — | FORMER C-6 FACILITY BOUNDARY |

FIGURE 2

**WELL LOCATION MAP**

BRC FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

# Attachment A

# Well Construction Permit

CDM

**WELL PERMIT APPLICATION - NON-PRODUCTION WELLS**
WATER & SEWAGE / MOUNTAIN & RURAL PROGRAMS - ENVIRONMENTAL HEALTH DIVISION
5050 COMMERCE DRIVE BALDWIN PARK, CA 91706 (626) 430-5380 FAX (626) 813-3016

DATE 10/4/06

| | |
|---|---|
| ✓ NEW WELL CONSTRUCTION<br>___ RECONSTRUCTION OR RENOVATION<br>___ DECOMMISSIONING<br>___ OTHER: _____ | ✓ MONITORING<br>___ CATHODIC<br>___ INJECTION<br>___ EXTRACTION<br>___ HEAT EXCHANGE<br>___ Hydropunch<br>___ C.P.T. For Ground Water Sampling<br>___ Other: (Specify) : _____ |

**WELL LOCATION**

| | | |
|---|---|---|
| SITE ADDRESS: 1451 & 1452 W. KNOX STREET | CITY: LOS ANGELES | ZIP CODE: 90501 |
| Nearest Intersection: NORMANDIE AVE. & W. 190th ST. | | Thomas Bros. Page / Grid: 763 J3 |
| NO. OF WELLS IN EACH PARCEL: 6 | Attach site map with well locations: (SEE ATTACHED MAP) | |

**WELL STRUCTURE**

| | |
|---|---|
| Total Depth, Size and Depth of Well Casing | SEE ATTACHED TABLE |
| Sanitary / Annular Sealing Material | " " " |
| Depth of Sanitary / Annular Seal | " " " |
| Conductor Casing Seal | N/A |

**CONSULTANT**

| | |
|---|---|
| Company | AVOCET ENVIRONMENTAL |
| Contact Person | MICHAEL RENDINA |
| Address | 16 TECHNOLOGY DR., Suite 154 |
| City, State Zip Code | IRVINE, CA 92618 |
| Telephone | 949 933 6031 |

**OWNER / DRILLER INFORMATION**

| | |
|---|---|
| Well Owner | BOEING REALTY CORP. |
| Address | 4900 E. CONANT ST., Bldg 1 |
| City / Zip Code | LONG BEACH, CA 90808 |
| Telephone | (562) 733-2229 |
| Well Driller | CASCADE DRILLING, INC. |
| Address | 11250 E. FIRESTONE BLVD. |
| City / Zip Code | NORWALK, CA 90650 |
| C-57 License No. | 717510 |
| Telephone | (526) 929-8176 |

**IF WELL AND GEOLOGIC CONDITIONS ENCOUNTERED IN THE FIELD ARE FOUND TO DIFFER FROM THE SCOPE OF WORK PRESENTED TO THIS OFFICE, WORK PLAN MODIFICATIONS MAY BE REQUIRED**

**WELL DECOMMISSIONING**

| | |
|---|---|
| Well Depth Log / Records | |
| Method of Well Assessment | |
| Depth and Number of Perforations | |
| Type of Perforator Size of Perforations | |
| Type and Amount of Sealant | |
| Method of Upper Seal Pressure Application | |

**DISPOSITION OF PERMIT (Department Use Only)**
**THIS PERMIT IS CONSIDERED COMPLETE WHEN THE WORK PLAN IS APPROVED AND WHEN THE WELL COMPLETION LOG IS RECEIVED. NO WELL CONSTRUCTION OR DECOMMISSIONING CAN BE INITIATED WITHOUT THE WORK PLAN APPROVAL FROM THIS DEPARTMENT**

**WORK PLAN APPROVAL**
**This Approval is Valid for 180 Days**

| | |
|---|---|
| Date | R.E.H.S. |
| Conditions | |

**I hereby agree to comply in every respect with all the regulations of the County Environmental Health Division and with all ordinances and laws of the County of Los Angeles and the State of California pertaining to well construction, reconstruction and decommissioning. Upon completion of the well and with in thirty days thereafter, I will furnish the Environmental Health office with a completion log of the well giving date drilled, depth of the well, perforations in the casing, and any other data deemed necessary by County Environmental Health Division.**

Michael A. Rendina P.G. #4573
Applicant's Signature

Applicant Name: (Print) MICHAEL A. RENDINA

Fax Number: 949 296 0978

## NOTICE

**This well permit approval is limited to compliance with the California well standards and the Los Angeles County Health and Safety Code and does not grant any rights to construct, reconstruct, or decommission any well. Applicant is responsible for securing all other permits necessary to perform the work.**

76A668-A
H-13 (Rev. 05/042006)

| | | |
|---|---|---|
| WELL LOCATION (ADDRESS) 1451 + 1452 W. Knox. St. | CITY Los Angeles, CA | ZIP CODE 90501 |
| Anticipated Start Date: 10/17/06 | Anticipated End Date: 11/1/06 | |
| Additional Contact Persons in Case of Emergency | Philip Miller | Telephone 949 933 6380 |
| | Robert Van Hynigh | 949 933 4905 |

| GENERAL LOCATION SKETCH |
|---|
| Provide site specific information on Well Construction Location Detail Sheet |
| SEE ATTACHED MAP. |

| Work Plan Details |
|---|
| SEE ATTACHED WORKPLAN |

| WELL DECOMMISSIONING DIAGRAM | |
|---|---|
| | |

| Notes / Comments (Department Use Only) |
|---|
| |

**SERVICE APPLICATION REQUEST AND FEE COLLECTION**
**COUNTY OF LOS ANGELES – DEPARTMENT OF PUBLIC HEALTH**
**ENVIRONMENTAL HEALTH**
**SERVICE REQUEST APPLICATION**

## INSTRUCTIONS

1. Check the TYPE OF SERVICE requested and attach the required non-refundable fee to the application. Make the money order or check payable to LOS ANGELES COUNTY TREASURER, DO NOT SEND CASH. This application is nontransferable.

| FEE REQUIRED* | | TYPE OF SERVICE |
|---|---|---|
| $ 1146.00 | ☑ | MONITORING WELL CONSTRUCTION/DECOMMISSIONING<br>Please complete and attach a Non-Production Well-Well Permit Application. |
| | ☐ | WELL CONSTRUCTION, RENOVATION OR DECOMMISSIONING PERMIT<br>Complete and attach a Well-Well Permit Application |
| | ☐ | PRIVATE SEWAGE DISPOSAL SYSTEM CONSTRUCTION PERMIT |
| | ☐ | PRIVATE SEWAGE DISPOSAL RENOVATION / EXPANSION |
| | ☐ | INSPECTION OF MOUNTAIN CABIN SITE as required by the United States Forest Service |
| | ☐ | SEPTIC TANK REPLACEMENT |
| | ☐ | INSPECTION OF EXISTING PRIVATE SEWAGE SYSTEM |
| | ☐ | WATER SUPPLY TEST AND CERTIFICATION as required by U.S. Department of Agriculture |
| | ☐ | WELL YIELD TEST PERMIT |
| | ☐ | COASTAL COMMISSION APPROVAL IN CONCEPT |

* Refer to Schedule of Fees for the current fiscal year. Field personnel cannot accept fees.

2. Check with the Contact Office stamped below for requirements or information

3. Deliver the completed application, money order or check with the forms indicated to:

**County of Los Angeles**
**Mountain and Rural Program / Water, Sewage, & Subdivision Program**
**5050 Commerce Drive, Baldwin Park, CA 91706**
**(626) 430-5380 FAX (626) 813-3016**
**www.lapublichealth.org/eh/progs/envirp/ehmount.htm**

4. Phone Contact Office noted below, after you have received your receipt, to request an inspection.

| Service/ Job Location | Address | City | State | Zip | Date |
|---|---|---|---|---|---|
| 1451 + 1452 | Knox Street, | Los Angeles | CA | 90501 | 10/18/06 |

| Owner / Applicant Name | Address/Zip | Phone No. |
|---|---|---|
| Boeing Realty Corp. | 4900 E. Conant St., Long Beach CA 90808 | (562) 929-8176 |

| Contractor's Name | Address/Zip | Phone No. |
|---|---|---|
| Avocet Environmental, Inc. | 16 Technology Dr., Suite 154 Irvine, CA | 949 933 6031 |

Co. Engineer Plan Check No. _____ Tract no. _____ Lot No. _____ No. Bedrooms _____ Fixture Unit Count _____
( Complete the line above for Private Sewage Disposal System Construction or Renovation Application)

| CONTACT OFFICE | DEPARTMENT STAMP |
|---|---|
| | |

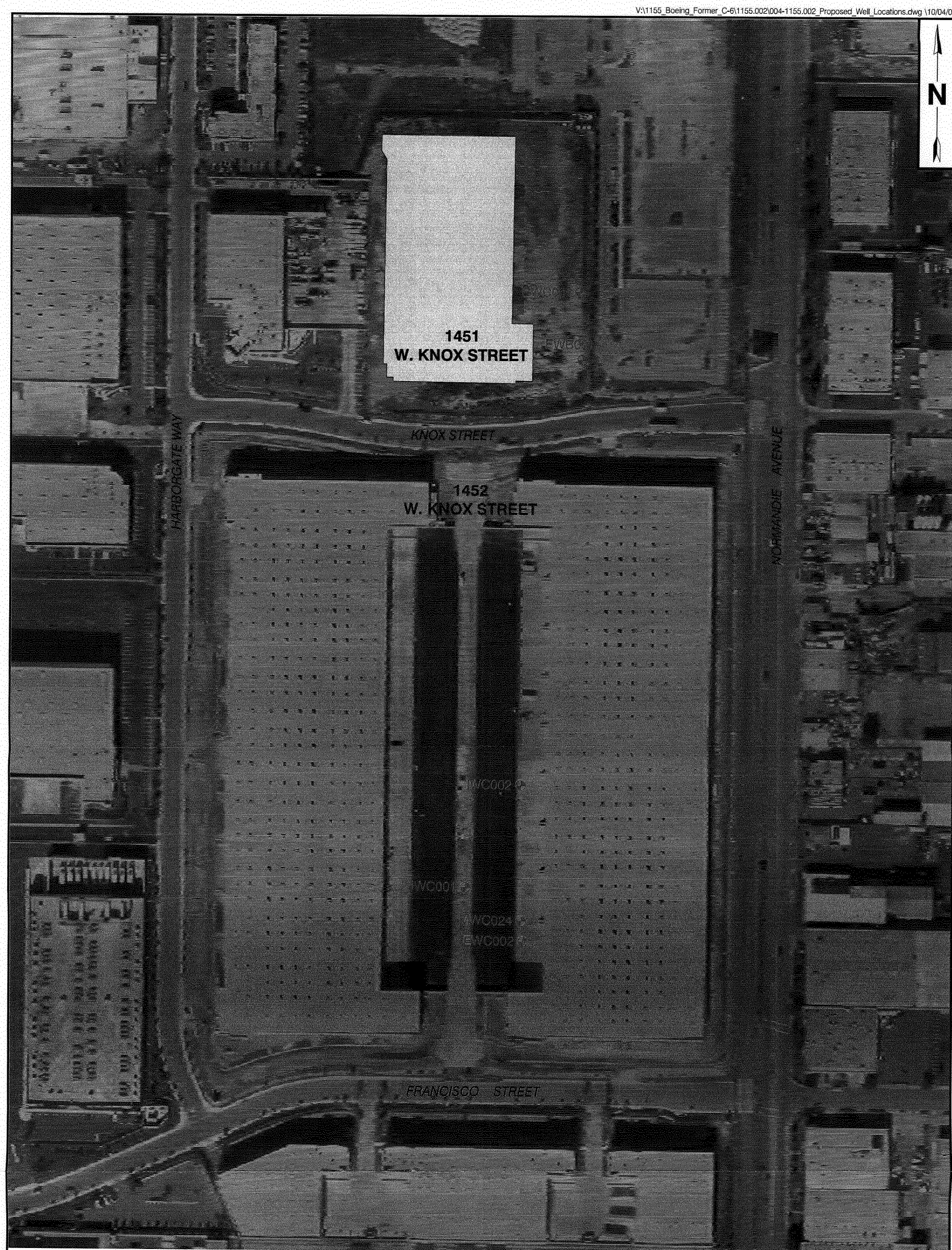
# Table of Well Completion Information
# Harbor Gateway
# Los Angeles, California

| Well | Maximum Depth (feet bgs) | Casing Diameter[1] (inches) | Screen Interval[2] (feet bgs) | Screen Length (feet) | Filter Pack (feet bgs) | Annular Seal[3] (feet bgs) |
|---|---|---|---|---|---|---|
| EWB001 | 90 | 6 | 55 - 90 | 35 | 52 - 90 | 0 - 52 |
| EWC001 | 120 | 4 | 90 - 120 | 30 | 87 - 120 | 0 - 87 |
| EWC002 | 130 | 4 | 95 - 125 | 30 | 92 - 120 | 0 - 92 |
| IWC001 | 130 | 4 | 95 - 125 | 30 | 92 - 120 | 0 - 92 |
| IWC002 | 130 | 4 | 95 - 125 | 30 | 92 - 120 | 0 - 92 |
| MWC024 | 130 | 4 | 95 - 125 | 30 | 92 - 120 | 0 - 92 |

Notes:
(1) Casing to consist of Schedule 80 PVC, joined with flush threads with O-ring seals.
(2) Screen to consist of Schedule 80 PVC with a 0.02-inch slot size. The filter pack shall extend 3 feet above the top-of-screen, consist of #3 Monterey sand, and be sealed with a 2-foot plug of coated bentonite pellets.
(3) Sanitary (annular) seal to consist of 2 feet of coated bentonite pellets with the remainder of the annulus backfilled with Portland cement grout with approximately 4 percent bentonite powder added by weight.

AVOCET ENVIRONMENTAL, INC.

V:\1155_Boeing_Former_C-6\1155.002\004-1155.002_Proposed_Well_Locations.dwg \10/04/06




0 200 400 FEET
SCALE

**LEGEND**

EWC001 PROPOSED WELL LOCATION

FIGURE 1

**PROPOSED WELL LOCATIONS**

HARBOR GATEWAY PROJECT
LOS ANGELES, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

**WELL PERMIT APPLICATION - NON-PRODUCTION WELLS**
WATER & SEWAGE / MOUNTAIN & RURAL PROGRAMS - ENVIRONMENTAL HEALTH DIVISION
5050 COMMERCE DRIVE BALDWIN PARK, CA 91706 (626) 430-5380 FAX (626) 813-3016

DATE 10/4/06

| | |
|---|---|
| ✓ NEW WELL CONSTRUCTION<br>___ RECONSTRUCTION OR RENOVATION<br>___ DECOMMISSIONING<br>___ OTHER: | ✓ MONITORING<br>___ CATHODIC<br>___ INJECTION<br>___ EXTRACTION<br>___ HEAT EXCHANGE<br>___ Hydropunch<br>___ C.P.T. For Ground Water Sampling<br>___ Other: (Specify) : |

| | | |
|---|---|---|
| SITE ADDRESS: 1451 + 1452 W. KNOX STREET | CITY: LOS ANGELES | ZIP CODE: 90501 |
| Nearest Intersection: NORMANDIE AVE. + W. 190th ST. | | Thomas Bros. Page / Grid: 763 J3 |
| NO. OF WELLS IN EACH PARCEL: 6 | Attach site map with well locations: (SEE ATTACHED MAP) | |

| | |
|---|---|
| Total Depth, Size and Depth of Well Casing | SEE ATTACHED TABLE |
| Sanitary / Annular Sealing Material | " " " |
| Depth of Sanitary / Annular Seal | " " " |
| Conductor Casing Seal | N/A |

| | |
|---|---|
| Company | AVOLET ENVIRONMENTAL |
| Contact Person | MICHAEL RENDINA |
| Address | 16 TECHNOLOGY DR., Suite 154 |
| City, State Zip Code | IRVINE, CA 92618 |
| Telephone | 949 933 6031 |

| | |
|---|---|
| Well Owner | BOEING REALTY CORP. |
| Address | 4900 E. CONANT ST., Bldg 1 |
| City / Zip Code | LONG BEACH, CA 90808 |
| Telephone | (562) 733-2229 |
| Well Driller | CASCADE DRILLING, INC. |
| Address | 11250 E. FIRESTONE BLVD. |
| City / Zip Code | NORWALK, CA 90650 |
| C-57 License No. | 717510 |
| Telephone | (626) 929-8176 |

IF WELL AND GEOLOGIC CONDITIONS ENCOUNTERED IN THE FIELD ARE FOUND TO DIFFER FROM THE SCOPE OF WORK PRESENTED TO THIS OFFICE, WORK PLAN MODIFICATIONS MAY BE REQUIRED

| | |
|---|---|
| Well Depth Log / Records | |
| Method of Well Assessment | |
| Depth and Number of Perforations | |
| Type of Perforator Size of Perforations | |
| Type and Amount of Sealant | |
| Method of Upper Seal Pressure Application | |

**DISPOSITION OF PERMIT (Department Use Only)**
**THIS PERMIT IS CONSIDERED COMPLETE WHEN THE WORK PLAN IS APPROVED AND WHEN THE WELL COMPLETION LOG IS RECEIVED. NO WELL CONSTRUCTION OR DECOMMISSIONING CAN BE INITIATED WITHOUT THE WORK PLAN APPROVAL FROM THIS DEPARTMENT**

Date 10/6/06 R.E.H.S. Michael Lui

Conditions ON 10/6/06 #1146 WERE PAID FOR PERMIT #7212 TO CONSTRUCT EWB001, EWC001, EWC002, IWC001, IWC002 AND MWC024. TOTAL OF SIX WELLS TO BE DRILLED ON 10-17-06 TILL 11/1/06

For Final Inspection
Call Michael Lui
(626) 430-5398
8 a.m. to 10 p.m.

I hereby agree to comply in every respect with all the regulations of the County Environmental Health Division and with all ordinances and laws of the County of Los Angeles and the State of California pertaining to well construction, reconstruction and decommissioning. Upon completion of the well and with in thirty days thereafter, I will furnish the Environmental Health office with a completion log of the well giving date drilled, depth of the well, perforations in the casing, and any other data deemed necessary by County Environmental Health Division.

Michael A. Rendina P.G. #4573
Applicant's Signature

Applicant Name: (Print) MICHAEL A. RENDINA

Fax Number: 949 296 2971

**NOTICE**

**This well permit approval is limited to compliance with the California well standards and the Los Angeles County Health and Safety Code and does not grant any rights to construct, reconstruct, or decommission any well. Applicant is responsible for securing all other permits necessary to perform the work.**

TOTAL P.01

# Attachment B

# Boring Logs

CDM

# LITHOLOGIC LOG

# MONITORING WELL No. EWB001

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

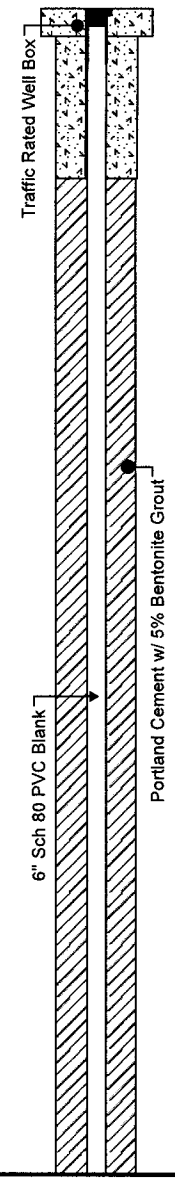
**Date Started:** 11/7/06
**Date Completed:** 11/9/06
**Northing:** 1769603.92
**Easting:** 6470380.97
**Elevation:** 53.01 Feet
**Boring Depth:** 90 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | | 3" Asphalt |
| | | | | | | | 6" Gravelly Base |
| 2 | | | | | | CL | Dark yellowish brown (10YR 4/4), SILTY CLAY, slightly moist, firm, plastic. |
| | | | | | | | ;debris - concrete red brick. |
| 4 | | | | 0.0 | | | |
| 6 | | | | | | | ;debris - concrete red brick. |
| | | | | | | | ;debris - large concrete pieces. |
| 8 | | | | | | ML | Brown (10YR 4/3), SANDY SILT, moist, firm, very fine-grained, little clay. |
| 10 | | | | 0.0 | | | |
| 12 | | | | 0.0 | | CL | Very dark grayish brown (10YR 3/2), SILTY CLAY, moist, stiff, plastic, little very fine-grained sand, trace fine gravel. |
| 14 | | | | 0.0 | | ML | Dark yellowish brown (10YR 3/4), SILT, moist, firm, little to some very fine-grained sand, little clay. |
| 16 | | | | | | | |
| 18 | | | | 0.0 | | | |
| 20 | | | | | | | |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWB001

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 11/7/06
**Date Completed:** 11/9/06
**Northing:** 1769603.92
**Easting:** 6470380.97
**Elevation:** 53.01 Feet
**Boring Depth:** 90 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | | | |
| 22 | | | | | | | | |
| | | | | 1.2 | | | | |
| 24 | | | | | | ML | Dark yellowish brown (10YR 3/4), SILT, moist, firm, little to some very fine-grained sand, little clay. | |
| 26 | | | | 0.0 | | | | |
| 28 | | | | 0.0 | | SM | Brown (10YR 5/3), SILTY SAND, moist, poorly graded, very fine-grained. | |
| 30 | | | | | | | | |
| | | | | 0.0 | | ML | Dark yellowish brown (10YR 4/4), SILT, moist, firm to stiff, little very fine-grained sand. | |
| 32 | | | | | | | | |
| 34 | | | | 0.0 | | | | |
| 36 | | | | | | SM | Brown (10YR 5/3), SILTY SAND, moist, poorly graded, very fine-grained. | |
| 38 | | | | 0.0 | | | | |
| 40 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWB001

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 11/7/06
**Date Completed:** 11/9/06
**Northing:** 1769603.92
**Easting:** 6470380.97
**Elevation:** 53.01 Feet
**Boring Depth:** 90 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | | | |
| 42 | | | | 0.0 | | SM | Brown (10YR 5/3), SILTY SAND, moist, poorly graded, very fine-grained. | |
| 44 | | | | 0.0 | | | | |
| 46 | | | | 0.0 | | SP | Grayish brown (10YR 5/2), SAND, moist, poorly graded, very fine-grained. | |
| | | | | | | CL | Brown (10YR 4/3), SANDY CLAY, moist, firm to stiff, plastic, very fine-grained sand. | |
| 48 | | | | 0.0 | | SM | Brown (10YR 4/3), SILTY SAND, moist, poorly graded, very fine-grained. | |
| 50 | | | | 0.0 | | SP | Yellowish brown (10YR 5/8), SAND, moist, poorly graded, fine-grained, scattered shell fragments. | |
| 52 | | | | 0.0 | | SW | Dark yellowish brown (10YR 4/4), GRAVELLY SAND, moist, well graded or bi-modally graded, fine-grained sand, fine sub-rounded gravel, scattered cobbles. | |
| 54 | | | | 0.0 | | ML | Dark yellowish brown (10YR 4/4), SILT, moist, firm, little to some very fine-grained sand. | Bentonite Pellets |
| 56 | | | | 0.4 | | ML/CL | Olive brown (2.5Y 4/3), SILTY CLAY/CLAYEY SILT, moist, stiff to hard in zones, plastic, oxidation staining in dark veins, some areas with greater silt, some greater clay content. | |
| 58 | | | | 0.0 | | ML | Transition to SANDY SILT.<br>Light olive brown (2.5Y 5/3), SANDY SILT, very moist to wet, firm, little to some very fine-grained sand, trace clay. | |
| 60 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWB001

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

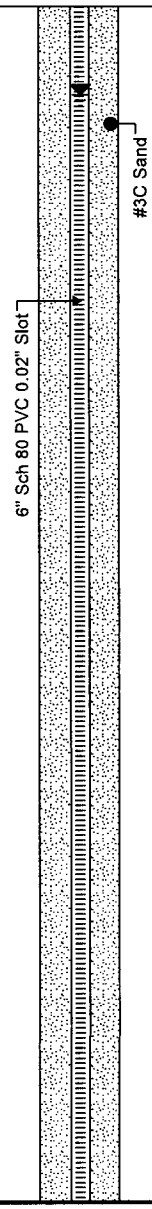
**Date Started:** 11/7/06
**Date Completed:** 11/9/06
**Northing:** 1769603.92
**Easting:** 6470380.97
**Elevation:** 53.01 Feet
**Boring Depth:** 90 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| | | | | 1.2 | | | Groundwater encountered approximately 61.5 feet. |
| 62 | | | | 2.6 | | SM | Light olive brown (2.5Y 5/3), SILTY SAND, wet to saturated, poorly graded, very fine-grained, faint oxidation staining. |
| 64 | | | | 1.0 | | ML | Light olive brown (2.5Y 5/3), SANDY SILT, wet, firm, very fine-grained sand, micaceous. |
| 66 | | | | 0.6 | | | |
| 68 | | | | 1.4 | | ML | SILT, no sand, very stiff. |
| | | | | | | ML | Light olive brown (2.5Y 5/3), SANDY SILT, wet, firm, very fine-grained sand, micaceous. |
| 70 | | | | 2.2 | | ML | SILT, no sand, very stiff. |
| 72 | | | | 4.2 | | ML | Light olive brown (2.5Y 5/3), SANDY SILT, wet, firm, very fine-grained sand, micaceous. ;dark oxidation staining in veins. |
| 74 | | | | 1.5 | | SP | Olive brown (2.5Y 4/3), SAND, saturated, poorly graded, very fine- to fine grained. |
| 76 | | | | 6.5 | | ML<br>SP | Olive brown (2.5Y 4/3), SILT, moist, stiff, oxidation staining in veins. |
| | | | | 0.6 | | ML | Olive brown (2.5Y 4/3), SAND, saturated, poorly graded, very fine- to fine grained. |
| 78 | | | | | | | Olive brown (2.5Y 4/3), SILT, moist, stiff. |
| | | | | 11.6 | | SP | Dark grayish brown (2.5Y 4/2), SAND, saturated, poorly graded, fine-grained. |
| 80 | | | | | | | |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWB001

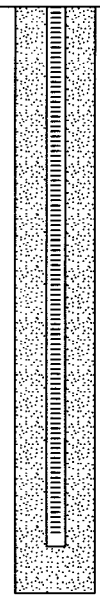
**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 11/7/06
**Date Completed:** 11/9/06
**Northing:** 1769603.92
**Easting:** 6470380.97
**Elevation:** 53.01 Feet
**Boring Depth:** 90 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| 82 | | | | 5.6 | | SP | Dark grayish brown (2.5Y 4/2), SAND, saturated, poorly graded, fine-grained. | |
| 84 | | | | 2.4 | | | Olive brown (2.5Y 4/3), SAND, saturated, poorly graded, very fine- to fine-grained. | |
| 86 | | | | 5.5 | | SM | Olive brown (2.5Y 4/3), SILTY SAND, wet, stiff, poorly graded, very fine-grained sand. | |
| | | | | 6.2 | | SP | Light olive brown (2.5Y 5/6), SAND, saturated, poorly graded, fine-grained. | |
| 88 | | | | | | ML | Olive brown (2.5Y 4/3), SILT, moist, very stiff, slightly plastic, some clay. | |
| | | | | | | SP | Olive brown (2.5Y 4/3), SAND, saturated, poorly graded, fine-grained. | |
| | | | | 9.2 | | ML | Olive brown (2.5Y 4/3), SILT, moist, stiff, little clay, oxidation staining in thin laminations. | |
| 90 | | | | | | | | |
| 92 | | | | | | | | |
| 94 | | | | | | | | |
| 96 | | | | | | | | |
| 98 | | | | | | | | |
| 100 | | | | | | | | |



Well Detail

| | |
|---|---|
| 0 to 59.2 | 6" Sch 80 PVC Blank |
| 59.2 to 89.2 | 6" Sch 80 PVC 0.020 Slot |
| 0 to 3 | Concrete with Traffic Rated Well Box |
| 3 to 53 | Portland Cement w/ 5% Bentonite Grout |
| 53 to 56 | Bentonite Pellets |
| 56 to 90 | #3C Sand |

Notes: Boring total depth 90 feet. Groundwater encountered at approximately 61.5 feet. Boring completed as a groundwater monitoring well.

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC001

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

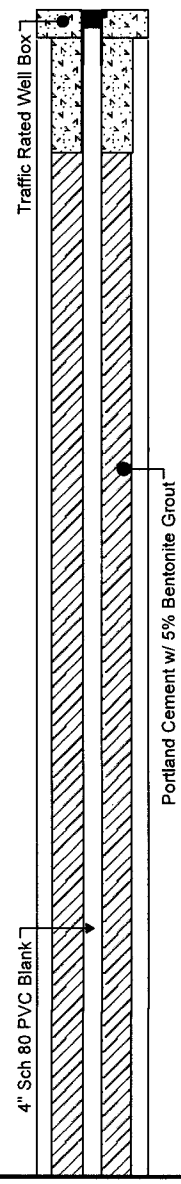
**Date Started:** 11/2/06
**Date Completed:** 11/7/06
**Northing:** 1769705.98
**Easting:** 6470359.29
**Elevation:** 52.59 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | | 7" Concrete |
| 2 | | | | | | CL | Brown (10YR 4/3), CLAY, moist, hard, plastic, some silt and very fine-grained sand.<br>Note: Concrete and red brick debris. |
| 4 | | | | 0.0 | | ML | Dark yellowish brown (10YR 4/4), SILT, moist, hard, some very fine-grained sand, concrete and red brick debris. |
| 6 | | | | | | CL | Dark brown (10YR 3/3), CLAY, moist, very stiff, plastic, some silt and very fine-grained sand. |
| 8 | | | | | | | |
| 10 | | | | 0.0 | | | |
| 12 | | | | | | ML | Brown (10YR 4/3), SILT, moist, hard, some clay, some very fine-grained sand. |
| 14 | | | | | | | |
| 16 | | | | 0.0 | | | |
| 18 | | | | | | | |
| 20 | | | | | | | |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC001

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 11/2/06
**Date Completed:** 11/7/06
**Northing:** 1769705.98
**Easting:** 6470359.29
**Elevation:** 52.59 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | ML | Brown (10YR 4/3), SILT, moist, stiff, some very fine-grained sand. | |
| | | | | 1.5 | | | | |
| 22 | | | | | | | | |
| 24 | | | | 0.0 | | | | |
| 26 | | | | | | | | |
| | | | | 0.0 | | | | |
| 28 | | | | | | | | |
| 30 | | | | 0.0 | | | | |
| | | | | | | CL | Brown (10YR 4/3), SILTY CLAY, moist, very stiff, plastic, little very fine-grained sand. | |
| 32 | | | | 1.2 | | | | |
| 34 | | | | | | | | |
| | | | | 3.6 | | ML | Brown (10YR 4/3), SILT, moist, stiff, very slightly plastic, little clay, some very fine-grained sand. | |
| 36 | | | | | | | | |
| 38 | | | | 0.0 | | | Dark yellowish brown (10YR 4/4), SANDY SILT, moist, stiff, very fine-grained. | |
| 40 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC001

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 11/2/06
**Date Completed:** 11/7/06
**Northing:** 1769705.98
**Easting:** 6470359.29
**Elevation:** 52.59 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| 42 | | | | 0.0 | | SM | Dark yellowish brown (10YR 4/4), SILTY SAND, moist, firm, poorly graded, very fine-grained, faint oxidation staining in veins. | |
| 44 | | | | 0.0 | | | | |
| 46 | | | | | | SM | Olive brown (2.5Y 4/3), SILTY SAND, very moist, firm, very fine-grained, oxidation staining in veins and nodules. | |
| 48 | | | | 0.0 | | SW | Dark yellowish brown (10YR 4/6), GRAVELLY SAND, moist, bimodally graded, fine-grained sand, some fine to medium gravel. | |
| 50 | | | | 0.0 | | | | |
| 52 | | | | 0.6 | | CL | Yellowish brown (10YR 5/4), CLAY, moist, firm, plastic, little silt and very fine-grained sand. | |
| 54 | | | | 1.5 | | ML | Olive brown (2.5Y 4/3), SILT, moist, stiff, slightly plastic, little to some clay. | |
| 56 | | | | 1.1 | | SP | Groundwater encountered apporximatley 56 feet. Olive brown (2.5Y 4/3), SAND, saturated, poorly graded, very fine-grained, trace to little silt. | |
| 58 | | | | 4.9 | | | | |
| 60 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC001

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 11/2/06
**Date Completed:** 11/7/06
**Northing:** 1769705.98
**Easting:** 6470359.29
**Elevation:** 52.59 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 1.4 | | | | |
| 62 | | | | 10.0 | | ML | Olive brown (2.5Y 4/3), SILT, moist, firm to stiff with very fine-grained sand, dark oxidation staining in veins. | |
| 64 | | | | 7.6 | | SP | Olive brown (2.5Y 4/3), SAND with SILT, wet, poorly graded, very fine-grained, trace to little silt, micaceous. | |
| 66 | | | | 26.3 | | ML | Olive brown (2.5Y 4/3), SILT, very moist, stiff, little to some very fine-grained sand, faint oxidation staining. | |
| 68 | | | | 5.0 | | | | |
| 70 | | | | 3.4 | | | | |
| 72 | | | | 1.0 | | | | |
| 74 | | | | 12.8 | | CL | Olive brown, CLAY, moist, hard, with silt, oxidation staining. | |
| | | | | | | SP | Dark grayish brown (2.5Y 4/2), SAND, saturated, poorly graded, very fine- to fine-grained. | |
| 76 | | | | | | | | |
| 78 | | | | 11.7 | | | | |
| 80 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC001

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

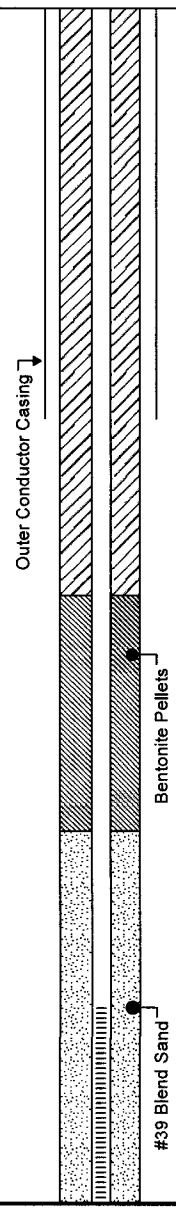
**Date Started:** 11/2/06
**Date Completed:** 11/7/06
**Northing:** 1769705.98
**Easting:** 6470359.29
**Elevation:** 52.59 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| | | | | 1.6 | | SP | Dark grayish brown (2.5Y 4/2), SAND, saturated, poorly graded, very fine- to fine-grained. |
| 82 | | | | 5.3 | | ML | Olive brown (2.5Y 4/4), SILT, moist, stiff to hard, little very fine-grained sand. |
| 84 | | | | 13.0 | | SP | Olive brown (2.5Y 4/4), SAND, saturated, poorly graded, fine-grained. |
| 86 | | | | 18.2 | | ML | Olive brown (2.5Y 4/3), SILT, moist, stiff, little to some very fine-grained sand, micaceous, oxidation staining in veins. Note: Outer conductor casing set at 87 feet. Install bentonite pellet seal. Continue drilling with inner casing. |
| 88 | | | | 13.6 | | SP | Light olive brown (2.5Y 5/3), SAND, saturated, poorly graded, very fine- to fine-grained. |
| 90 | | | | 4.9 | | | Light olive brown (2.5Y 5/3), SAND, saturated, poorly graded, fine-grained, abundant shell fragments. |
| 92 | | | | 27.6 | | SM | Olive brown (2.5Y 4/3), SILTY SAND, wet, poorly graded, very fine-grained, oxidation staining throughout. |
| 94 | | | | 15.6 | | SP | Light olive brown, (2.5Y 5/4), SAND, saturated, poorly graded, fine-grained, abundant shell fragments, oxidation staining. |
| 96 | | | | 26.5 | | CL | Olive brown (2.5Y 4/3), SILTY CLAY, moist, very stiff to hard, oxidation staining in veins. |
| 98 | | | | 8.5 | | SP | Olive yellow, (2.5Y 6/6), SAND, saturated, fine-grained, shelly debris, 50% to 60% shell fragments. ;as above, poorly graded, little silt, shell fragments throughout. ;as above, wet, very fine-grained, little silt, shell fragments and oxidation staining. |
| 100 | | | | | | | |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC001

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 11/2/06
**Date Completed:** 11/7/06
**Northing:** 1769705.98
**Easting:** 6470359.29
**Elevation:** 52.59 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 25.6 | | | | |
| 102 | | | | 1.8 | | CL | Olive brown (2.5Y 4/3), CLAY, moist, hard, plastic, some shell fragments, few indurated nodules 1/4" to 1/2". | |
| | | | | | | SP | Olive brown (2.5Y 4/3), SAND, saturated, poorly graded, fine-grained, dark oxidation staining at upper contact, shells throughout. | |
| 104 | | | | 42.0 | | GW | Dark grayish brown (2.5Y 4/2), GRAVEL, saturated, well graded, fine to coarse sub-angular gravel, with sand and shells. | |
| 106 | | | | 59.6 | | SP | Olive brown (2.5Y 4/4), SAND, saturated, poorly graded, very fine- to fine-grained, trace silt, no shells. | 4" Sch 80 PVC 0.02" Slot |
| 108 | | | | 116.0 | | SM | Dark grayish brown (2.5Y 5/6), SILTY SAND, saturated, stiff, poorly graded, very fine-grained, micacous. | |
| 110 | | | | 97 | | SP | Light olive brown (2.5Y 5/6), SAND, saturated, poorly graded, fine-grained, faint oxidation staining. | |
| 112 | | | | 14.5 | | SM | Dark grayish brown (2.5Y 4/2), SILTY SAND, wet, poorly graded, very fine-grained, little to some silt, micaceous. | |
| 114 | | | | 17.1 | | | | |
| 116 | | | | 5.4 | | SP | Dark grayish brown (2.5Y 4/2), SAND, saturated, poorly graded, fine-grained. | |
| 118 | | | | 132 | | | | |
| 120 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC001

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 11/2/06
**Date Completed:** 11/7/06
**Northing:** 1769705.98
**Easting:** 6470359.29
**Elevation:** 52.59 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 2.7 | | SM | Dark grayish brown (2.5Y 4/2), SILTY SAND, wet to saturated, poorly graded, very fine-grained, micaceous. | |
| 122 | | | | 0.0 | | | | |
| 124 | | | | 0.4 | | | | Cave |
| 126 | | | | | | | | |
| 128 | | | | | | | Well Detail<br>0 to 97 — 4" Sch 80 PVC Blank<br>97 to 122 — 4" Sch 80 PVC 0.020 Slot<br>0 to 2.5 — Concrete with Traffic Rated Well Box<br>2.5 to 90 — Portland Cement w/ 5% Bentonite Grout<br>90 to 94 — Bentonite Pellets<br>94 to 123 — #39 Blend Sand | |
| 130 | | | | | | | | |
| 132 | | | | | | | | |
| 134 | | | | | | | | |
| 136 | | | | | | | | |
| 138 | | | | | | | | |
| 140 | | | | | | | | |

Notes: Boring total depth 125 feet. Groundwater encountered at approximately 56 feet. Boring completed as a groundwater monitoring well.

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC002

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

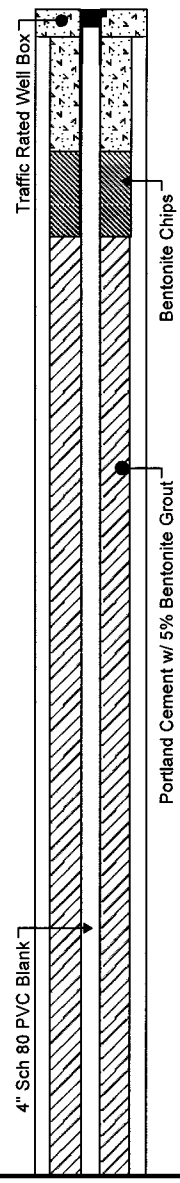
**Date Started:** 10/17/06
**Date Completed:** 10/20/06
**Northing:** 1768367.68
**Easting:** 6470266.69
**Elevation:** 51.76 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | | 8" Concrete |
| 2 | | | | | | ML/CL | Brown (10YR 4/3), CLAYEY SILT/SILTY CLAY, moist, stiff, plastic, little fine-grained sand. Brick and concrete debris - reworked - base.<br><br>Note: Brick and concrete debris. |
| 4 | | | | | | | |
| 6 | | | | | | | |
| 8 | | | | | | ML | Brown (10YR 4/3), SILT, moist, stiff, trace clay, little fine-grained sand. |
| 10 | | | | | | | |
| 12 | | | | 0.0 | | | |
| 14 | | | | | | | |
| 16 | | | | 0.0 | | ML | Grayish brown (10YR 5/2), SILT, moist, firm, some very fine-grained sand. |
| 18 | | | | | | | |
| 20 | | | | | | | |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC002

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 10/17/06
**Date Completed:** 10/20/06
**Northing:** 1768367.68
**Easting:** 6470266.69
**Elevation:** 51.76 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | CL | Dark grayish brown (10YR 4/2), CLAY, moist, stiff to hard, moderately plastic, little silt and fine sand, few caliche nodules. | |
| 22 | | | | 0.0 | | SM | Yellowish brown (10YR 5/4), SILTY SAND, moist, poorly graded, fine- to very fine-grained. | |
| 24 | | | | | | | | |
| 26 | | | | | | | | |
| 28 | | | | | | | | |
| 30 | | | | 0.0 | | CL | Brown (10YR 4/3), CLAY, moist, plastic, firm, some silt, trace fine-grained sand. | |
| 32 | | | | | | SP | Light yellowish brown (10YR 5/4), SAND, moist, poorly graded, fine- to very fine-grained, little silt. | |
| 34 | | | | | | | Yellowish brown (10YR 5/6), SAND, moist, poorly graded, fine-grained | |
| 36 | | | | | | | | |
| 38 | | | | 0.0 | | | Light yellowish brown (10YR 5/4), SAND, slightly moist, poorly graded, fine- to very fine-grained, little silt. | |
| 40 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC002

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 10/17/06
**Date Completed:** 10/20/06
**Northing:** 1768367.68
**Easting:** 6470266.69
**Elevation:** 51.76 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| 42 | | | | | | SP | | |
| 44 | | | | 0.0 | | ML | Olive brown (2.5Y 4/4), SILT, moist, firm, little fine-grained sand, oxidation stained veinlets throughout. | |
| 46 | | | | | | | | |
| 48 | | | | 0.0 | | | | |
| 50 | | | | | | | ;as above with 30% fine-grained sand. | |
| 52 | | | | 0.0 | | SP | Brown (10YR 4/3), SAND, moist, dense, poorly graded, fine- to very fine-grained, trace silt. | |
| 54 | | | | 0.0 | | ML | Dark yellowish brown (10YR 4/4), SILT, moist to very moist, firm, some very fine-grained sand, trace clay, micaceous. | |
| 56 | | | | | | SM | Dark yellowish brown (10YR 4/4), SILTY SAND, moist, dense, poorly graded, very fine-grained, micacous. | |
| 58 | | | | 0.0 | | ML | Light olive brown (10YR 5/4), SILT, moist, firm, little very fine-grained sand, trace clay. | |
| 60 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC002

**Logged By:** Micheal Lewis
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**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 10/17/06
**Date Completed:** 10/20/06
**Northing:** 1768367.68
**Easting:** 6470266.69
**Elevation:** 51.76 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | SM | Light olive brown (2.5Y 5/4), SILTY SAND, moist, poorly graded, very fine-grained. | |
| 62 | | | | 1.4 | | | | |
| 64 | | | | | | | Light olive brown (2.5Y 5/4), SILTY SAND, very moist, thin interbeds of fine-grained sand. | |
| | | | | 0.0 | | ML | Olive brown (2.5Y 4/3), SILT, very moist to wet, micaceous, trace clay. | |
| 66 | | | | | | SP | Olive brown (2.5Y 4/4), SAND, wet, poorly graded, very fine-grained, little silt. Groundwater encountered at approximately 67 feet. | |
| | | | | 0.7 | | | Olive brown (2.5Y 4/4), SAND, saturated, poorly graded, fine-grained, oxidation staining, thin zone of saturation. | |
| 68 | | | | 0.0 | | | | |
| | | | | 0.0 | | | ;as above, wet, poorly graded, fine-grained. | |
| 70 | | | | | | | ;as above. | |
| 72 | | | | 0.0 | | | | |
| | | | | | | SM | Olive brown (2.5Y 4/4), SANDY SILT/SILTY SAND, moist to very moist, stiff, very fine-grained sand, thin silt interbeds approximately 4" thick. | |
| 74 | | | | 0.0 | | | | |
| | | | | | | SP | Olive brown (2.5Y 4/4), SAND, very moist, poorly graded, fine-grained. | |
| 76 | | | | 0.3 | | ML | Olive brown, SILT, very moist, firm, some very fine-grained sand, some oxidation staining, micacous. | |
| 78 | | | | | | SM | Olive brown (2.5Y 4/4), SILTY SAND, very moist, stiff, very fine- to fine-grained, some oxidation staining in veinlets. | |
| 80 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC002

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

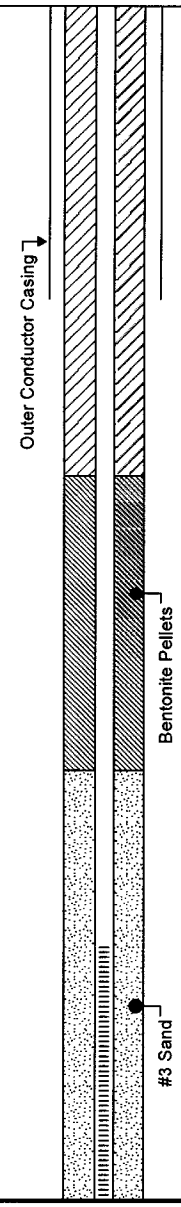
**Date Started:** 10/17/06
**Date Completed:** 10/20/06
**Northing:** 1768367.68
**Easting:** 6470266.69
**Elevation:** 51.76 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| | | | | | | ML | Olive brown (2.5Y 4/4), SILT, moist to very moist, firm, little fine-grained sand, some clay. |
| 82 | | | | 0.0 | | SP | Olive brown (2.5Y 4/3), SAND, wet to saturated, poorly graded, fine-grained, 15% medium-grained, some zones with silt, oxidation staining (faint), shells at 83 feet. |
| 84 | | | | 0.0 | | ML | Light olive brown (2.5Y 5/4), CLAYEY SILT, moist, stiff, crumbly with abundant shells. Note: Outer conductor casing set at 85 feet. Install bentonite pellet seal. Continue drilling with inner casing. |
| 86 | | | | | | SM | Light olive brown (2.5Y 5/3), SILTY SAND, very moist, poorly graded, fine-grained, little clay, abundant shells and shell fragments throughout. |
| 88 | | | | | | SP | Light olive brown, (2.5Y 5/4), SAND, wet, poorly graded, fine-grained, faint oxidation staining. |
| 90 | | | | 0.0 | | CL | Olive brown (2.5Y 5/4), CLAY, moist, firm, approximately 6" thick, plastic, oxidation staining in thin layers. |
| 92 | | | | 0.0 | | SP | Light olive brown, (2.5Y 5/4), SAND, wet, poorly graded, fine-grained, oxidation staining in layers. |
| 94 | | | | 0.0 | | CL | Olive brown (2.5Y 4/3), CLAY, moist, firm to stiff, plastic, some silt, oxidation staining in thin layers. |
| 96 | | | | 0.0 | | SP | Light olive brown, (2.5Y 4/3), SAND, wet to saturated, poorly graded, fine-grained. |
| 98 | | | | 0.0 | | CL | Olive brown (2.5Y 4/4), CLAY, moist, stiff, plastic, some silt, little oxidation staining. |
| 100 | | | | | | | |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC002

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 10/17/06
**Date Completed:** 10/20/06
**Northing:** 1768367.68
**Easting:** 6470266.69
**Elevation:** 51.76 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | | | SM | Olive brown, SILTY SAND, little clay. | |
| 102 | | | | 0.0 | | CL | Olive brown (2.5Y 4/4), CLAY, moist, stiff, plastic. | |
| 104 | | | | 0.0 | | SP | Light olive brown, (2.5Y 4/3), SAND, wet, poorly graded, fine-grained, 5% medium-grained, abundant small shell fragments throughout. | |
| 106 | | | | | | CL | Olive brown (2.5Y 4/4), CLAY with SILT, moist, stiff, slightly plastic, oxidation staining in thin layers. | 4" Sch 80 PVC 0.02" Slot |
| 108 | | | | 0.0 | | SP | Light olive brown, (2.5Y 4/3), SAND, wet, poorly graded, fine-grained, no shells, fining graduationally upward over 6" into overlying clay. | |
| 110 | | | | 0.0 | | | ;as above, very fine-graned, little silt. | |
| 112 | | | | | | SW | 4" Layer of GRAVELLY SAND, bi-modally graded fine sand with medium to large subanglular gravel, oxidation staining. | |
| 114 | | | | 0.0 | | SP | Light olive brown, (2.5Y 5/3), SAND, wet, poorly graded, very fine- to fine-grained, thin intervals with little fine- to coarse-grained subangular gravel. | |
| | | | | | | | Olive brown (2.5Y 4/3), SAND, wet, poorly graded, fine-grained, faint oxidation staining, no shells. | |
| 116 | | | | 0.0 | | CL | Olive (5Y 4/4), CLAY, moist, hard, plastic, oxidation stained, scour contact with overlying sand. | |
| 118 | | | | 0.0 | | ML | Olive (5Y 4/4), CLAYEY SILT, moist to very moist, slightly plastic, occasional interbeds of sandy silt. | |
| 120 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. EWC002

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 10/17/06
**Date Completed:** 10/20/06
**Northing:** 1768367.68
**Easting:** 6470266.69
**Elevation:** 51.76 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | ML | | |
| 122 | | | | 0.0 | | CL | Olive (5Y 4/4), SILTY SANDY CLAY, moist, stiff, plastic, fine-grained sand, faint oxidation staining. | |
| 124 | | | | 0.0 | | SP | Olive brown (2.5Y 4/4), SAND, wet to saturated, poorly graded, very fine to fine-grained, faint oxidation staining. | Bentonite Pellets |
| 126 | | | | | | | Well Detail<br>0 to 96 — 4" Sch 80 PVC Blank<br>96 to 121 — 4" Sch 80 PVC 0.020 Slot<br><br>0 to 2.5 — Concrete with Traffic Rated Well Box<br>2.5 to 4 — Bentonite Chips<br>4 to 88 — Portland Cement w/ 5% Bentonite Grout<br>88 to 93 — Bentonite Pellets<br>93 to 123 — Sand<br>123 to 125 — Bentonite Pellets | |
| 128 | | | | | | | | |
| 130 | | | | | | | | |
| 132 | | | | | | | | |
| 134 | | | | | | | | |
| 136 | | | | | | | | |
| 138 | | | | | | | | |
| 140 | | | | | | | | |

Notes: Boring total depth 125 feet. Groundwater encountered at approximately 67 feet. Boring completed as a groundwater monitoring well.

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC001

**Logged By:** Micheal Lewis/Z. Dickson
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

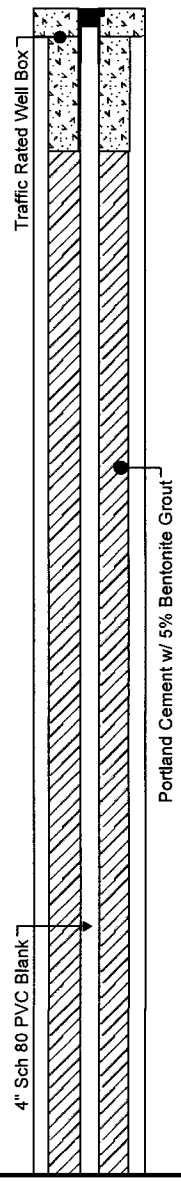
**Date Started:** 10/31/06
**Date Completed:** 11/2/06
**Northing:** 1768452.84
**Easting:** 6470121.09
**Elevation:** 53.60 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | | 8" Asphalt |
| 2 | | | | | | CL | Brown (10YR 5/3), SILTY CLAY, moist, stiff, plastic. |
| 4 | | | | | | | Note: Construction debris. |
| 6 | | | | | | | Note: Construction debris. |
| 8 | | | | | | ML | Brown (10YR 4/3), SILT, moist, firm, little clay, little fine-grained sand. |
| 10 | | | | | | | |
| 12 | | | | | | | |
| 14 | | | | 0.0 | | SM | Dark brown (7.5YR 3/4), SANDY SILT, moist, stiff, very fine- to fine grained sand, micaceous. |
| 16 | | | | | | | |
| 18 | | | | 0.0 | | | |
| 20 | | | | | | | |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC001

**Logged By:** Micheal Lewis/Z. Dickson
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 10/31/06
**Date Completed:** 11/2/06
**Northing:** 1768452.84
**Easting:** 6470121.09
**Elevation:** 53.60 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| 22, 24, 26, 28 | | | | 0.0 | | ML | Note: First 10 foot run with core barrel.Casing at 18 feet, core barrel to 24 feet. Logged from shoe.<br>Dark brown (7.5YR 3/4), SILT, moist, very stiff, micaceous, mottled with caliche, trace fine to very fine sand, slightly clayey. | |
| 30, 32, 34 | | | | 0.0 | | SM | Light olive brown (2.5Y 5/6), SILTY SAND, slightly moist, very dense, poorly graded, very fine- to fine-grained, micaceous. | |
| 36, 38, 40 | | | | 0.0 | | SP | Light olive brown, SAND, dry to slightly moist, very dense, very fine- to fine-grained, poorly graded, micaceous, trace silt. | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC001

**Logged By:** Micheal Lewis/Z. Dickson
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 10/31/06
**Date Completed:** 11/2/06
**Northing:** 1768452.84
**Easting:** 6470121.09
**Elevation:** 53.60 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| 42, 44 | | | | 0.0 | | SP | Light olive brown, SAND, dry to slightly moist, very dense, very fine- to fine-grained, poorly graded, micaceous, slightly silty. | |
| 46, 48 | | | | 0.0 | | ML | Light olive brown (2.5Y 5/3), CLAYEY SILT, moist, firm, moderately plastic. | |
| 50 | | | | 1.1 | | SP | Light olive brown (2.5Y 5/6), SAND, moist, poorly graded, very fine-grained, little silt. | |
| 52, 54 | | | | 1.3<br>4.2 | | ML | Light olive brown (2.5Y 4/3), SILT, moist, firm, slightly plastic, some clay.<br>Light olive brown (2.5Y 4/3), SILT, moist, firm, with little to some very fine-grained sand, no clay.<br>Light olive brown (2.5Y 4/3), SILT, moist, firm, slightly plastic, some clay. | |
| 56, 58, 60 | | | | 1.8<br>3.1 | | SM | Olive brown (2.5Y 4/3), SILTY SAND, moist, stiff, poorly graded, very fine-grained, oxidation staining in veins throughout. | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC001

**Logged By:** Micheal Lewis/Z. Dickson
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

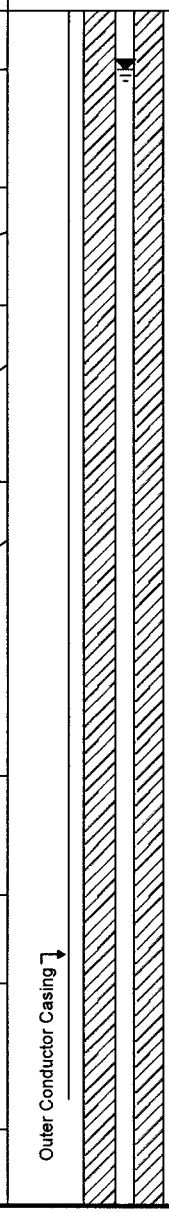
**Date Started:** 10/31/06
**Date Completed:** 11/2/06
**Northing:** 1768452.84
**Easting:** 6470121.09
**Elevation:** 53.60 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| | | | | 2.9 | | | |
| 62 | | | | 1.7 | | SP | Groundwater encountered approximately 61 feet. Light olive brown (2.5Y 5/6), SAND, wet to saturated, poorly graded, fine-grained. |
| | | | | | | ML | Olive brown, SILT, wet, stiff, some very fine-grained sand. |
| 64 | | | | 0.3 | | SP | Light olive brown (2.5Y 5/3), SAND, wet, poorly graded, fine- to very fine-grained. |
| | | | | | | SM | Olive brown (2.5Y 4/3), SILTY SAND, very moist, firm, slightly plastic, little clay, heavy oxidation staining in veins. |
| 66 | | | | 0.4 | | SP | Olive brown (2.5Y 4/4), SAND, saturated, poorly graded, very fine-grained, some fine-grained. |
| 68 | | | | 1.3 | | CL | Olive brown (2.5Y 4/3), CLAY, moist, hard, slightly plastic, very thin lamination/oxidation staining. |
| 70 | | | | 7.2 | | SP | Dark olive brown (2.5Y 3/3), SAND, saturated, poorly graded, fine-grained to very fine-grained, little silt, micaceous. |
| 72 | | | | 1.3 | | | |
| 74 | | | | 1.0 | | ML | Dark grayish brown (2.5Y 4/2), SILT, moist to very moist, hard, interbeds of very fine-grained sand, faint oxidation staining. |
| 76 | | | | 0.8 | | SP | Light olive brown (2.5Y 5/3), SAND, saturated, poorly graded, fine-grained. |
| 78 | | | | | | ML | Olive brown (2.5Y 4/4), CLAYEY SILT, moist, hard, slightly plastic, faint oxidation staining throughout. Note: Outer conductor casing set at 78.5 feet. Install bentonite pellet seal. Continue drilling with inner casing. |
| 80 | | | | | | SP | Note: 3" thick SAND layer, saturated, poorly graded, fine-grained. |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC001

**Logged By:** Micheal Lewis/Z. Dickson
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

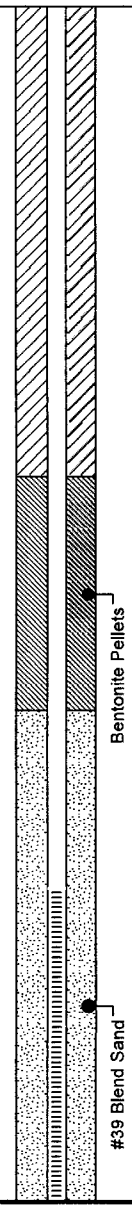
**Date Started:** 10/31/06
**Date Completed:** 11/2/06
**Northing:** 1768452.84
**Easting:** 6470121.09
**Elevation:** 53.60 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| 82 | | | | 1.2 | | SP | Grayish brown (10YR 5/2), SAND, wet to saturated, poorly graded, very fine- to fine-grained, little silt, abundant shells. |
| 84 | | | | 0.0 | | SP | Olive brown (2.5Y 4/4), SAND, wet, poorly graded, very fine-grained. |
| 86 | | | | 0.0 | | ML | Olive brown (2.5Y 4/4), CLAYEY SILT, moist, hard, slightly plastic, oxidation staining in veins. |
| 88 | | | | 0.8 | | CL | Olive brown (2.5Y 4/4), CLAY, moist, hard, slightly plastic, some silt. |
| | | | | | | SP | Olive brown (2.5Y 4/4), SAND, saturated, poorly graded, very fine-grained. |
| | | | | | | CL | Olive brown, CLAY, moist, very stiff, plastic. |
| 90 | | | | 0.4 | | SP | Olive brown (2.5Y 4/4), SAND, saturated, poorly graded, very fine-grained. |
| 92 | | | | 0.0 | | ML | Olive brown (2.5Y 4/4), CLAYEY SILT, moist, hard, slightly plastic, oxidation staining in veins. |
| 94 | | | | 0.3 | | SP | Olive brown (2.5Y 4/4), SAND, wet, poorly graded, very fine-grained, trace to little silt. |
| 96 | | | | 0.6 | | | Olive brown (2.5Y 4/4), SAND, wet, poorly graded, very fine-grained, little silt. |
| 98 | | | | 0.0 | | | |
| 100 | | | | | | | Light olive brown (2.5Y 5/3), SAND, wet, poorly graded, very fine-grained, little silt. |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC001

**Logged By:** Micheal Lewis/Z. Dickson
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

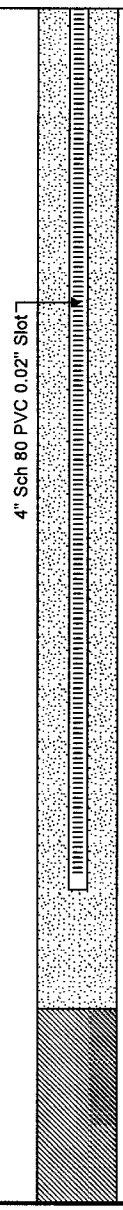
**Date Started:** 10/31/06
**Date Completed:** 11/2/06
**Northing:** 1768452.84
**Easting:** 6470121.09
**Elevation:** 53.60 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | GW | Light olive brown (2.5Y 5/3), GRAVEL, wet, very dense, well graded, fine-grained sand matrix, fine sub-angular gravel. |
| 102 | | | | 0.0 | | CL | Olive brown (2.5Y 4/4), CLAY, moist, very hard, slightly plastic, oxidation staining in veins. |
| 104 | | | | 0.0 | | SM | Dark grayish brown (2.5Y 4/2), SILTY SAND, wet, poorly graded, very fine-grained. |
| 106 | | | | 1.2 | | SP | Dark grayish brown (2.5Y 4/2), SAND, wet, poorly graded, very fine-grained. |
| 108 | | | | 0.0 | | SM | Dark grayish brown (2.5Y 4/2), SILTY SAND, wet, poorly graded, very fine-grained, micaceous. |
| 110 | | | | 0.0 | | | |
| 112 | | | | 5.0 | | SP | Light olive brown (2.5Y 5/3), SAND, saturated, poorly graded, fine-grained. |
| 114 | | | | 4.4 | | | |
| 116 | | | | 8.9 | | | |
| 118 | | | | 5.6 | | CL | Olive brown (2.5Y 4/3), CLAY, slightly moist, very hard, slightly plastic, oxidation staining in dark veins. |
| 120 | | | | | | ML | Olive brown (2.5Y 4/3), SILT, moist, stiff, some very fine-grained sand. |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC001

**Logged By:** Micheal Lewis/Z. Dickson
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 10/31/06
**Date Completed:** 11/2/06
**Northing:** 1768452.84
**Easting:** 6470121.09
**Elevation:** 53.60 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 1.5 | | ML | Olive brown (2.5Y 4/3), SILT, moist, stiff, some very fine-grained sand. | Bentonite Chips/Cave |
| 122 | | | | 1.2 | | | | |
| 124 | | | | 4.6 | | SM | Olive brown (2.5Y 4/3), SILTY SAND, moist to very moist, medium dense, very fine-grained sand, oxidation staining in veins. | |
| 126 | | | | | | | Well Detail<br>0 to 95 — 4" Sch 80 PVC Blank<br>95 to 115 — 4" Sch 80 PVC 0.020 Slot<br>0 to 2.5 — Concrete with Traffic Rated Well Box<br>2.5 to 88 — Portland Cement w/ 5% Bentonite Grout<br>88 to 92 — Bentonite Pellets<br>92 to 117 — #39 Blend Sand | |
| 128 | | | | | | | | |
| 130 | | | | | | | | |
| 132 | | | | | | | | |
| 134 | | | | | | | | |
| 136 | | | | | | | | |
| 138 | | | | | | | | |
| 140 | | | | | | | | |

Notes: Boring total depth125 feet. Groundwater encountered at approximately 61 feet. Boring completed as a groundwater monitoring well.

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC002

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

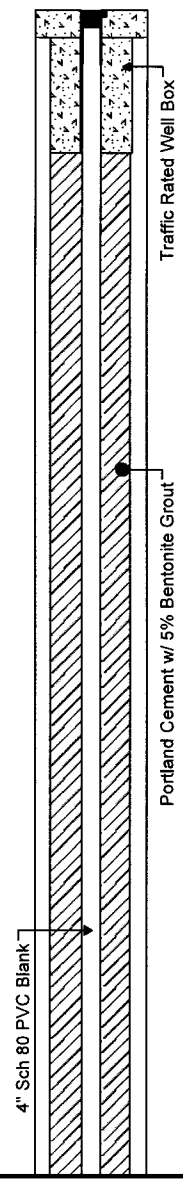
**Date Started:** 10/26/06
**Date Completed:** 10/31/06
**Northing:** 1768669.11
**Easting:** 6470239.20
**Elevation:** 51.56 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | | Asphalt |
| | | | | | | | Very dark gray, SANDY SILTY GRAVEL, well graded (base). |
| 2 | | | | | | CL | Brown (10YR 5/3), SILTY CLAY, moist, stiff, plastic. |
| 4 | | | | 0.0 | | | |
| 6 | | | | | | | Note: Red brick and concrete debris. |
| 8 | | | | | | | |
| 10 | | | | 0.0 | | ML | Brown (10YR 4/3), SILT, moist, firm, little clay, little very fine-grained sand. |
| 12 | | | | | | | |
| 14 | | | | 0.0 | | | Dark brown (7.5YR 3/4), SILT, moist, very stiff, little to some clay. |
| 16 | | | | | | | |
| 18 | | | | | | CL | Dark yellowish brown (10YR 4/4), CLAY, moist, firm, plastic, some silt, oxidation staining in veins throughout. |
| 20 | | | | | | | |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC002

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 10/26/06
**Date Completed:** 10/31/06
**Northing:** 1768669.11
**Easting:** 6470239.20
**Elevation:** 51.56 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | | | |
| 22 | | | | | | | | |
| 24 | | | | | | | | |
| | | | | 0.0 | | CL | Yellowish brown (10YR 5/4), SILTY CLAY, moist, very stiff, slightly plastic. | |
| 26 | | | | | | | | |
| 28 | | | | | | | | |
| | | | | | | | Yellowish brown (10YR 5/6), SAND, moist, poorly graded, very fine-grained, little silt. | |
| 30 | | | | 0.0 | | SP | | |
| 32 | | | | | | | | |
| 34 | | | | | | | | |
| | | | | 0.0 | | | Yellowish brown (10YR 5/6), SAND, moist, poorly graded, very fine-grained, little silt. | |
| 36 | | | | | | | | |
| 38 | | | | | | | | |
| | | | | | | | Yellowish brown (10YR 5/6), SAND, moist, poorly graded, very fine-grained, no silt. | |
| 40 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC002

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 10/26/06
**Date Completed:** 10/31/06
**Northing:** 1768669.11
**Easting:** 6470239.20
**Elevation:** 51.56 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | | | |
| 42, 44, 46, 48 | | | | | | ML | Olive brown (2.5Y 4/3), SANDY SILT, moist, firm, slightly plastic, very fine-grained, some clay, oxidation staining in veins. | |
| 50, 52, 54 | | | | 0.0 | | SP | Light olive brown (2.5Y 5/4), SAND, moist, poorly graded, very fine-grained, little silt. Light olive brown (2.5Y 5/4), SAND, moist, poorly graded, very fine to fine-grained, no silt. | |
| 56, 58 | | | | 0.0, 0.0 | | ML | Olive brown (2.5Y 4/3), SILT, moist, firm, little clay, little very fine-grained sand, oxidation staining in veins throughout. Groundwater encountered approximately 58 feet. | |
| | | | | | | SP | Olive brown (2.5Y 4/3), SAND, saturated, poorly graded, fine-grained. | |
| 60 | | | | 0.0 | | ML | Olive brown (2.5Y 4/3), SILT, moist, firm, oxidation staining. | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC002

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 10/26/06
**Date Completed:** 10/31/06
**Northing:** 1768669.11
**Easting:** 6470239.20
**Elevation:** 51.56 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | SP | Light olive brown (2.5Y 5/4), SAND, saturated, poorly graded, fine-grained. | |
| 62 | | | | | | | | |
| | | | | 0.0 | | ML | Light olive brown (2.5Y 5/4), SILT, moist to very moist, firm. | |
| 64 | | | | | | SP | Light olive brown (2.5Y 5/4), SAND, saturated, poorly graded, fine-grained. | |
| | | | | 0.0 | | | | |
| 66 | | | | | | ML | Olive brown (2.5Y 4/4), SILT, moist, firm. | |
| | | | | 0.0 | | SP | Light olive brown (2.5Y 5/4), SAND, saturated, poorly graded, fine-grained. | |
| 68 | | | | | | ML | Olive brown (2.5Y 4/4), SILT. | |
| | | | | 0.0 | | SP | Olive brown (2.5Y 4/4), SAND, saturated, poorly graded, very fine-grained, trace silt, heavy oxidation staining at upper and lower contacts. | |
| 70 | | | | | | | | |
| | | | | 0.0 | | | | |
| 72 | | | | | | ML | Olive brown (2.5Y 4/4), SILT, moist to very moist, stiff, oxidation staining in veins throughout. | |
| | | | | 1.4 | | SP | Olive brown (2.5Y 4/3), SAND, wet, poorly graded, fine- to very fine-grained, localized oxidation staining. | |
| 74 | | | | | | | | |
| | | | | 6.9 | | | | |
| 76 | | | | | | ML | Olive brown (2.5Y 4/3), SILT, moist to very moist, stiff, little to some very fine-grained sand, oxidation staining in veins. | |
| | | | | 1.6 | | | | |
| 78 | | | | | | SP | Light olive brown (2.5Y 5/3), SAND, wet to saturated, poorly graded, fine-grained, trace medium-grained. | |
| | | | | 0.0 | | | | |
| 80 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC002

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

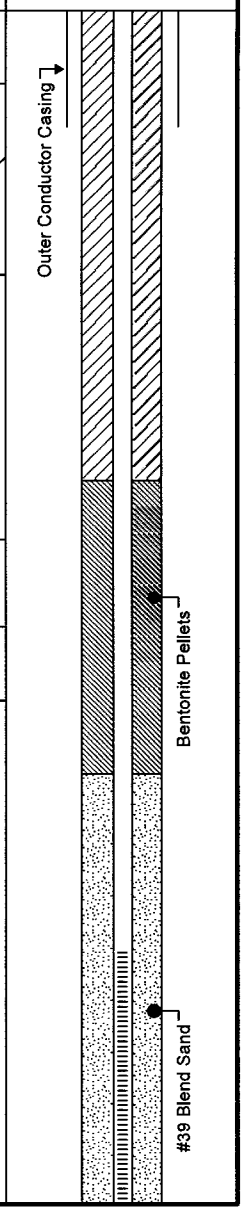
**Date Started:** 10/26/06
**Date Completed:** 10/31/06
**Northing:** 1768669.11
**Easting:** 6470239.20
**Elevation:** 51.56 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | SP | Dark olive brown (2.5Y 3/3), SAND, saturated, poorly graded, very fine-grained, trace silt. |
| 82 | | | | 1.2 | | SM | Olive brown (2.5 4/3), SILTY SAND, saturated, poorly graded, transitions to silt below. Note: Outer conductor casing set at 82 feet. Install bentonite pellet seal. Continue drilling with inner casing. |
| 84 | | | | | | ML | Olive brown (2.5Y 4/3), SILT, very moist, stiff, trace to some clay. |
| 86 | | | | 1.3 | | SP | Note: Silty sand transition. Olive brown (2.5Y 4/4), SAND, wet, poorly graded, fine-grained, thin shells and shell fragments abundant throughout. |
| 88 | | | | 5.0 | | | |
| 90 | | | | 5.4 | | SM | Note: Oxidation scour sandy contact. Olive brown (2.5Y 4/3), SILTY SAND, very moist, poorly graded, very fine-grained. |
| 92 | | | | 5.7 | | ML | Olive brown (2.5Y 4/3), SILT, moist, very stiff, slightly plastic, little to some clay. |
| 94 | | | | 0.0 | | SP | Olive brown (2.5Y 4/3), SAND, wet, poorly graded, very fine-grained, little silt. |
| 96 | | | | 0.0 | | SP | Note: Caliche vienlets. Olive brown (2.5Y 4/4), SAND, wet, poorly graded, very fine-grained, some silt. |
| 98 | | | | 0.5 | | | |
| 100 | | | | 0.0 | | | |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC002

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 10/26/06
**Date Completed:** 10/31/06
**Northing:** 1768669.11
**Easting:** 6470239.20
**Elevation:** 51.56 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | SP | | |
| 102 | | | | | | | | |
| | | | | 0.3 | | | | |
| 104 | | | | | | | Olive brown (2.5Y 4/4), SAND, scattered layers with fine sub-rounded gravel. | |
| | | | | 0.6 | | | | 4" Sch 80 PVC 0.02" Slot |
| 106 | | | | | | | | |
| | | | | 1.7 | | | | |
| 108 | | | | | | | | |
| | | | | 0.0 | | | | |
| 110 | | | | | | SM | Olive brown (2.5Y 4/3), SILTY SAND, moist, very fine-grained sand, gradational transition to underlying silt. | |
| | | | | 0.0 | | ML | Olive brown (2.5Y 4/3), SILT, moist, firm, slightly plastic, some clay. | |
| 112 | | | | | | SP | Dark yellowish brown (10YR 4/6), SAND, saturated, poorly graded, fine-grained, no fines, oxidation staining at upper contact. | |
| | | | | 1.6 | | | | |
| 114 | | | | | | | | |
| | | | | 0.0 | | | | |
| 116 | | | | | | | | |
| | | | | 0.0 | | | | |
| 118 | | | | | | ML | Olive brown (2.5Y 4/3), SILT, moist, stiff, slightly plastic, some clay. | |
| | | | | 1.2 | | | | |
| 120 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. IWC002

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** NA
**Sampling Interval:** Continuous Core

**Date Started:** 10/26/06
**Date Completed:** 10/31/06
**Northing:** 1768669.11
**Easting:** 6470239.20
**Elevation:** 51.56 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| 122 | | | | 0.4 | | ML | Olive brown (2.5 4/3), SANDY SILT, moist, stiff, some very fine-grained sand, oxidation staining faint throughout. | Bentonite Chips and Cave |
| 124 | | | | 0.7 | | | | |
| 126 | | | | | | | Well Detail<br>0 to 96 — 4" Sch 80 PVC Blank<br>96 to 116 — 4" Sch 80 PVC 0.020 Slot<br>0 to 2.5 — Concrete with Traffic Rated Well Box<br>2.5 to 88 — Portland Cement w/ 5% Bentonite Grout<br>88 to 93 — Bentonite Pellets<br>93 to 118 — #39 Blend Sand | |
| 128 | | | | | | | | |
| 130 | | | | | | | | |
| 132 | | | | | | | | |
| 134 | | | | | | | | |
| 136 | | | | | | | | |
| 138 | | | | | | | | |
| 140 | | | | | | | | |

Notes: Boring total depth 125 feet. Groundwater encountered at approximately 58 feet. Boring completed as a groundwater monitoring well.

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. MWC024

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** Shelby Tube
**Sampling Interval:** Continuous Core

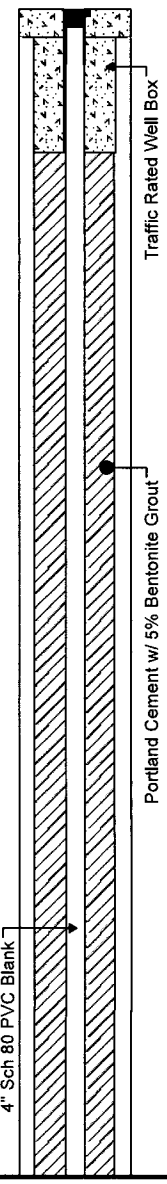
**Date Started:** 10/20/06
**Date Completed:** 10/26/06
**Northing:** 1768408.81
**Easting:** 6470265.98
**Elevation:** 51.64 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | | Concrete |
| 2 | | | | | | CL | Brown (10YR 4/3), CLAY, moist, very stiff, plastic, with little to some silt. |
| 4 | | | | | | | |
| 6 | | | | | | | Note: Scattered concrete and brick debris. |
| 8 | | | | | | | |
| 10 | | | | 0.0 | | ML | Brown (10YR 4/3), SILT, moist, firm to stiff, little to some clay, some fine-grained sand. |
| 12 | | | | | | | |
| 14 | | | | 0.0 | | | |
| 16 | | | | | | | |
| 18 | | | | | | CL | Brown (10YR 4/4), CLAY, moist, stiff, some silt, plastic. |
| 20 | | | | | | | |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. MWC024

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** Shelby Tube
**Sampling Interval:** Continuous Core

**Date Started:** 10/20/06
**Date Completed:** 10/26/06
**Northing:** 1768408.81
**Easting:** 6470265.98
**Elevation:** 51.64 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | CL | Brown (10YR 4/4), CLAY, moist, stiff, some silt, plastic. | |
| 22 | | | | | | | | |
| 24 | | | | | | | | |
| 26 | | | | | | | | |
| | | | | 0.0 | | ML | Brown (10YR 4/3), SANDY SILT, moist, firm, very fine-grained. | |
| 28 | | | | | | | | |
| 30 | | | | 0.0 | | SP | Light yellowish brown (10YR 5/4), SAND, moist, poorly graded, very fine-grained, little silt. | |
| 32 | | | | | | | | |
| | | | | | | | Light yellowish brown (10YR 5/4), SAND, moist, poorly graded, very fine-grained. | |
| 34 | | | | | | | | |
| | | | | 0.0 | | | | |
| 36 | | | | | | | | |
| 38 | | | | 0.0 | | | | |
| 40 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. MWC024

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** Shelby Tube
**Sampling Interval:** Continuous Core

**Date Started:** 10/20/06
**Date Completed:** 10/26/06
**Northing:** 1768408.81
**Easting:** 6470265.98
**Elevation:** 51.64 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 42 | | | | 0.0 | | ML | Olive brown (2.5Y 4/4), SILT, moist, firm, some very fine-grained sand, oxidation staining in veins throughout. | |
| 44 | | | | | | SM | Light olive brown (2.5Y 5/4) SILTY SAND/SANDY SILT, moist, firm, poorly graded, very fine-grained sand. | |
| | | | | 0.0 | | ML | Olive brown (2.5Y 4/4), SILT, moist, firm, some very fine-grained sand, oxidation staining. | |
| 46 | | | | | | SM | Light olive brown (2.5Y 5/4) SILTY SAND, moist, stiff, some intervals of more silt and oxidation staining. | |
| | | | | 0.0 | | | | |
| 48 | | | | | | | | |
| | | | | | | ML | Olive brown (2.5Y 4/4) SILT, moist, firm, slightly plastic, some clay in zones, oxidation staining in veins throughout. | |
| 50 | | | | 0.0 | | | | |
| | | | | | | SP | Note: Gradational change from silt above to sand.<br>Light yellowish brown (2.5Y 6/4), SAND, moist, poorly graded, very fine-grained, faint oxidation staining. | |
| 52 | | | | 0.0 | | | | |
| 54 | | | | 0.3 | | | | |
| | | | | | | ML | Note: Gradational change from sand, to silty sand, to silt.<br>Dark grayish brown (2.5Y 4/2), SILT, very moist, firm, micaceous. | |
| 56 | | | | 0.3 | | | | |
| 58 | | | | 1.5 | | | | |
| 60 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. MWC024

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** Shelby Tube
**Sampling Interval:** Continuous Core

**Date Started:** 10/20/06
**Date Completed:** 10/26/06
**Northing:** 1768408.81
**Easting:** 6470265.98
**Elevation:** 51.64 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | | Dark grayish brown (2.5Y 4/2), SILT, very moist, firm, micaceous. | |
| 62 | | | | 0.0 | | | | |
| | | | | | | | Groundwater encountered approximately 63 feet. | |
| 64 | | | | 0.4 | | SP | Olive brown (2.5Y 4/3), SAND, wet to saturated, poorly graded, very fine-grained, little to some silt, faint oxidation staining. | |
| | MWC024_ SSB00065_0001 | | | | | | | |
| 66 | MWC024_ SSB00066_0001 | | | | | | Olive brown (2.5Y 4/3), SAND, saturated, poorly graded, fine-grained, little very fine-grained. | |
| | | | | 0.0 | | | Note: Lost Shelby tube down-hole (broke off) on second run (11:00) - Recovered. | |
| 68 | | | | | | | | |
| | MWC024_ SSB00069_0001 | | | | | | Light olive brown (2.5Y 5/4), SAND, saturated, poorly graded, fine-grained, some very fine-grained, scattered small oxidation stained concretions. | |
| 70 | MWC024_ SSB00070_0001 | | | 0.0 | | | | |
| 72 | | | | 0.0 | | | Light olive brown (2.5Y 5/4), SAND, saturated, poorly graded, fine-grained, little medium-grained sand. | |
| 74 | | | | | | SM | Very dark grayish brown (2.5Y 3/2), SILTY SAND, moist to very moist, dense, very fine-grained, micaceous, oxidation staining. | |
| | | | | 0.0 | | SP | Dark grayish brown, (2.5Y 4/2), SAND, wet, poorly graded, fine-grained. | |
| 76 | | | | | | | | |
| | | | | | | CL | SILTY CLAY, moist, stiff, plastic, oxidation staining. | |
| 78 | | | | 1.5 | | SP | Olive brown (2.5Y 4/3), SAND, wet to saturated, poorly graded, fine to very fine-grained, faint oxidation staining. | |
| | | | | 0.0 | | SM | | |
| 80 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. MWC024

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** Shelby Tube
**Sampling Interval:** Continuous Core

**Date Started:** 10/20/06
**Date Completed:** 10/26/06
**Northing:** 1768408.81
**Easting:** 6470265.98
**Elevation:** 51.64 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 1.1 | | SM | Dark grayish brown, (2.5Y 4/2), SILTY SAND, gradational change from poorly graded sand (above) to silty sand to silt (below). | Outer Conductor Casing |
| | | | | 1.3 | | ML | Dark grayish brown, (2.5Y 4/2), SILT, moist, stiff, faint oxidation staining. Note: Outer conductor casing set at 81 feet. Install bentonite pellet seal. Continue drilling with inner casing. | |
| 82 | | | | | | SC | | |
| | | | | 14.6 | | | Olive brown (2.5Y 4/4), CLAYEY SAND, very moist, slightly plastic, fine-grained sand, abundant shells and shell fragments. | |
| 84 | | | | | | | | |
| | | | | 0.0 | | | | |
| 86 | | | | | | | | |
| | | | | 0.0 | | SP | Olive brown (2.5Y 4/4), SAND, saturated, poorly graded, fine-grained, abundant shells. | |
| 88 | | | | | | CL | Light olive brown (2.5Y 5/4), CLAY, moist, very stiff, plastic. | |
| | | | | 0.0 | | SP | Olive brown (2.5Y 4/4), SAND, wet, poorly graded, very fine-grained, oxidation staining in veins. | |
| 90 | | | | | | CL | Light olive brown (2.5Y 5/4), CLAY, moist, hard, plastic. | |
| | | | | 0.0 | | SP | Olive brown (2.5Y 4/4), SAND, wet, poorly graded, very fine-grained, little silt, no shells. | |
| 92 | | | | | | | | |
| | | | | 0.0 | | | | |
| 94 | | | | | | | | Bentonite Pellets |
| 96 | | | | 1.2 | | CL | Olive brown (2.5Y 4/4), SILTY CLAY, moist, hard, slightly plastic, few stringers of very fine-grained oxidized sand. | |
| 98 | | | | 4.1 | | | | |
| 100 | | | | | | | | |

AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. MWC024

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** Shelby Tube
**Sampling Interval:** Continuous Core

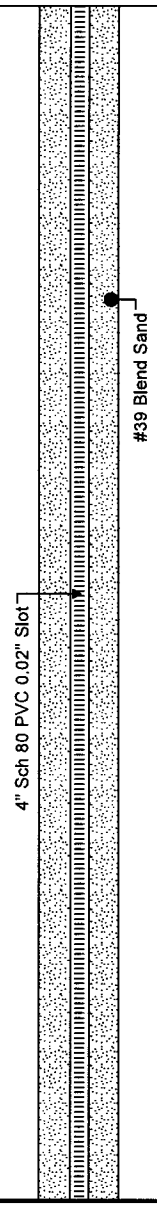
**Date Started:** 10/20/06
**Date Completed:** 10/26/06
**Northing:** 1768408.81
**Easting:** 6470265.98
**Elevation:** 51.64 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description |
|---|---|---|---|---|---|---|---|
| | | | | 0.2 | | SP | Light olive brown (2.5Y 4/4), SAND, wet to saturated, poorly graded, very fine-grained, faint oxidation staining |
| 102 | | | | 1.9 | | CL | Olive brown (2.5Y 4/3), SILTY CLAY, moist, very stiff, slightly plastic, oxidation staining in veinlets throughout. |
| 104 | | | | 0.4 | | | |
| 106 | | | | 0.0 | | ML | Dark grayish brown (2.5Y 4/2), SILT, moist, very stiff, oxidation staining in veinlets throughout.<br>Grading into; |
| 108 | | | | 0.0 | | SM | Dark grayish brown (2.5Y 4/2), SILTY SAND, very moist, stiff, very fine-grained. |
| 110 | | | | | | SP | Olive brown (2.5Y 4/4), SAND, saturated, poorly graded, very fine-grained, some silt. |
| | | | | 0.0 | | CL | Dark grayish brown (2.5Y 4/2), CLAY, moist, hard, some silt, oxidation staining in veins throughout. |
| 112 | | | | | | SM/ML | Dark grayish brown (2.5Y 4/2), SANDY SILT/SILTY SAND, moist, very fine-grained, oxidation staining. |
| | | | | 0.3 | | SP | Dark yellowish brown (10YR 4/4), SAND, saturated, poorly graded, fine-grained, trace medium-grained, oxidation staining. |
| 114 | | | | | | ML | |
| | MWC024_ SSB00115_0001 | | | 0.0 | | SP | Olive brown (2.5Y 4/4), CLAYEY SILT, moist, firm, slightly plastic, little oxidation staining. |
| 116 | MWC024_ SSB00116_0001 | | | | | | Dark yellowish brown (10YR 4/4), SAND, saturated, poorly graded, fine-grained, trace medium-grained, scattered shells and fragments. |
| | | | | 0.0 | | ML | Olive brown (2.5Y 4/3), SILT, moist, hard, trace clay, oxidation staining in veins, % very fine sand increases with depth. |
| 118 | | | | 0.4 | | | Olive brown (2.5Y 4/3), SILT, very moist, firm, little to some very fine grained-sand. |
| 120 | | | | | | | |

**Well Completion Details**




AVOCET ENVIRONMENTAL, INC.

# LITHOLOGIC LOG

# MONITORING WELL No. MWC024

**Logged By:** Micheal Lewis
**Checked By:** Micheal Rendina
**Driller:** Cascade Drilling
**Drilling Method:** Sonic Drilling
**Sampling Method:** Shelby Tube
**Sampling Interval:** Continuous Core

**Date Started:** 10/20/06
**Date Completed:** 10/26/06
**Northing:** 1768408.81
**Easting:** 6470265.98
**Elevation:** 51.64 Feet
**Boring Depth:** 125 Feet

**Client:** Boeing Realty Corp.
**Site:** Former C-6 Facility
**Location:** Los Angeles, California
**Project No.:** 1155.002



| Depth (ft) | Sample Number | Sample Depth | Blow Count (per foot) | OVM (ppm) | Graphic Log | Soil Classification | Description | Well Completion Details |
|---|---|---|---|---|---|---|---|---|
| | | | | 0.1 | | SM | Olive brown (2.5Y 4/3), SILTY SAND, very moist to wet, very fine-grained sand. | |
| 122 | | | | 0.0 | | | | |
| 124 | | | | | | SP | Olive brown (2.5Y 4/3), SAND, saturated, poorly graded, fine-grained, trace medium-grained. | Caved |
| | | | | 1.6 | | | | |
| 126 | | | | | | | | |
| 128 | | | | | | | Well Detail<br>0 to 96 — 4" Sch 80 PVC Blank<br>96 to 121 — 4" Sch 80 PVC 0.020 Slot<br><br>0 to 2.5 — Concrete with Traffic Rated Well Box<br>2.5 to 93 — Portland Cement w/ 5% Bentonite Grout<br>93 to 96 — Bentonite Pellets<br>96 to 122 — #39 Blend Sand | |
| 130 | | | | | | | | |
| 132 | | | | | | | | |
| 134 | | | | | | | | |
| 136 | | | | | | | | |
| 138 | | | | | | | | |
| 140 | | | | | | | | |

Notes: Boring total depth 125 feet. Groundwater encountered at approximately 63 feet. Boring completed as a groundwater monitoring well.

AVOCET ENVIRONMENTAL, INC.

# Attachment C

# Well Development Forms

CDM

AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

**Project Name** Boeing Former C-6
**Location** Torrance, CA
**Project Manager** M. Rendina

**Project No.** 1155
**Date** 11-07-2006
**Field Personnel** D. BOLDUC

Well No. IWC 002
Time ~~Sampled~~ GAUGED 0720
Static Water Depth (ft) 60.22
Total Volume Purged 350 + 100 = 450 gallons.

Measuring Point N. RIM - TOC
Sample Method —
Water Level Instrument SOLINST
Purge Method 3-in Grundfos Pump.
Field Preservation —

Comments: Bail sediment 0744 - 0804 (stainless steel bailer, capacity 5 gal.) Bail 50 gallons. Surge 0808 - 0828 (stainless steel, 10-foot long, vented surge block). Bail 0832 - 0850 (50 gallons). Pump - 3 inch Grundfos. Begin pumping at 0923. (DTW = 60.37)

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 116 | | 60.22 | | 55.78 | | 0.17 | 0.66 | 1.47 | | 36.8 |

| Time | 0804 | 0850 | 0925 | 0935 | 0945 | 0953 | 0959 |
|---|---|---|---|---|---|---|---|
| Volume Purged (gallons) | 50 | 100 | 0 | 37 | 70 | 96 | 116 |
| Purge Rate (gpm) | — | — | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| Temperature (F°) | — | — | 75.8 | 79.0 | 79.0 | 78.6 | 78.7 |
| pH | — | — | ~~7.55~~ | 7.66 | 7.55 | 7.50 | 7.47 |
| Specific Conductivity (µs/cm) x 1000 | — | — | ~~75.8~~ 0.74 | 1.07 | 1.07 | 1.07 | 1.08 |
| Odor | — | — | NONE | NONE | NONE | NONE | NONE |
| Turbidity (NTU) | — | — | >1000 | >1000 | >500 | 7250 | ≈100 |
| Color // Cleanness | BROWN | BROWN | SL. BROWN | SL. BROWN/ GREY | SL. GREY | SL. GREY | SL. CLOUDY |
| Dissolved Oxygen (mg/l) | — | — | — | — | — | — | — |
| ORP (mV) | — | — | — | — | — | — | — |
| Number of Casing Volumes Removed | 1.3 | 2.6 | 0 | 1 | 1.8 | 2.6 | 3.1 |
| Dewatered (Yes/No) | NO | NO | NO | NO | NO | NO | NO |

**Total Casing Depth (after development):** — feet



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AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

Project Name: Boeing Former C-6
Location: Torrance, CA.
Project Manager: M. RENDINA

Project No.: 1155
Date: 11-7-2006
Field Personnel: D. Boldue

Well No.: TWC 002
Time Sampled: –
Static Water Depth (ft): 60.22
Total Volume Purged: 350 + 100 = 450

Measuring Point: N. RIM TOC
Sample Method: –
Water Level Instrument: SOLINST
Purge Method: 3-IN. GRUNDFOS
Field Preservation: –

Comments: Begin pumping @ 0923. Stop @ 1034, lower pump from 80 feet to bottom. Begin pumping again @ 1044. End at 1116 (350 gallons pumped).
DTW @ 11:35 60.2

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 116 | | 60.22 | | 55.78 | | 0.17 | (0.66) | 1.47 | | 36.8 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time | 1006 | 1015 | 1028 | 1047 | 1055 | 1103 | 1113 |
| Volume Purged (gallons) | 151 | 181 | 213 | 240 | 270 | 293 | 330 |
| Purge Rate (gpm) | 3.5 | 3.5 | 3.5 | 4 | 4 | 4 | 4 |
| Temperature (F°) | 78.9 | 79.4 | 78.5 | 77.5 | 76.8 | 77.2 | 76.1 |
| pH | 7.47 | 7.48 | 7.44 | 7.54 | 7.46 | 7.58 | 7.51 |
| Specific Conductivity (µs/cm) x 1000 | 1.08 | 1.08 | 1.07 | 0.98 | 1.05 | 1.07 | 1.07 |
| Odor | None | None | None | None | None | None | None |
| Turbidity (NTU) | >50 | >50 | 10 | 310 | 75 | 31 | 15 |
| Color // Cleanness | Clear | Clear | Clear | Cloudy brown | Sl. Cloudy | Clear | Clear |
| Dissolved Oxygen (mg/l) | – | – | – | – | – | – | – |
| ORP (mV) | – | – | – | – | – | – | – |
| Number of Casing Volumes Removed | 4 | 4.8 | 5.8 | 6.5 | 7.3 | 7.9 | 8.9 |
| Dewatered (Yes/No) | NO | No | No | No. | NO | No | NO |

Total Casing Depth (after development): – feet



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AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

**Project Name** Boeing Former C-6
**Location** Torrance, CA
**Project Manager** M. Rendina

**Project No.** 1155
**Date** 11-07-2006
**Field Personnel** D. Bolduc

Well No. IWC001
Time Sampled —
Static Water Depth (ft) 62.44
Total Volume Purged 371 gallons pumped

Measuring Point N. side TOC
Sample Method —
Water Level Instrument Solinst
Purge Method 3in Diam Grundfos
Field Preservation —

Comments: Screen 95-115'. TD = 114.84'. Bailing from 1213-1222 (50 gallons) 10-foot SS bailer (5-gallon). Surge well (10-ft SS vented surge block), 1226-1241. Bailing from 1243-1255, another 50 gallons. Pumping 1315 +

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 115 | | 62.44 | | 52.56 | | 0.17 | 0.66 | 1.47 | | 34.7 |

| Time | 1222 | 1255 | 1316 | 1323 | 1330 | 1337 | 1344 |
|---|---|---|---|---|---|---|---|
| Volume Purged (gallons) | 50 | 100 | 0 | 30 | 57 | 86 | 113 |
| Purge Rate (gpm) | — | — | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 |
| Temperature (F°) | — | — | 82.5 | 82.3 | 76.6 | 77.0 | 76.7 |
| pH | — | — | 7.62 | 7.51 | 7.40 | 7.37 | 7.36 |
| Specific Conductivity (µs/cm) x 1000 | — | — | 1.51 | 2.19 | 2.17 | 1.41 | 1.39 |
| Odor | — | — | NONE | NONE | NONE | NONE | NONE |
| Turbidity (NTU) | Brown/ cloudy | — | >1000 | >1000 | 550 | 140 | 220 |
| Color // Cleanness | >1000 | Brown/ cloudy | Brown cloudy | Brown/ silty | sl. brown + cloudy | sl. cloudy | sl. brown cloudy |
| Dissolved Oxygen (mg/l) | — | — | — | — | — | — | — |
| ORP (mV) | — | — | — | — | — | — | — |
| Number of Casing Volumes Removed | 1.4 | 2.8 | 0 | 0.8 | 1.6 | 2.5 | 3.2 |
| Dewatered (Yes/No) | No. | No | No | No. | No | No | No |

**Total Casing Depth (after development):** _____ feet

AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

Project Name: Boeing Former C-6
Location: Torrance, CA.
Project Manager: M. RENDINA

Project No.: 1155
Date: 11-07-2006
Field Personnel: D. Boldue

Well No.: IWC001
Time Sampled: —
Static Water Depth (ft): 62.44
Total Volume Purged: 371 gallons Pumped

Measuring Point: N. Side TOC
Sample Method: —
Water Level Instrument: Solinst
Purge Method: 3-in. Grundfos
Field Preservation: —

Comments: Pumping 1315—1356 (151 gallons). Drop pump down another 33 feet. Start pumping again at 1405. Stop purge @ 1500.

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 115 | | 62.44 | | 52.56 | | 0.17 | 0.66 | 1.47 | | 34.7 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time | 1354 | 1409 | 1416 | 1426 | 1431 | 1440 | 1450 |
| Volume Purged (gallons) | 151 | 176 | 206 | 241 | 271 | 293 | 339 |
| Purge Rate (gpm) | 3.7 | 4 | 4 | 4 | 4 | 4 | 4 |
| Temperature (F°) | 76.7 | 75.2 | 75.5 | 75.0 | 74.7 | 74.2 | 73.5 |
| pH | 6.95 | 7.40 | ~~6.78~~ 7.43 | 7.54 | 7.52 | 7.41 | 7.35 |
| Specific Conductivity (µs/cm) x 1000 | 1.41 | 1.39 | 1.40 | 1.39 | 1.38 | 1.34 | 1.38 |
| Odor | NONE | NONE | NONE | NONE | NONE | NONE | NONE |
| Turbidity (NTU) | clear | 350 | 55 | 150 | 55 | 70 | 40 |
| Color // Cleanness | 50 | Brown/ cloudy | sl. cloudy | sl cloudy | sl. cloudy | sl cloudy | sl. cloudy |
| Dissolved Oxygen (mg/l) | — | — | — | — | — | — | — |
| ORP (mV) | — | — | — | — | — | — | — |
| Number of Casing Volumes Removed | 4.3 | 5 | 5.8 | 6.9 | 7.7 | 8.4 | 9.7 |
| Dewatered (Yes/No) | No. | No | No. | No. | No. | No | No |

Total Casing Depth (after development): — feet



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AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

**Project Name** Boeing Former C-6
**Location** Torrance, CA
**Project Manager** M. Rendina

**Project No.** 1155
**Date** 11-07-2006
**Field Personnel** D. Baldue

Well No. IWC 001
Time Sampled —
Static Water Depth (ft) 62.44
Total Volume Purged 371 + 100 = 471

Measuring Point N. SIDE TOC
Sample Method —
Water Level Instrument SOLINST
Purge Method 3-in Grundfos Pump
Field Preservation —

Comments: Pumped from 1315-1356 (151 gallons). Drop pump down another 33 feet (from 80 to bottom). Pumping again from 1405-1500.

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 115 | | 62.44 | | 52.56 | | 0.17 | 0.66 | 1.47 | | 34.7 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time | 1458 | | | | | | |
| Volume Purged (gallons) | 371 | | | | | | |
| Purge Rate (gpm) | 4 | | | | | | |
| Temperature (F°) | 73.7 ✓ | | | | | | |
| pH | 7.28 ✓ | | | | | | |
| Specific Conductivity (µs/cm) x 1000 | 1.38 ✓ | | | | | | |
| Odor | NONE | | | | | | |
| Turbidity (NTU) | 28 ✓ | | | | | | |
| Color // Cleanness | clear | | | | | | |
| Dissolved Oxygen (mg/l) | — | | | | | | |
| ORP (mV) | — | | | | | | |
| Number of Casing Volumes Removed | 10.6 | | | | | | |
| Dewatered (Yes/No) | No. | | | | | | |

**Total Casing Depth (after development):** — feet

AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

**Project Name** Boeing Former C-6
**Location** Torrance, CA
**Project Manager** M. Rendina

**Project No.** 1155
**Date** 11-07 / 11-08 - 2006
**Field Personnel** D. Boldue

Well No. MWC 024
Time Sampled —
Static Water Depth (ft) 60.45 (11/7/06)
Total Volume Purged 400 gallons pumped

Measuring Point N. side TOC
Sample Method —
Water Level Instrument SOLINST
Purge Method
Field Preservation

Comments: Screened 96-121 feet. Bail with 5-gallon SS (10-foot long) bailer, 1546-1600 (50 gallons). Surge with vented SS surge block (1605-1620). Continue bailing (1625-1641, 50 gallons.
11/08/2006 - Bail 5 gallons. Begin pumping at 0723.

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 121 | | 60.45 | | 60.55 | | 0.17 | 0.66 | 1.47 | | 39.9 |

| Time | 1600 | 1641 | 0725 | 0731 | 0740 | 0754 | 0802 |
|---|---|---|---|---|---|---|---|
| Volume Purged (gallons) | 50 | 100 | 0 | 34 | 77 | 116 | 145 |
| Purge Rate (gpm) | — | — | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 |
| Temperature (F°) | — | — | 64.8 | 66.4 | 66.7 | 67.5 | 67.8 |
| pH | — | — | 6.52 | 7.05 | 7.11 | 7.19 | 7.25 |
| Specific Conductivity (µs/cm) x 1000 | — | — | 1.78 | 1.76 | 1.76 | 1.78 | 1.78 |
| Odor | NONE | NONE | NONE | NONE | NONE | NONE | NONE |
| Turbidity (NTU) | — | — | 650 | 1000 | 360 | 80 | 45 |
| Color // Cleanness | — | — | Sl. brown cloudy | brown cloudy | Sl. cloudy | Sl. cloudy | Clear |
| Dissolved Oxygen (mg/l) | — | — | — | — | — | — | — |
| ORP (mV) | — | — | — | — | — | — | — |
| Number of Casing Volumes Removed | 1.25 | 2.5 | 0 | 0.85 | 1.9 | 2.9 | 3.6 |
| Dewatered (Yes/No) | N | No | No | No | No | No | No |

**Total Casing Depth (after development):** 121.4 feet
Bail

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BOE-C6-0186819

AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

**Project Name** Boeing Former C-Le
**Location** Torrance, CA
**Project Manager** M. Rendina

**Project No.** 1155.
**Date** 11-8-2006
**Field Personnel** D. Bolduc

Well No. MWC024
Time Sampled —
Static Water Depth (ft) 60.45 (11/7/2006)
Total Volume Purged Pump = 400 gallons

Measuring Point N. SIDE - TOC
Sample Method —
Water Level Instrument SOLINST
Purge Method 3-inch Grundfos pump
Field Preservation NA

Comments: Nov. 8, 2006: Bail 5 gallons. Begin pumping at 0723 – 0830. Drop pump to 100 feet. Begin pumping again at 0835. Stop pumping at 0850, drop pump to ≈ 120 feet (bottom). Begin pumping again at 0856.

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 121 | | 60.45 | | 60.55 | | 0.17 | 0.66 | 1.47 | | 39.9 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time | 0812 | 0818 | 0825 | 0837 | 0846 | 0858 | 0904 |
| Volume Purged (gallons) | 180 | 201 | 224 | 245 | 280 | 300 | 325 |
| Purge Rate (gpm) | 4.3 | 4.3 | 4.3 | 4 | 4 | 4.3 | 4.3 |
| Temperature (F°) | 69.1 | 69.2 | 69.5 | 67.6 | 68.5 | 68.0 | 70.4 |
| pH | 7.19 | 7.17 | 7.21 | 7.20 | 7.19 | 7.23 | 7.25 |
| Specific Conductivity (µs/cm) x 1000 | 1.81 | 1.81 | 1.80 | 1.76 | 1.77 | 1.71 | 1.80 |
| Odor | NONE | NONE | None | None | None | None | None |
| Turbidity (NTU) | 26 | 18 | 12 | 40 | 13 | 220 | 32 |
| Color // Cleanness | Clear | Clear | Clear | sl. cloudy | clear | sl. brown cloudy | Clear |
| Dissolved Oxygen (mg/l) | — | — | — | — | — | — | — |
| ORP (mV) | — | — | — | — | — | — | — |
| Number of Casing Volumes Removed | 4.5 | 5 | 5.6 | 6.1 | 7 | 7.5 | 8.1 |
| Dewatered (Yes/No) | No | No | No | No | No | No | No |

**Total Casing Depth (after development):** 121.4 feet

AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

**Project Name** Boeing Former C-6
**Location** Torrance, CA
**Project Manager** Mo Rendina

**Project No.** 1155
**Date** 11-8-2006
**Field Personnel** D. Bolduc

Well No. MWC024
Time Sampled —
Static Water Depth (ft) 60.45 (11/7/2006)
Total Volume Purged 416+5+100 = 521 gallons

Measuring Point N. SIDE TOC
Sample Method —
Water Level Instrument SOLINST
Purge Method 3in. Grundfos
Field Preservation

Comments: Pumping at 120 feet – 0856 → 0926.
End purge at 926 = 416 gallons pumped.

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 121 | | 60.45 | | 60.55 | | 0.17 | 0.66 | 1.47 | | 39.9 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time | 0916 | 0924 | | | | | |
| Volume Purged (gallons) | 370 | 400 | | | | | |
| Purge Rate (gpm) | 4.3 | 4.3 | | | | | |
| Temperature (F°) | 75.8 | 77.4 | | | | | |
| pH | 7.26 | 7.38 | | | | | |
| Specific Conductivity (µs/cm) x 1000 | 1.90 | 1.92 | | | | | |
| Odor | None | None | | | | | |
| Turbidity (NTU) | 15 | 8.9 | | | | | |
| Color // Cleanness | Clear | Clear | | | | | |
| Dissolved Oxygen (mg/l) | — | — | | | | | |
| ORP (mV) | — | — | | | | | |
| Number of Casing Volumes Removed | 9.25 | 10 | | | | | |
| Dewatered (Yes/No) | No | No | | | | | |

**Total Casing Depth (after development):** 121.4 feet

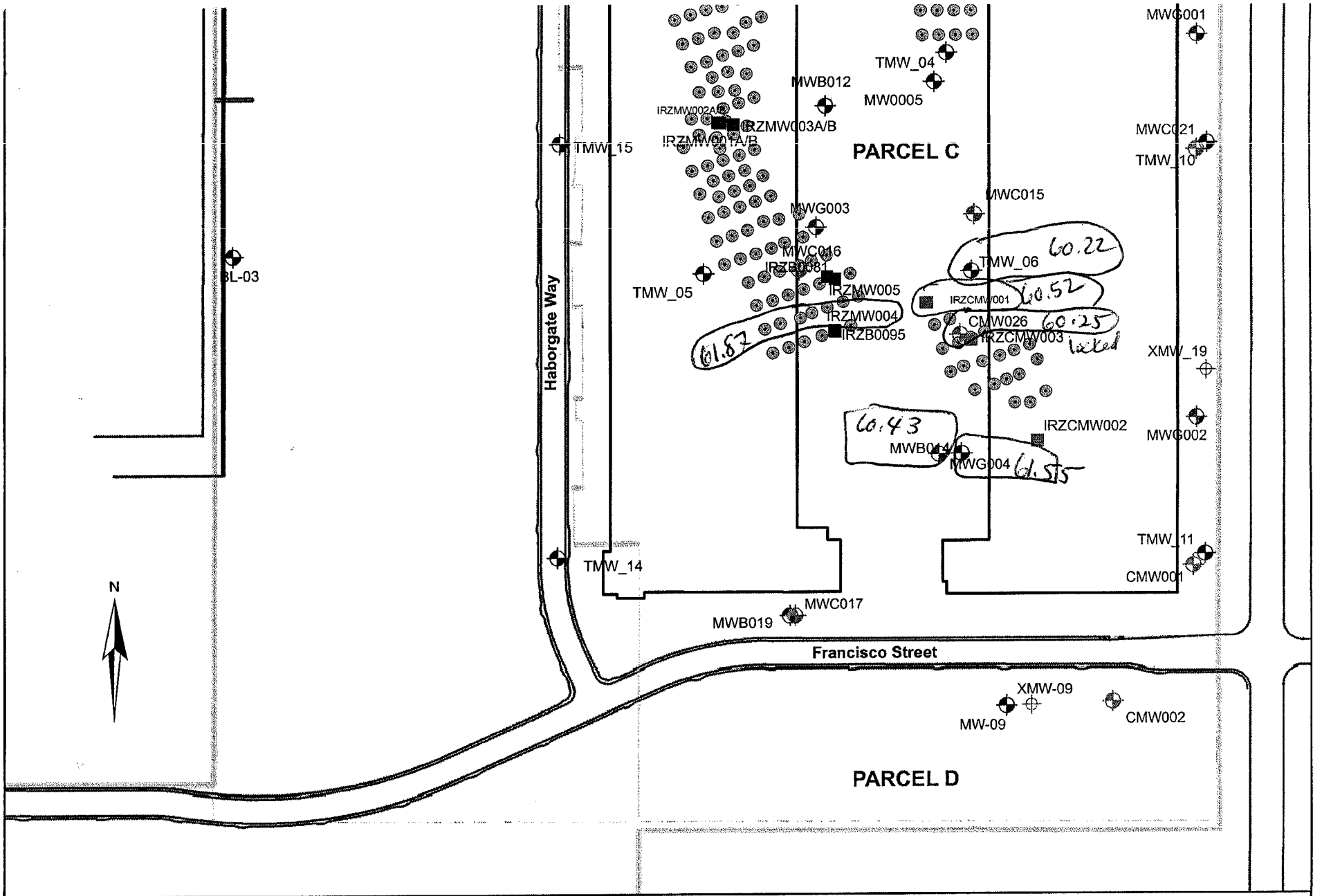
AVOCET ENVIRONMENTAL, INC.

# DEPTH TO WATER / FLOATING PRODUCT

Project Name: BOEING FORMER C-6
Location: TORRANCE, CA
Project Manager: M. RENDINA

Project No.: 1155
Date: 11/07/2006
Field Personnel: D. Boldue

| Well I.D. | TOTAL DEPTH (ft) | DEPTH TO WATER First Measurement (ft) | DEPTH TO WATER Second Measurement (ft) | Depth to Floating Product (ft) | Floating Product Thickness (ft) | Comments (Condition of surface seal, lid, lock, etc.) |
|---|---|---|---|---|---|---|
| MWG004 | | 61.55 | 61.55 | NONE | N/A | |
| MWB014 | | 60.43 | 60.43 | | | |
| CMW026 | | 60.25 | 60.25 | | | |
| IRZCMW001 | | 60.52 | 60.52 | | | |
| TMW-06 | | 60.22 | 60.22 | | | |
| IRZMW004 | | 61.87 | 61.87 | | | |




0 250 500
Feet

**Amendment and Monitoring Wells**

- Parcel Boundary
- Property Boundary
- B-Sand Monitoring Well
- C-Sand Monitoring Well
- Gage Monitoring Well
- Montrose
- B-Sand IRZ Bioremediation Monitoring Well
- C-Sand IRZ Bioremediation Monitoring Well
- Amendment Well

CDM

Figure 2

Boeing Realty Corporation
Former C-6 Facility

**Location of Existing Amendment and Monitorinig Wells**

BOE-C6-0186823

AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

**Project Name** Boeing Former C-6
**Location** Torrance, CA
**Project Manager** M. Rendina

**Project No.** 1155
**Date** 11/08/2006
**Field Personnel** D. Boldue

Well No. EWC 002
Time ~~Sampled~~ Gauged 11/8/06 @ 1047
Static Water Depth (ft) 60.63
Total Volume Purged 429 gallons pumped

Measuring Point N. SIDE TOC
Sample Method —
Water Level Instrument SOLINST
Purge Method 3-inch Grundfos pump
Field Preservation —

Comments: Well screened 96-121 feet. Bail (50 gallons) using SS 3.5-gallon bailer. 1049-1103. Surge with SS vented surge block. (1106-1121). Bail with 3.5-gallon bailer (50 gallons), 1126-1137. Begin purging with pump at 1184.

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing 0.17 | 4-inch casing 0.66 | 6-inch casing 1.47 | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 121 | | 60.63 | | 60.37 | | | | | | 39.8 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time | 1103 | 1137 | 1157 | 1202 | 1211 | 1219 | 1228 |
| Volume Purged (gallons) | 50 | 100 | 0 | 28 | 65 | 97 | 134 |
| Purge Rate (gpm) | — | — | 4 | 4 | 4 | 4 | 4 |
| Temperature (F°) | — | — | 81.2 | 78.8 | 78.1 | 78.8 | 77.8 |
| pH | — | — | 7.47 | 7.41 | 7.40 | 7.39 | 7.37 |
| Specific Conductivity (µs/cm) x 1000 | — | — | 1.73 | 1.62 | 1.64 | 1.63 | 1.63 |
| Odor | NONE | None | none | none | none | none | none |
| Turbidity (NTU) | >1000 | >1000 | >1000 | >1000 | 500 | 160 | 95 |
| Color // Cleanness | brown | brown | Brown | Brown | Cloudy | Sl. cloudy | sl. cloudy |
| Dissolved Oxygen (mg/l) | — | — | — | — | — | — | — |
| ORP (mV) | — | — | — | — | — | — | — |
| Number of Casing Volumes Removed | 1 | 2.5 | 0 | 0.7 | 1.6 | 2.4 | 3.3 |
| Dewatered (Yes/No) | NO | NO | NO | NO | NO | NO | NO |

**Total Casing Depth (after development):** 120.2 feet

Bail

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BOE-C6-0186824

AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

Project Name: Boeing Former C-6
Location: Torrance, CA
Project Manager: M. Rendina

Project No.: 1155
Date: 11-08-2006
Field Personnel: D. Boldue

Well No.: EWC 002
Time ~~Sampled~~ Gauged: 11/8/06 @ 1047
Static Water Depth (ft): 60-63
Total Volume Purged (Pump): ~~446~~ 429

Measuring Point: N. Side T.O.C
Sample Method: —
Water Level Instrument: SOLINST
Purge Method: 3inch Grundfos
Field Preservation: —

Comments: Pump set @ 80 feet, purge 1154 – 1240. Lower pump to 100 feet, purge from 1246 – 1301. Lower pump to ≈ ~~120~~ feet, purge from 1306 – Turn up rate to 9.1 gpm @ 1330. Water stable at DTW = 65.32'.

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 121 | | 60.63 | | 60.37 | | 0.17 | 0.66 | 1.47 | | 39.8 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time | 1237 | 1248 | 1258 | 1309 | 1322 | 1331 | 1336 |
| Volume Purged (gallons) | 168 | 187 | 224 | 240 | 290 | 336 | 379 |
| Purge Rate (gpm) | 4 | 4 | 4 | 4 | 4 | 9.1 | 9.1 |
| Temperature (F°) | 77.0 | 78.6 | 75.7 | 74.8 | 75.3 | 74.3 | 73.8 |
| pH | 7.52 | 7.38 | 7.36 | 7.36 | 7.50 | 7.48 | 7.39 |
| Specific Conductivity (µs/cm) x 1000 | 1.62 | 1.57 | 1.60 | 1.60 | 1.60 | 1.59 | 1.57 |
| Odor | none | none | none | none | none | none | none |
| Turbidity (NTU) | 9.9 | 60 | 8 | 290 | 11 | 29 | 14 |
| Color // Cleanness | Clear | Sl. cloudy | clear | Sl. brown Cloudy | Clear | clear | clear |
| Dissolved Oxygen (mg/l) | — | — | — | — | — | — | — |
| ORP (mV) | — | — | — | — | — | — | — |
| Number of Casing Volumes Removed | 4.2 | 4.7 | 5.6 | 6 | 7.25 | 8.4 | 9.5 |
| Dewatered (Yes/No) | No. | No. | No | No. | No | No. | No |

Total Casing Depth (after development): 120.2 feet

Page 2 of 3

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BOE-C6-0186825

AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

**Project Name** BRC Former C-6
**Location** Torrance, CA
**Project Manager** M. Rendina

**Project No.** 1155
**Date** 11-08-2006
**Field Personnel** D. Bolduc

Well No. EWC 002
Time Sampled —
Static Water Depth (ft) 60.63
Total Volume Purged 429 gallons

Measuring Point N. Side - TOC
Sample Method —
Water Level Instrument SOLINST
Purge Method 3-inch Grundfos pump
Field Preservation NA

Comments: Purging at 9.1 gpm (1330-1342).

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 121 | | 60.63 | | 60.37 | | 0.17 | 0.66 | 1.47 | | 39.8 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time | 1341 | | | | | | |
| Volume Purged (gallons) | 418 | | | | | | |
| Purge Rate (gpm) | 9.1 | | | | | | |
| Temperature (F°) | 73.3 ✓ | | | | | | |
| pH | 7.35 ✓ | | | | | | |
| Specific Conductivity (µs/cm) x 1000 | 1.56 ✓ | | | | | | |
| Odor | None | | | | | | |
| Turbidity (NTU) | 7.1 ✓ | | | | | | |
| Color // Cleanness | Clear | | | | | | |
| Dissolved Oxygen (mg/l) | — | | | | | | |
| ORP (mV) | — | | | | | | |
| Number of Casing Volumes Removed | 10.4 | | | | | | |
| Dewatered (Yes/No) | N | | | | | | |

**Total Casing Depth (after development):** 120.2 feet

AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

**Project Name** Boeing Former C-6
**Location** Torrance, CA
**Project Manager** M. Rendina

**Project No.** 1155
**Date** 11-14-2006
**Field Personnel** D. Bolduc

Well No. EW B001
Time Sampled —
Static Water Depth (ft) 60.67
Total Volume Purged 270

Measuring Point N. SIDE TOC
Sample Method —
Water Level Instrument SOLINST
Purge Method 3-inch Grundfos pump
Field Preservation —

Comments: HyDac meter for pH, temperature, and conductivity. LaMotte 2020 Turbidimeter. Surge well 8.14–8.21. Fix surge block, continue 0836–0857. Bail with SS 2½ gallon (3½" diam) bailer, 0907 - 0917 (25 gallons). (TD at start 88.5')

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 90 | | 60.67 | | 29.33 | | 0.17 | 0.66 | 1.47 | | 43.1 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time | 0934 | 0939 | 0943 | 0947 | 0952 | 0958 | 1003 |
| Volume Purged (gallons) | 0 | 65 | ≈75 | 125 | 140 | 150 | 180 |
| Purge Rate (gpm) | ≈15 | ≈7 | ≈5 | ≈5 | ≈5 | ≈5 | ≈5 |
| Temperature (F°) | 79.6 | 77.5 | 76.8 | 76.5 | 74.8 | 75.2 | 76.5 |
| pH | 6.02 | 6.36 | 6.62 | 6.74 | 6.81 | 6.96 | 6.97 |
| Specific Conductivity (µs/cm) x 1000 | 0.79 | 0.98 | 1.11 | 1.15 | 1.17 | 1.19 | 1.22 |
| Odor | None | None | None | None | None | None | None |
| Turbidity (NTU) | >1000 | >1000 | 230 | 120 | 85 | 45 | 50 |
| Color // Cleanness | Cloudy brown | Cloudy brown | Cloudy | Sl. cloudy | Sl. cloudy | Sl. cloudy | Sl. cloudy |
| Dissolved Oxygen (mg/l) | — | — | — | — | — | — | — |
| ORP (mV) | — | — | — | — | — | — | — |
| Number of Casing Volumes Removed | 0 | 1.5 | 1.7 | 2.9 | 3.25 | 3.5 | 4 |
| Dewatered (Yes/No) | No | No. | No | No. | No | No | No |

**Total Casing Depth (after development):** 88.95 feet

AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

**Project Name** Boeing Former C-6
**Location** Torrance, CA
**Project Manager** M. Rendina

**Project No.** 1155
**Date** 11-14-2006
**Field Personnel** D. Bolduc

Well No. EWB001
Time Sampled —
Static Water Depth (ft) 60.67
Total Volume Purged 270

Measuring Point N. Side - TOC
Sample Method —
Water Level Instrument SOLINST
Purge Method 3-inch Grundfos
Field Preservation —

Comments: Purging 0934 - 1035.
Dry at 1018 - let recharge a couple minutes then begin purging again. ** Water has strong solvent odor, sporadically.

* Meter in sun/readings elevated.

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 90 | | 60.67 | | 29.33 | | 0.17 | 0.66 | 1.47 | | 43.1 |

| Time | 1008 | 1013 | 1021 | 1027 | 1033 | 1035 |
|---|---|---|---|---|---|---|
| Volume Purged (gallons) | 195 | 215 | 235 | 250 | 265 | 270 |
| Purge Rate (gpm) | ≈5 | ≈5 | ≈5 | ≈5 | ≈5 | ≈5 |
| Temperature (F°) | 76.9 | 78.6 | 80.5* | 80.3* | 78.6 | 78.8 |
| pH | 7.01 | 6.98 | 7.12 | 7.18 | 7.20 | 7.21 |
| Specific Conductivity (µs/cm) x 1000 | 1.24 | 1.24 | 1.30 | 1.32 | 1.31 | 1.30 |
| Odor ** | None | None | None | None. | None. | None |
| Turbidity (NTU) | 21 | 16 | 31 | 35 | 15 | 10 |
| Color // Cleanness | clear | clear | clear | clear | clear | clear |
| Dissolved Oxygen (mg/l) | — | — | — | — | — | — |
| ORP (mV) | — | — | — | — | — | — |
| Number of Casing Volumes Removed | 4.5 | 5 | 5.4 | 5.8 | 6.1 | 6.3 |
| Dewatered (Yes/No) | No | No. | Yes | NO | NO. | No. |

**Total Casing Depth (after development):** 88.95 feet

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BOE-C6-0186828

AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

**Project Name** Former C-6 (Boeing)
**Location** Torrance, CA
**Project Manager** M. Rendina

**Project No.** 1155
**Date** 11-14-2006
**Field Personnel** D. Boldue

Well No. EWC 001
Time Sampled —
Static Water Depth (ft) 60.22 (11/14/06 @ 1156)
Total Volume Purged 380

Measuring Point N. side TOC
Sample Method —
Water Level Instrument SOLINST
Purge Method 3-in. Grundfos pump
Field Preservation

Comments: Surge well 1200-1227. Vented surge block. Bail with SS, 2 1/2 gallon bailer (1229-1249), 35 gallons. Purge 1322-1338, pump at 100 feet. When pumped water is aerated, smells like paint/solvents.

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 121 | | 60.22 | | 60.78 | | 0.17 | 0.66 | 1.47 | | 40 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time | 1323 | 1329 | 1334 | 1341 | 1347 | 1357 | 1355 |
| Volume Purged (gallons) | 0 | 100 | 135 | 155 | 200 | 220 | 240 |
| Purge Rate (gpm) | 15 | 15 | 15 | 5 | 5 | 5 | 5 |
| Temperature (F°) | 75.6 | 73.9 | 73.3 | 73.6 | 73.2 | 72.8 | 73.0 |
| pH | 7.75 | ~~3.46~~ NA | 7.31 | 7.35 | 7.18 | 7.21 | 7.14 |
| Specific Conductivity (µs/cm) x 1000 | 0.51 | 1.25 | 1.31 | 1.31 | 1.32 | 1.34 | 1.31 |
| Odor | none | paint smell | Paint | — | Sl. solvent odor | solvent odor | solvent odor |
| Turbidity (NTU) | >1000 | >1000 | 160 | 300 | 60 | 32 | 23 |
| Color // Cleanness | cloudy brown | cloudy | cloudy | cloudy | Sl. cloudy | Sl. cloudy | Sl. cloudy |
| Dissolved Oxygen (mg/l) | — | — | — | — | — | — | — |
| ORP (mV) | — | — | — | — | — | — | — |
| Number of Casing Volumes Removed | 0 | 2.5 | 3.4 | 3.9 | 5 | 5.5 | 6 |
| Dewatered (Yes/No) | No | No | No | No | No | No | No. |

**Total Casing Depth (after development):** 122 feet

water @ 64'

Page 1 of 2

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AVOCET ENVIRONMENTAL, INC.

# PURGE AND SAMPLE / WELL DEVELOPMENT FORM

**Project Name** Boeing Former C-6
**Location** Knox St., Torrance, CA
**Project Manager** M. Rendina

**Project No.** 1155
**Date** 11-14-2006
**Field Personnel** D. Boldue

Well No. EWC001
Time ~~Sampled~~ Gauged 11/14/06 @ 1156
Static Water Depth (ft) 60.22
Total Volume Purged 380

Measuring Point N. side TOC
Sample Method —
Water Level Instrument SOLINST
Purge Method 3-inch Grundfos
Field Preservation —

Comments: Pumping @ 70'. Approx. 5gpm. Water has moderate to strong solvent odor. Purge 1322-1424.

| Well Volume Calculation (Fill in before purging) | Total Depth (ft) | - | Depth to Water (ft) | = | Water Column (ft) | x | Multiplier for Well Size: 2-inch casing | 4-inch casing | 6-inch casing | = | Volume (one well volume) (gal) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 121 | | 60.22 | | 60.78 | | 0.17 | 0.66 | 1.47 | | 40 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Time | 1359 | 1405 | 1411 | 1416 | 1420 | | |
| Volume Purged (gallons) | 260 | 295 | 315 | 335 | 370 | | |
| Purge Rate (gpm) | ~5 | ~5 | ~5 | 5 | 5 | | |
| Temperature (F°) | 72.8 | 72.3 | 72.3 | 72.4 | 72.0 | | |
| pH | 7.15 | 7.24 | 7.18 | 7.23 | 7.20 | | |
| Specific Conductivity (µs/cm) x 1000 | 1.34 | 1.34 | 1.35 | 1.35 | 1.34 | | |
| Odor | strong solvent odor | → | → | → | → | | |
| Turbidity (NTU) | 17 | 13 | 7.4 | 9.6 | 6.4 | | |
| Color // Cleanness | sl. cloudy | clear | clear | clear | clear | | |
| Dissolved Oxygen (mg/l) | — | — | — | — | — | | |
| ORP (mV) | — | — | — | — | — | | |
| Number of Casing Volumes Removed | 6.5 | 7.4 | 7.8 | 8.4 | 9.25 | | |
| Dewatered (Yes/No) | NO | NO | NO | NO | NO | | |

**Total Casing Depth (after development):** 122. feet



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# Attachment D

# Laboratory Analytical Reports

CDM

SEVERN TRENT STL

**STL Los Angeles**
1721 South Grand Avenue
Santa Ana, CA 92705

Tel 714 258 8610 Fax: 714 258 0921
www.stl-inc.com

November 15, 2006

STL LOT NUMBER: **E6K030407**

MICHAEL RENDINA
Avocet Environmental Inc
16 Technology Drive, Suite 154
Irvine, CA 92618-2327

Dear MICHAEL RENDINA,

This report contains the analytical results for the two samples received under chain of custody by STL Los Angeles on November 3, 2006. These samples are associated with your "The Boeing Company - C6 facility" project.

STL Los Angeles certifies that the test results provided in this report meet all the requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of the report. NELAP Certification Number for STL Los Angeles is 01118CA/E87652.

Any matrix related anomaly is footnoted within the report. A cooler receipt temperature between 2-6 degrees Celsius is within EPA acceptance criteria. The temperature(s) of the coolers received for this project can be found on the Project Receipt Checklist.

The preliminary report was sent on November 13, 2006.

This report shall not be reproduced except in full, without the written approval of the laboratory.

This report contains 000058 pages.



BOE-C6-0186832

## CASE NARRATIVE

Historical control limits for the LCS are used to define the estimate of uncertainty for a method.

All applicable quality control procedures met method-specified acceptance criteria.

If you have any questions, please feel free to call me at 714.258.8610.

Sincerely,

Trupti Mistry
Project Manager
CC: Project File

E6K030407

# CHAIN OF CUSTODY RECORD

E6K030407

AVO110206A

AVOCET ENVIRONMENTAL, INC.
16 Technology Drive, Suite 154
Irvine, California 92618-2327
(949) 296-0977
FAX (949) 296-0978

| | |
|---|---|
| Project Name | The Boeing Company - C6 Facility |
| Project No. | 1155.002 |
| Location | Los Angeles, CA |
| Project Manager | Michael A. Rendina |
| email: | mrendina@avocetenv.com |
| Sheet | 1 of 1 |

| Sample Identification | Sample Date | Sample Time | Matrix | Samplers Initials | Number of containers | TPH by EPA Method 8015B-CC | VOCs by EPA Method 8260B | Title 22 Metals by EPA 6010 (Mercury by 7471A) | | | | | | | | | Hold | Rem. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bin 1a | 11/2/2006 | 16:31 | SS | MAR | 1 | x | x | x | | | | | | | | | | |
| Bin 1b | 11/2/2006 | 16:33 | SS | MAR | 1 | x | x | x | | | | | | | | | | |
| Bin 1c | 11/2/2006 | 16:34 | SS | MAR | 1 | x | x | x | | | | | | | | | | |
| Bin 1d | 11/2/2006 | 16:35 | SS | MAR | 1 | x | x | x | | | | | | | | | | |
| Bin 2a | 11/2/2006 | 16:44 | SS | MAR | 1 | x | x | x | | | | | | | | | | |
| Bin 2b | 11/2/2006 | 16:45 | SS | MAR | 1 | x | x | x | | | | | | | | | | |

Please composite samples Bin 1a through Bin 1d into one sample and Bin 2a and Bin 2b into a second sample and test two samples Bin 1-composite and Bin 2 -composite for TPH, VOCs and metals. Do not send confirmation or results to Boeing EDMS. Thanks, Mike Rendina

| | Signature | Company | Date | Time |
|---|---|---|---|---|
| Collected by | [illegible] | Avocet Environmental, Inc. | 11/3/06 | 8:30 |
| Relinquished by | [illegible] | Avocet Environmental, Inc. | 11/3/06 | 8:30 |
| Received by | [illegible] | STL | 11/3/06 | 8:30 |
| Relinquished by | [illegible] | STL | 11/3/06 | 0855 |
| Received by | [illegible] | STL | 11/3/06 | 8:55 |
| Relinquished by | | | | |
| Received by | | | | |

3

BOE-C6-0186834

# STL LOS ANGELES - PROJECT RECEIPT CHECKLIST Date: 11/3/06

**Single Cooler Only**

LIMS Lot #: E6K030407 Quote #: 73051

Client Name: AVOIET Project: Boeing C6 facility

Received by: AV Date/Time Received: 11/3/06 855

Delivered by : ☐ Client ☒ STL ☐ DHL ☐ Fed Ex ☐ UPS ☐ Other

********** **Initial / Date**

Custody Seal Status Cooler: ☐Intact ☐Broken ☒None ..... 11/3/06

Custody Seal Status Samples: ☐Intact ☐Broken ☒None .....

Custody Seal #(s): N/A ☒No Seal #.....

Sampler Signature on COC ☐ Yes ☐No ☒N/A.....

IR Gun # __B_ Correction Factor __-.2_°C IR passed daily verification ☒ Yes ☐No .....

Temperature - **BLANK** 5.6 °C - .2___ CF = 5.4 °C ...**Cooler #1 ID** N/A .....

Temperature – **COOLER** (____°C ____°C ____°C ____°C) = _____ avg °C -__.2 __ CF = _____°C.....

Samples outside temperature criteria but received within 6 hours of final sampling ☐ Yes ☒N/A...

Sample Container(s): ☒ STL-LA ☐ Client .....

pH measured: ☐ Yes ☐ Anomaly (if checked, notify lab and file NCM) ☒N/A..

Anomalies: ☒No ☐Yes – complete CUR and Create NCM .....

Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times. ☒Yes ☐ No.....

Labeled by: CA .....

**********

Turn Around Time: ☐RUSH–24HR ☐RUSH–48HR ☐RUSH–72HR ☒NORMAL..... 11/3/06

********** LEAVE NO BLANK SPACES ; USE N/A **********

**Headspace Anomaly** ☐YES ☒N/A 11/3/06

| Lab ID | Container(s) # | Headspace | Lab ID | Container(s) # | Headspace |
|---|---|---|---|---|---|
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |

LIMS Lot # E6K030407

**PROJECT RECEIPT CHECKLIST Cont'd**

| Fraction | 1-6 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VOAH | | | | | | | | | | | | | | |
| 1/2 Cal | 1 | | | | | | | | | | | | | |
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H: HCL, S: H2SO4, N: HNO3, V: VOA, SL, Sleeve, E: Encore, PB: Poly Bottle, CGB: Clear Glass Bottle, AGJ: Amber Glass Jar, T: Terracore
AGB: Amber Glass Bottle, n/f/l:HNO3-Lab filtered, n/f:HNO3-Field filtered, znna: Zinc Acetate/Sodium Hydroxide, Na2s2o3: sodium thiosulfate

## Condition Upon Receipt Anomaly Form

**Anomalies** ☐ YES ☒ N/A

- **COOLERS**
  - ☐ Not Received (received COC only)
  - ☐ Leaking
  - ☐ Other:
- **CUSTODY SEALS (COOLER(S)**
  - ☐ None
  - ☐ Not Intact
  - ☐ Other
- **CONTAINER(S)**
  - ☐ None
  - ☐ Not Intact
  - ☐ Other
- **TEMPERATURE (SPECS 4 ± 2°C)**
  - ☐ Cooler Temp(s)
  - ☐ Temperature Blank(s)
- **CHAIN OF CUSTODY (COC)**
  - ☐ Not relinquished by Client; No date/time relinquished
  - ☐ Incomplete information provided
  - ☐ Other ☐ COC not received – notify PM
- **CONTAINERS**
  - ☐ Leaking ☐ Voa Vials with Bubbles > 6mm
  - ☐ Broken
  - ☐ Extra
  - ☐ Without Labels
  - ☐ Other:
- **LABELS**
  - ☐ Not the same ID/info as in COC
  - ☐ Incomplete Information
  - ☐ Markings/Info illegible
  - ☐ Torn
- **SAMPLES**
  - ☐ Samples NOT RECEIVED but listed on COC
  - ☐ Samples received but NOT LISTED on COC
  - ☐ Logged based on Label Information
  - ☐ Logged based on info from other samples on COC
  - ☐ Logged according to Work Plan
  - ☐ Logged on HOLD UNTIL FURTHER NOTICE
  - ☐ Will be noted on COC–Client to send samples with new COC
  - ☐ Mislabeled as to tests, preservatives, etc.
  - ☐ Holding time expired – list sample ID and test
  - ☐ Improper container used
  - ☐ Not preserved/Improper preservative used
  - ☐ Improper pH _____ Lab to preserve sample and document
  - ☐ Insufficient quantities for analysis ☐ Other

Comments:

☐ Corrective Action Implemented:

☐ Client Informed: verbally on _____ By: _____ ☐ In writing on _____ By: _____

☐ Sample(s) on hold until: _____ ☐ Sample(s) processed "as is."

**Logged by/Date:** Logged in by other STL ☐ ____ **PM Review/Date:**

Albert Vargas 11-3-06 [signature] 11/6/06

STL

# Analytical Report

# ANALYTICAL REPORT

The Boeing Co - C6 facility

Lot #: E6K030407

MICHAEL RENDINA

Avocet Environmental Inc

SEVERN TRENT LABORATORIES, INC.

**Trupti Mistry**
Project Manager

November 13, 2006



BOE-C6-0186838

# ANALYTICAL REPORT

The Boeing Co - C6 facility

Lot #: E6K030407

Phil Miller

Avocet Environmental Inc

SEVERN TRENT LABORATORIES, INC.

Trupti Mistry
Project Manager

November 13, 2006



BOE-C6-0186839

# EXECUTIVE SUMMARY - Detection Highlights

**E6K030407**

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|---|---|---|---|---|
| **BIN 1-COMPOSITE 11/02/06 16:31 001** | | | | |
| C18-C19 | 5.5 | 5.0 | mg/kg | SW846 8015B |
| C20-C23 | 7.5 | 5.0 | mg/kg | SW846 8015B |
| C24-C27 | 7.7 | 5.0 | mg/kg | SW846 8015B |
| C28-C31 | 18 | 5.0 | mg/kg | SW846 8015B |
| C32-C35 | 18 | 5.0 | mg/kg | SW846 8015B |
| C36-C39 | 18 | 5.0 | mg/kg | SW846 8015B |
| C40+ | 6.6 | 5.0 | mg/kg | SW846 8015B |
| Total Carbon Chain Range | 82 | 5.0 | mg/kg | SW846 8015B |
| Mercury | 0.037 B | 0.10 | mg/kg | SW846 7471A |
| Aluminum | 9750 | 20.0 | mg/kg | SW846 6010B |
| Arsenic | 5.8 | 1.0 | mg/kg | SW846 6010B |
| Barium | 74.9 | 2.0 | mg/kg | SW846 6010B |
| Beryllium | 0.27 B | 0.50 | mg/kg | SW846 6010B |
| Cobalt | 5.3 | 5.0 | mg/kg | SW846 6010B |
| Chromium | 15.2 | 1.0 | mg/kg | SW846 6010B |
| Copper | 13.2 | 2.5 | mg/kg | SW846 6010B |
| Molybdenum | 0.72 B | 4.0 | mg/kg | SW846 6010B |
| Nickel | 10.3 | 4.0 | mg/kg | SW846 6010B |
| Lead | 3.6 | 0.50 | mg/kg | SW846 6010B |
| Thallium | 0.60 B | 1.0 | mg/kg | SW846 6010B |
| Vanadium | 32.1 | 5.0 | mg/kg | SW846 6010B |
| Zinc | 33.7 | 2.0 | mg/kg | SW846 6010B |
| Tetrahydrofuran | 2.1 J | 20 | ug/kg | SW846 8260B |
| **BIN 2-COMPOSITE 11/02/06 16:44 002** | | | | |
| C20-C23 | 4.8 J | 5.0 | mg/kg | SW846 8015B |
| C24-C27 | 11 | 5.0 | mg/kg | SW846 8015B |
| C28-C31 | 31 | 5.0 | mg/kg | SW846 8015B |
| C32-C35 | 33 | 5.0 | mg/kg | SW846 8015B |
| C36-C39 | 30 | 5.0 | mg/kg | SW846 8015B |
| C40+ | 10 | 5.0 | mg/kg | SW846 8015B |
| Total Carbon Chain Range | 120 | 5.0 | mg/kg | SW846 8015B |
| Mercury | 0.043 B | 0.10 | mg/kg | SW846 7471A |
| Aluminum | 10300 | 20.0 | mg/kg | SW846 6010B |
| Arsenic | 4.1 | 1.0 | mg/kg | SW846 6010B |
| Barium | 75.2 | 2.0 | mg/kg | SW846 6010B |
| Beryllium | 0.30 B | 0.50 | mg/kg | SW846 6010B |
| Cobalt | 6.2 | 5.0 | mg/kg | SW846 6010B |
| Chromium | 16.4 | 1.0 | mg/kg | SW846 6010B |
| Copper | 14.4 | 2.5 | mg/kg | SW846 6010B |
| Molybdenum | 0.51 B | 4.0 | mg/kg | SW846 6010B |
| Nickel | 11.0 | 4.0 | mg/kg | SW846 6010B |

(Continued on next page)



BOE-C6-0186840

# EXECUTIVE SUMMARY - Detection Highlights

**E6K030407**

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|---|---|---|---|---|
| **BIN 2-COMPOSITE 11/02/06 16:44 002** | | | | |
| Lead | 3.9 | 0.50 | mg/kg | SW846 6010B |
| Selenium | 0.66 | 0.50 | mg/kg | SW846 6010B |
| Thallium | 1.1 | 1.0 | mg/kg | SW846 6010B |
| Vanadium | 29.4 | 5.0 | mg/kg | SW846 6010B |
| Zinc | 42.1 | 2.0 | mg/kg | SW846 6010B |
| Tetrahydrofuran | 2.1 J | 20 | ug/kg | SW846 8260B |



BOE-C6-0186841

# METHODS SUMMARY

**E6K030407**

| PARAMETER | ANALYTICAL METHOD | PREPARATION METHOD |
|---|---|---|
| Extractable Petroleum Hydrocarbons | SW846 8015B | SANA AUTO-SHAKE |
| Inductively Coupled Plasma (ICP) Metals | SW846 6010B | SW846 3050B |
| Mercury in Solid Waste (Manual Cold-Vapor) | SW846 7471A | SW846 7471A |
| Volatile Organics by GC/MS | SW846 8260B | SW846 5030B/826 |
| Volatile Petroleum Hydrocarbons | SW846 8015B | SW846 5030 |

**References:**

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



BOE-C6-0186842

# SAMPLE SUMMARY

**E6K030407**

| WO # | SAMPLE# | CLIENT SAMPLE ID | SAMPLED DATE | SAMP TIME |
|---|---|---|---|---|
| JH0ED | 001 | BIN 1-COMPOSITE | 11/02/06 | 16:31 |
| JH0EE | 002 | BIN 2-COMPOSITE | 11/02/06 | 16:44 |

**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.



BOE-C6-0186843

**Avocet Environmental Inc**

**Client Sample ID: BIN 1-COMPOSITE**

**GC/MS Volatiles**

**Lot-Sample #...:** E6K030407-001 **Work Order #...:** JH0ED1AD **Matrix.....:** SO
**Date Sampled...:** 11/02/06 16:31 **Date Received..:** 11/03/06 08:55 **MS Run #.....:** 6312057
**Prep Date.....:** 11/07/06 **Analysis Date..:** 11/07/06
**Prep Batch #...:** 6312127 **Analysis Time..:** 14:31
**Dilution Factor:** 0.99
**% Moisture.....:** **Analyst ID.....:** 004648 **Instrument ID..:** MSO
**Method.....:** SW846 8260B

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| Acetone | ND | 25 | ug/kg | 11 |
| Acrolein | ND | 99 | ug/kg | 30 |
| Acrylonitrile | ND | 50 | ug/kg | 40 |
| Benzene | ND | 5.0 | ug/kg | 2.0 |
| Bromobenzene | ND | 5.0 | ug/kg | 2.0 |
| Bromochloromethane | ND | 5.0 | ug/kg | 0.99 |
| Bromodichloromethane | ND | 5.0 | ug/kg | 0.99 |
| Bromoform | ND | 5.0 | ug/kg | 2.5 |
| Bromomethane | ND | 9.9 | ug/kg | 3.0 |
| t-Butanol | ND | 99 | ug/kg | 50 |
| 2-Butanone | ND | 25 | ug/kg | 11 |
| n-Butylbenzene | ND | 5.0 | ug/kg | 2.0 |
| sec-Butylbenzene | ND | 5.0 | ug/kg | 2.0 |
| tert-Butylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Carbon disulfide | ND | 5.0 | ug/kg | 3.0 |
| Carbon tetrachloride | ND | 5.0 | ug/kg | 0.99 |
| Chlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| Dibromochloromethane | ND | 5.0 | ug/kg | 0.99 |
| Chloroethane | ND | 9.9 | ug/kg | 2.0 |
| 2-Chloroethyl vinyl ether | ND | 9.9 | ug/kg | 5.0 |
| Chloroform | ND | 5.0 | ug/kg | 0.99 |
| Chloromethane | ND | 9.9 | ug/kg | 3.0 |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | 2.0 |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | 2.0 |
| 1,2-Dibromo-3-chloro-propane | ND | 9.9 | ug/kg | 3.0 |
| 1,2-Dibromoethane | ND | 5.0 | ug/kg | 2.5 |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| Dichlorodifluoromethane | ND | 9.9 | ug/kg | 2.0 |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | 0.99 |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | 0.99 |
| cis-1,2-Dichloroethene | ND | 5.0 | ug/kg | 2.0 |
| trans-1,2-Dichloroethene | ND | 5.0 | ug/kg | 2.0 |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | 2.0 |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | 0.99 |

(Continued on next page)



BOE-C6-0186844

**Avocet Environmental Inc**

**Client Sample ID: BIN 1-COMPOSITE**

**GC/MS Volatiles**

**Lot-Sample #...:** E6K030407-001 **Work Order #...:** JH0ED1AD **Matrix.....:** SO

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | 2.0 |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | 0.99 |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | 2.0 |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | 0.99 |
| Tert-amyl methyl ether | ND | 9.9 | ug/kg | 2.0 |
| Tert-butyl ethyl ether | ND | 9.9 | ug/kg | 0.99 |
| Ethylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | 2.0 |
| 2-Hexanone | ND | 25 | ug/kg | 12 |
| Iodomethane | ND | 9.9 | ug/kg | 9.9 |
| Isopropylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Isopropyl ether | ND | 9.9 | ug/kg | 0.99 |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | 2.0 |
| Methylene chloride | ND | 5.0 | ug/kg | 2.0 |
| 4-Methyl-2-pentanone | ND | 25 | ug/kg | 9.9 |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | 0.99 |
| n-Propylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Styrene | ND | 9.9 | ug/kg | 2.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | 2.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | 2.5 |
| Tetrachloroethene | ND | 5.0 | ug/kg | 2.0 |
| **Tetrahydrofuran** | **2.1 J** | **20** | **ug/kg** | **2.0** |
| Toluene | ND | 5.0 | ug/kg | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| 1,2,4-Trichloro-benzene | ND | 5.0 | ug/kg | 2.0 |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | 0.99 |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | 2.0 |
| Trichloroethene | ND | 5.0 | ug/kg | 2.0 |
| Trichlorofluoromethane | ND | 9.9 | ug/kg | 2.0 |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | 2.5 |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | 2.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Vinyl acetate | ND | 9.9 | ug/kg | 5.0 |
| Vinyl chloride | ND | 9.9 | ug/kg | 2.5 |
| Xylenes (total) | ND | 5.0 | ug/kg | 2.0 |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 79 | (60 - 125) |
| 1,2-Dichloroethane-d4 | 94 | (55 - 125) |
| Toluene-d8 | 82 | (60 - 125) |

**NOTE(S):**

J Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: BIN 1-COMPOSITE

GC Volatiles

| | | | | | |
|---|---|---|---|---|---|
| **Lot-Sample #...:** | E6K030407-001 | **Work Order #...:** | JH0ED1AC | **Matrix.....:** | SO |
| **Date Sampled...:** | 11/02/06 16:31 | **Date Received..:** | 11/03/06 08:55 | **MS Run #.....:** | 6312174 |
| **Prep Date.....:** | 11/07/06 | **Analysis Date..:** | 11/07/06 | | |
| **Prep Batch #...:** | 6312334 | **Analysis Time..:** | 19:52 | | |
| **Dilution Factor:** | 1 | | | | |
| **% Moisture.....:** | | **Analyst ID.....:** | 001464 | **Instrument ID..:** | G15 |
| | | **Method.....:** | SW846 8015B | | |

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| C6-C8 | ND | 1.0 | mg/kg | 0.20 |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 84 | (70 - 130) |

Avocet Environmental Inc

Client Sample ID: BIN 1-COMPOSITE

GC Semivolatiles

| | | | | | |
|---|---|---|---|---|---|
| **Lot-Sample #...:** | E6K030407-001 | **Work Order #...:** | JH0ED1AA | **Matrix.....:** | SO |
| **Date Sampled...:** | 11/02/06 16:31 | **Date Received..:** | 11/03/06 08:55 | **MS Run #.....:** | 6310152 |
| **Prep Date.....:** | 11/06/06 | **Analysis Date..:** | 11/09/06 | | |
| **Prep Batch #...:** | 6310229 | **Analysis Time..:** | 14:19 | | |
| **Dilution Factor:** | 1 | | | | |
| **% Moisture.....:** | | **Analyst ID.....:** | 402479 | **Instrument ID..:** | G12 |
| | | **Method.....:** | SW846 8015B | | |

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| C8-C9 | ND | 5.0 | mg/kg | 2.0 |
| C10-C11 | ND | 5.0 | mg/kg | 2.0 |
| C12-C13 | ND | 5.0 | mg/kg | 2.0 |
| C14-C15 | ND | 5.0 | mg/kg | 2.0 |
| C16-C17 | ND | 5.0 | mg/kg | 2.0 |
| **C18-C19** | **5.5** | **5.0** | **mg/kg** | **2.0** |
| **C20-C23** | **7.5** | **5.0** | **mg/kg** | **2.0** |
| **C24-C27** | **7.7** | **5.0** | **mg/kg** | **2.0** |
| **C28-C31** | **18** | **5.0** | **mg/kg** | **2.0** |
| **C32-C35** | **18** | **5.0** | **mg/kg** | **2.0** |
| **C36-C39** | **18** | **5.0** | **mg/kg** | **2.0** |
| **C40+** | **6.6** | **5.0** | **mg/kg** | **2.0** |
| **Total Carbon Chain Range** | **82** | **5.0** | **mg/kg** | **2.0** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 85 | (60 - 120) |

**Avocet Environmental Inc**

**Client Sample ID: BIN 1-COMPOSITE**

**TOTAL Metals**

**Lot-Sample #...:** E6K030407-001 **Matrix.....:** SO
**Date Sampled...:** 11/02/06 16:31 **Date Received..:** 11/03/06 08:55
**% Moisture.....:**

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Prep Batch #...:** 6310441 | | | | | | |
| Silver | ND | 1.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH0ED1AT |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.10 | |
| **Aluminum** | **9750** | **20.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0ED1AE** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 20.0 | |
| **Arsenic** | **5.8** | **1.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0ED1AG** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.40 | |
| **Barium** | **74.9** | **2.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0ED1AH** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.10 | |
| **Beryllium** | **0.27 B** | **0.50** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0ED1AJ** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.060 | |
| Cadmium | ND | 0.50 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH0ED1AK |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.080 | |
| **Cobalt** | **5.3** | **5.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0ED1AL** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.20 | |
| **Chromium** | **15.2** | **1.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0ED1AX** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.20 | |
| **Copper** | **13.2** | **2.5** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0ED1AM** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.40 | |

(Continued on next page)

Avocet Environmental Inc

Client Sample ID: BIN 1-COMPOSITE

TOTAL Metals

Lot-Sample #...: E6K030407-001 Matrix.....: SO

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Molybdenum** | **0.72 B** | **4.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0ED1AP** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.30 | |
| **Nickel** | **10.3** | **4.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0ED1AQ** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.30 | |
| **Lead** | **3.6** | **0.50** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0ED1AN** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.25 | |
| Antimony | ND | 6.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH0ED1AF |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.60 | |
| Selenium | ND | 0.50 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH0ED1AR |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.50 | |
| **Thallium** | **0.60 B** | **1.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0ED1AU** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.50 | |
| **Vanadium** | **32.1** | **5.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0ED1AV** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.20 | |
| **Zinc** | **33.7** | **2.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0ED1AW** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:21 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 1.0 | |

**Prep Batch #...:** 6310448

| | | | | | | |
|---|---|---|---|---|---|---|
| **Mercury** | **0.037 B** | **0.10** | **mg/kg** | **SW846 7471A** | **11/08-11/09/06** | **JH0ED1A0** |
| | | Dilution Factor: 1 | | Analysis Time..: 18:23 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M04 | | MS Run #.....: 6310285 | MDL.....: 0.020 | |

**NOTE(S):**

B Estimated result. Result is less than RL.



BOE-C6-0186849

Avocet Environmental Inc

Client Sample ID: BIN 2-COMPOSITE

GC/MS Volatiles

| | | | | | |
|---|---|---|---|---|---|
| **Lot-Sample #...:** | E6K030407-002 | **Work Order #...:** | JH0EE1AE | **Matrix.....:** | SO |
| **Date Sampled...:** | 11/02/06 16:44 | **Date Received..:** | 11/03/06 08:55 | **MS Run #.....:** | 6312057 |
| **Prep Date.....:** | 11/07/06 | **Analysis Date..:** | 11/07/06 | | |
| **Prep Batch #...:** | 6312127 | **Analysis Time..:** | 14:51 | | |
| **Dilution Factor:** | 0.99 | | | | |
| **% Moisture.....:** | | **Analyst ID.....:** | 004648 | **Instrument ID..:** | MSO |
| | | **Method.....:** | SW846 8260B | | |

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| Acetone | ND | 25 | ug/kg | 11 |
| Acrolein | ND | 99 | ug/kg | 30 |
| Acrylonitrile | ND | 50 | ug/kg | 40 |
| Benzene | ND | 5.0 | ug/kg | 2.0 |
| Bromobenzene | ND | 5.0 | ug/kg | 2.0 |
| Bromochloromethane | ND | 5.0 | ug/kg | 0.99 |
| Bromodichloromethane | ND | 5.0 | ug/kg | 0.99 |
| Bromoform | ND | 5.0 | ug/kg | 2.5 |
| Bromomethane | ND | 9.9 | ug/kg | 3.0 |
| t-Butanol | ND | 99 | ug/kg | 50 |
| 2-Butanone | ND | 25 | ug/kg | 11 |
| n-Butylbenzene | ND | 5.0 | ug/kg | 2.0 |
| sec-Butylbenzene | ND | 5.0 | ug/kg | 2.0 |
| tert-Butylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Carbon disulfide | ND | 5.0 | ug/kg | 3.0 |
| Carbon tetrachloride | ND | 5.0 | ug/kg | 0.99 |
| Chlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| Dibromochloromethane | ND | 5.0 | ug/kg | 0.99 |
| Chloroethane | ND | 9.9 | ug/kg | 2.0 |
| 2-Chloroethyl vinyl ether | ND | 9.9 | ug/kg | 5.0 |
| Chloroform | ND | 5.0 | ug/kg | 0.99 |
| Chloromethane | ND | 9.9 | ug/kg | 3.0 |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | 2.0 |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | 2.0 |
| 1,2-Dibromo-3-chloro-propane | ND | 9.9 | ug/kg | 3.0 |
| 1,2-Dibromoethane | ND | 5.0 | ug/kg | 2.5 |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| Dichlorodifluoromethane | ND | 9.9 | ug/kg | 2.0 |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | 0.99 |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | 0.99 |
| cis-1,2-Dichloroethene | ND | 5.0 | ug/kg | 2.0 |
| trans-1,2-Dichloroethene | ND | 5.0 | ug/kg | 2.0 |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | 2.0 |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | 0.99 |

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BOE-C6-0186850

**Avocet Environmental Inc**

**Client Sample ID: BIN 2-COMPOSITE**

**GC/MS Volatiles**

**Lot-Sample #...:** E6K030407-002 **Work Order #...:** JH0EE1AE **Matrix.....:** SO

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | 2.0 |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | 0.99 |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | 2.0 |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | 0.99 |
| Tert-amyl methyl ether | ND | 9.9 | ug/kg | 2.0 |
| Tert-butyl ethyl ether | ND | 9.9 | ug/kg | 0.99 |
| Ethylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | 2.0 |
| 2-Hexanone | ND | 25 | ug/kg | 12 |
| Iodomethane | ND | 9.9 | ug/kg | 9.9 |
| Isopropylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Isopropyl ether | ND | 9.9 | ug/kg | 0.99 |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | 2.0 |
| Methylene chloride | ND | 5.0 | ug/kg | 2.0 |
| 4-Methyl-2-pentanone | ND | 25 | ug/kg | 9.9 |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | 0.99 |
| n-Propylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Styrene | ND | 9.9 | ug/kg | 2.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | 2.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | 2.5 |
| Tetrachloroethene | ND | 5.0 | ug/kg | 2.0 |
| **Tetrahydrofuran** | **2.1 J** | **20** | **ug/kg** | **2.0** |
| Toluene | ND | 5.0 | ug/kg | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| 1,2,4-Trichloro-benzene | ND | 5.0 | ug/kg | 2.0 |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | 0.99 |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | 2.0 |
| Trichloroethene | ND | 5.0 | ug/kg | 2.0 |
| Trichlorofluoromethane | ND | 9.9 | ug/kg | 2.0 |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | 2.5 |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | 2.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Vinyl acetate | ND | 9.9 | ug/kg | 5.0 |
| Vinyl chloride | ND | 9.9 | ug/kg | 2.5 |
| Xylenes (total) | ND | 5.0 | ug/kg | 2.0 |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 78 | (60 - 125) |
| 1,2-Dichloroethane-d4 | 96 | (55 - 125) |
| Toluene-d8 | 82 | (60 - 125) |

**NOTE(S):**

J Estimated result. Result is less than RL.

**Avocet Environmental Inc**

**Client Sample ID: BIN 2-COMPOSITE**

**GC Volatiles**

| | | | | | |
|---|---|---|---|---|---|
| **Lot-Sample #...:** | E6K030407-002 | **Work Order #...:** | JH0EE1AD | **Matrix.....:** | SO |
| **Date Sampled...:** | 11/02/06 16:44 | **Date Received..:** | 11/03/06 08:55 | **MS Run #.....:** | 6312174 |
| **Prep Date.....:** | 11/07/06 | **Analysis Date..:** | 11/07/06 | | |
| **Prep Batch #...:** | 6312334 | **Analysis Time..:** | 20:19 | | |
| **Dilution Factor:** | 1 | | | | |
| **% Moisture.....:** | | **Analyst ID.....:** | 001464 | **Instrument ID..:** | G15 |
| | | **Method.....:** | SW846 8015B | | |

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| C6-C8 | ND | 1.0 | mg/kg | 0.20 |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 88 | (70 - 130) |

Avocet Environmental Inc

Client Sample ID: BIN 2-COMPOSITE

GC Semivolatiles

| | | | | | |
|---|---|---|---|---|---|
| **Lot-Sample #...:** | E6K030407-002 | **Work Order #...:** | JH0EE1AC | **Matrix.....:** | SO |
| **Date Sampled...:** | 11/02/06 16:44 | **Date Received..:** | 11/03/06 08:55 | **MS Run #.....:** | 6310152 |
| **Prep Date.....:** | 11/06/06 | **Analysis Date..:** | 11/09/06 | | |
| **Prep Batch #...:** | 6310229 | **Analysis Time..:** | 14:29 | | |
| **Dilution Factor:** | 1 | | | | |
| **% Moisture.....:** | | **Analyst ID.....:** | 402479 | **Instrument ID..:** | G12 |
| | | **Method.....:** | SW846 8015B | | |

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| C8-C9 | ND | 5.0 | mg/kg | 2.0 |
| C10-C11 | ND | 5.0 | mg/kg | 2.0 |
| C12-C13 | ND | 5.0 | mg/kg | 2.0 |
| C14-C15 | ND | 5.0 | mg/kg | 2.0 |
| C16-C17 | ND | 5.0 | mg/kg | 2.0 |
| C18-C19 | ND | 5.0 | mg/kg | 2.0 |
| **C20-C23** | **4.8 J** | **5.0** | **mg/kg** | **2.0** |
| **C24-C27** | **11** | **5.0** | **mg/kg** | **2.0** |
| **C28-C31** | **31** | **5.0** | **mg/kg** | **2.0** |
| **C32-C35** | **33** | **5.0** | **mg/kg** | **2.0** |
| **C36-C39** | **30** | **5.0** | **mg/kg** | **2.0** |
| **C40+** | **10** | **5.0** | **mg/kg** | **2.0** |
| **Total Carbon Chain Range** | **120** | **5.0** | **mg/kg** | **2.0** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 83 | (60 - 120) |

**NOTE(S):**

J Estimated result. Result is less than RL.

**Avocet Environmental Inc**

**Client Sample ID: BIN 2-COMPOSITE**

**TOTAL Metals**

**Lot-Sample #...:** E6K030407-002 **Matrix.....:** SO
**Date Sampled...:** 11/02/06 16:44 **Date Received..:** 11/03/06 08:55
**% Moisture.....:**

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Prep Batch #...:** 6310441 | | | | | | |
| Silver | ND | 1.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH0EE1AU |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.10 | |
| **Aluminum** | **10300** | **20.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1AF** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 20.0 | |
| **Arsenic** | **4.1** | **1.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1AH** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.40 | |
| **Barium** | **75.2** | **2.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1AJ** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.10 | |
| **Beryllium** | **0.30 B** | **0.50** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1AK** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.060 | |
| Cadmium | ND | 0.50 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH0EE1AL |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.080 | |
| **Cobalt** | **6.2** | **5.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1AM** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.20 | |
| **Chromium** | **16.4** | **1.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1A0** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.20 | |
| **Copper** | **14.4** | **2.5** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1AN** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.40 | |

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Avocet Environmental Inc

Client Sample ID: BIN 2-COMPOSITE

TOTAL Metals

**Lot-Sample #...:** E6K030407-002 **Matrix.....:** SO

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Molybdenum** | **0.51 B** | **4.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1AQ** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.30 | |
| **Nickel** | **11.0** | **4.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1AR** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.30 | |
| **Lead** | **3.9** | **0.50** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1AP** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.25 | |
| Antimony | ND | 6.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH0EE1AG |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.60 | |
| **Selenium** | **0.66** | **0.50** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1AT** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.50 | |
| **Thallium** | **1.1** | **1.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1AV** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.50 | |
| **Vanadium** | **29.4** | **5.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1AW** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 0.20 | |
| **Zinc** | **42.1** | **2.0** | **mg/kg** | **SW846 6010B** | **11/06-11/08/06** | **JH0EE1AX** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:51 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6310281 | MDL.....: 1.0 | |

**Prep Batch #...:** 6310448

| | | | | | | |
|---|---|---|---|---|---|---|
| **Mercury** | **0.043 B** | **0.10** | **mg/kg** | **SW846 7471A** | **11/08-11/09/06** | **JH0EE1AA** |
| | | Dilution Factor: 1 | | Analysis Time..: 18:25 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M04 | | MS Run #.....: 6310285 | MDL.....: 0.020 | |

**NOTE(S):**

B Estimated result. Result is less than RL.

STL

# QA/QC



BOE-C6-0186856

# QC DATA ASSOCIATION SUMMARY

**E6K030407**

Sample Preparation and Analysis Control Numbers

| SAMPLE# | MATRIX | ANALYTICAL METHOD | LEACH BATCH # | PREP BATCH # | MS RUN# |
|---|---|---|---|---|---|
| 001 | SO | SW846 8015B | | 6310229 | 6310152 |
| | SO | SW846 8015B | | 6312334 | 6312174 |
| | SO | SW846 7471A | | 6310448 | 6310285 |
| | SO | SW846 8260B | | 6312127 | 6312057 |
| | SO | SW846 6010B | | 6310441 | 6310281 |
| 002 | SO | SW846 8015B | | 6310229 | 6310152 |
| | SO | SW846 8015B | | 6312334 | 6312174 |
| | SO | SW846 7471A | | 6310448 | 6310285 |
| | SO | SW846 8260B | | 6312127 | 6312057 |
| | SO | SW846 6010B | | 6310441 | 6310281 |



BOE-C6-0186857

## METHOD BLANK REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K030407 **Work Order #...:** JH6G21AA **Matrix.....:** SOLID
**MB Lot-Sample #:** E6K080000-127

**Prep Date.....:** 11/07/06 **Analysis Time..:** 13:58
**Analysis Date..:** 11/07/06 **Prep Batch #...:** 6312127 **Instrument ID..:** MSO
**Dilution Factor:** 1

**Analyst ID.....:** 004648

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 25 | ug/kg | SW846 8260B |
| Acrolein | ND | 100 | ug/kg | SW846 8260B |
| Acrylonitrile | ND | 50 | ug/kg | SW846 8260B |
| Benzene | ND | 5.0 | ug/kg | SW846 8260B |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Bromochloromethane | ND | 5.0 | ug/kg | SW846 8260B |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260B |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260B |
| Bromomethane | ND | 10 | ug/kg | SW846 8260B |
| t-Butanol | ND | 100 | ug/kg | SW846 8260B |
| 2-Butanone | ND | 25 | ug/kg | SW846 8260B |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260B |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260B |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260B |
| Chloroethane | ND | 10 | ug/kg | SW846 8260B |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260B |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260B |
| Chloromethane | ND | 10 | ug/kg | SW846 8260B |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260B |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260B |
| 1,2-Dibromoethane | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260B |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260B |
| cis-1,2-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260B |
| trans-1,2-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260B |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260B |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260B |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260B |

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BOE-C6-0186858

## METHOD BLANK REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K030407 **Work Order #...:** JH6G21AA **Matrix.....:** SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260B |
| Tert-amyl methyl ether | ND | 10 | ug/kg | SW846 8260B |
| Tert-butyl ethyl ether | ND | 10 | ug/kg | SW846 8260B |
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260B |
| 2-Hexanone | ND | 25 | ug/kg | SW846 8260B |
| Iodomethane | ND | 10 | ug/kg | SW846 8260B |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Isopropyl ether | ND | 10 | ug/kg | SW846 8260B |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260B |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260B |
| 4-Methyl-2-pentanone | ND | 25 | ug/kg | SW846 8260B |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260B |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Styrene | ND | 10 | ug/kg | SW846 8260B |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260B |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260B |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260B |
| Tetrahydrofuran | ND | 20 | ug/kg | SW846 8260B |
| Toluene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2,4-Trichloro-benzene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260B |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260B |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260B |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260B |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260B |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260B |
| Xylenes (total) | ND | 5.0 | ug/kg | SW846 8260B |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 73 | (60 - 125) |
| 1,2-Dichloroethane-d4 | 92 | (55 - 125) |
| Toluene-d8 | 78 | (60 - 125) |

**NOTE(S):**

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



BOE-C6-0186859

## METHOD BLANK REPORT

### GC Volatiles

**Client Lot #...:** E6K030407
**MB Lot-Sample #:** E6K080000-334
**Analysis Date..:** 11/07/06
**Dilution Factor:** 1

**Work Order #...:** JH67K1AA
**Prep Date.....:** 11/07/06
**Prep Batch #...:** 6312334
**Analyst ID.....:** 001464

**Matrix.....:** SOLID
**Analysis Time..:** 18:59
**Instrument ID..:** G15

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| C6-C8 | ND | 1.0 | mg/kg | SW846 8015B |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 90 | (70 - 130) |

**NOTE(S):**

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

## METHOD BLANK REPORT

### GC Semivolatiles

**Client Lot #...:** E6K030407
**MB Lot-Sample #:** E6K060000-229
**Analysis Date..:** 11/09/06
**Dilution Factor:** 1

**Work Order #...:** JH2TW1AA
**Prep Date.....:** 11/06/06
**Prep Batch #...:** 6310229
**Analyst ID.....:** 402479

**Matrix.....:** SOLID
**Analysis Time..:** 12:19
**Instrument ID..:** G12

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| C8-C9 | ND | 5.0 | mg/kg | SW846 8015B |
| C10-C11 | ND | 5.0 | mg/kg | SW846 8015B |
| C12-C13 | ND | 5.0 | mg/kg | SW846 8015B |
| C14-C15 | ND | 5.0 | mg/kg | SW846 8015B |
| C16-C17 | ND | 5.0 | mg/kg | SW846 8015B |
| C18-C19 | ND | 5.0 | mg/kg | SW846 8015B |
| C20-C23 | ND | 5.0 | mg/kg | SW846 8015B |
| C24-C27 | ND | 5.0 | mg/kg | SW846 8015B |
| C28-C31 | ND | 5.0 | mg/kg | SW846 8015B |
| C32-C35 | ND | 5.0 | mg/kg | SW846 8015B |
| C36-C39 | ND | 5.0 | mg/kg | SW846 8015B |
| C40+ | ND | 5.0 | mg/kg | SW846 8015B |
| Total Carbon Chain Range | ND | 5.0 | mg/kg | SW846 8015B |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 93 | (60 - 120) |

**NOTE(S):**

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



BOE-C6-0186861

## METHOD BLANK REPORT

### TOTAL Metals

**Client Lot #...:** E6K030407 **Matrix.....:** SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **MB Lot-Sample #:** E6K060000-441 **Prep Batch #...:** 6310441 | | | | | | |
| Aluminum | ND | 20.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AA |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Antimony | ND | 6.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AC |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Arsenic | ND | 1.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AD |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Barium | ND | 2.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AE |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Beryllium | ND | 0.50 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AF |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Cadmium | ND | 0.50 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AG |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Chromium | ND | 1.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AU |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Cobalt | ND | 5.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AH |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Copper | ND | 2.5 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AJ |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Lead | ND | 0.50 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AK |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Molybdenum | ND | 4.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AL |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |

(Continued on next page)



BOE-C6-0186862

## METHOD BLANK REPORT

## TOTAL Metals

**Client Lot #...:** E6K030407 **Matrix.....:** SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| Nickel | ND | 4.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AM |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Selenium | ND | 0.50 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AN |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Silver | ND | 1.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AP |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Thallium | ND | 1.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AQ |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Vanadium | ND | 5.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AR |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Zinc | ND | 2.0 | mg/kg | SW846 6010B | 11/06-11/08/06 | JH3J91AT |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:23 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |

**MB Lot-Sample #:** E6K060000-448 **Prep Batch #...:** 6310448

| | | | | | | |
|---|---|---|---|---|---|---|
| Mercury | ND | 0.10 | mg/kg | SW846 7471A | 11/08-11/09/06 | JH3LF1AA |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:04 | | Analyst ID.....: 021088 | Instrument ID..: M04 | |

**NOTE(S):**

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



BOE-C6-0186863

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K030407 **Work Order #...:** JH6G21AC **Matrix.....:** SOLID
**LCS Lot-Sample#:** E6K080000-127
**Prep Date.....:** 11/07/06 **Analysis Date..:** 11/07/06
**Prep Batch #...:** 6312127 **Analysis Time..:** 13:38
**Dilution Factor:** 1 **Instrument ID..:** MSO
**Analyst ID.....:** 004648

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| **Benzene** | **109** | **(70 - 130)** | **SW846 8260B** |
| **Bromodichloromethane** | **115** | **(70 - 135)** | **SW846 8260B** |
| **Carbon tetrachloride** | **106** | **(60 - 140)** | **SW846 8260B** |
| **m-Xylene & p-Xylene** | **94** | **(70 - 130)** | **SW846 8260B** |
| **Chloroform** | **107** | **(70 - 130)** | **SW846 8260B** |
| **o-Xylene** | **95** | **(70 - 130)** | **SW846 8260B** |
| **1,1-Dichloroethane** | **110** | **(70 - 130)** | **SW846 8260B** |
| **1,2-Dichloroethane** | **108** | **(70 - 130)** | **SW846 8260B** |
| **cis-1,2-Dichloroethene** | **113** | **(70 - 130)** | **SW846 8260B** |
| **1,1-Dichloroethene** | **110** | **(50 - 160)** | **SW846 8260B** |
| **Ethylbenzene** | **95** | **(70 - 130)** | **SW846 8260B** |
| **Tetrachloroethene** | **93** | **(70 - 130)** | **SW846 8260B** |
| **Toluene** | **93** | **(70 - 130)** | **SW846 8260B** |
| **1,1,1-Trichloroethane** | **107** | **(65 - 140)** | **SW846 8260B** |
| **Trichloroethene** | **105** | **(70 - 135)** | **SW846 8260B** |
| **Vinyl chloride** | **106** | **(40 - 160)** | **SW846 8260B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 79 | (60 - 125) |
| 1,2-Dichloroethane-d4 | 92 | (55 - 125) |
| Toluene-d8 | 81 | (60 - 125) |

**NOTE(S):**

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

Bold print denotes control parameters



BOE-C6-0186864

## LABORATORY CONTROL SAMPLE DATA REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K030407 **Work Order #...:** JH6G21AC **Matrix.....:** SOLID
**LCS Lot-Sample#:** E6K080000-127
**Prep Date.....:** 11/07/06 **Analysis Date..:** 11/07/06
**Prep Batch #...:** 6312127 **Analysis Time..:** 13:38
**Dilution Factor:** 1 **Instrument ID..:** MSO
**Analyst ID.....:** 004648

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCENT RECOVERY | METHOD |
|---|---|---|---|---|---|
| **Benzene** | **50.0** | **54.3** | **ug/kg** | **109** | **SW846 8260B** |
| **Bromodichloromethane** | **50.0** | **57.4** | **ug/kg** | **115** | **SW846 8260B** |
| **Carbon tetrachloride** | **50.0** | **53.0** | **ug/kg** | **106** | **SW846 8260B** |
| **m-Xylene & p-Xylene** | **100** | **93.8** | **ug/kg** | **94** | **SW846 8260B** |
| **Chloroform** | **50.0** | **53.3** | **ug/kg** | **107** | **SW846 8260B** |
| **o-Xylene** | **50.0** | **47.7** | **ug/kg** | **95** | **SW846 8260B** |
| **1,1-Dichloroethane** | **50.0** | **55.0** | **ug/kg** | **110** | **SW846 8260B** |
| **1,2-Dichloroethane** | **50.0** | **54.2** | **ug/kg** | **108** | **SW846 8260B** |
| **cis-1,2-Dichloroethene** | **50.0** | **56.3** | **ug/kg** | **113** | **SW846 8260B** |
| **1,1-Dichloroethene** | **50.0** | **55.1** | **ug/kg** | **110** | **SW846 8260B** |
| **Ethylbenzene** | **50.0** | **47.7** | **ug/kg** | **95** | **SW846 8260B** |
| **Tetrachloroethene** | **50.0** | **46.7** | **ug/kg** | **93** | **SW846 8260B** |
| **Toluene** | **50.0** | **46.5** | **ug/kg** | **93** | **SW846 8260B** |
| **1,1,1-Trichloroethane** | **50.0** | **53.3** | **ug/kg** | **107** | **SW846 8260B** |
| **Trichloroethene** | **50.0** | **52.5** | **ug/kg** | **105** | **SW846 8260B** |
| **Vinyl chloride** | **50.0** | **53.1** | **ug/kg** | **106** | **SW846 8260B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 79 | (60 - 125) |
| 1,2-Dichloroethane-d4 | 92 | (55 - 125) |
| Toluene-d8 | 81 | (60 - 125) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC Volatiles

**Client Lot #...:** E6K030407 **Work Order #...:** JH67K1AC **Matrix.....:** SOLID
**LCS Lot-Sample#:** E6K080000-334
**Prep Date.....:** 11/07/06 **Analysis Date..:** 11/07/06
**Prep Batch #...:** 6312334 **Analysis Time..:** 19:26
**Dilution Factor:** 1 **Instrument ID..:** G15
**Analyst ID.....:** 001464

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| **TPH (as Gasoline)** | **95** | **(65 - 135)** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 123 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters



BOE-C6-0186866

## LABORATORY CONTROL SAMPLE DATA REPORT

### GC Volatiles

**Client Lot #...:** E6K030407 **Work Order #...:** JH67K1AC **Matrix.....:** SOLID
**LCS Lot-Sample#:** E6K080000-334
**Prep Date.....:** 11/07/06 **Analysis Date..:** 11/07/06
**Prep Batch #...:** 6312334 **Analysis Time..:** 19:26
**Dilution Factor:** 1 **Instrument ID..:** G15
**Analyst ID.....:** 001464

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCENT RECOVERY | METHOD |
|---|---|---|---|---|---|
| **TPH (as Gasoline)** | **5.00** | **4.75** | **mg/kg** | **95** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 123 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC Semivolatiles

**Client Lot #...:** E6K030407 **Work Order #...:** JH2TW1AC **Matrix.....:** SOLID
**LCS Lot-Sample#:** E6K060000-229
**Prep Date.....:** 11/06/06 **Analysis Date..:** 11/09/06
**Prep Batch #...:** 6310229 **Analysis Time..:** 12:29
**Dilution Factor:** 1 **Instrument ID..:** G12
**Analyst ID.....:** 402479

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| **TPH (as Diesel)** | **92** | **(65 - 135)** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 96 | (60 - 120) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE DATA REPORT

### GC Semivolatiles

**Client Lot #...:** E6K030407 **Work Order #...:** JH2TW1AC **Matrix.....:** SOLID
**LCS Lot-Sample#:** E6K060000-229
**Prep Date.....:** 11/06/06 **Analysis Date..:** 11/09/06
**Prep Batch #...:** 6310229 **Analysis Time..:** 12:29
**Dilution Factor:** 1 **Instrument ID..:** G12
**Analyst ID.....:** 402479

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCENT RECOVERY | METHOD |
|---|---|---|---|---|---|
| **TPH (as Diesel)** | **125** | **115** | **mg/kg** | **92** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 96 | (60 - 120) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### TOTAL Metals

**Client Lot #...:** E6K030407 **Matrix.....:** SOLID

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|
| **LCS Lot-Sample#:** E6K060000-441 **Prep Batch #...:** 6310441 | | | | | |
| Aluminum | 102 | (70 - 115) | SW846 6010B | 11/06-11/08/06 | JH3J91AV |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Antimony | 102 | (70 - 115) | SW846 6010B | 11/06-11/08/06 | JH3J91AW |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Arsenic | 102 | (80 - 115) | SW846 6010B | 11/06-11/08/06 | JH3J91AX |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Barium | 103 | (80 - 115) | SW846 6010B | 11/06-11/08/06 | JH3J91A0 |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Beryllium | 105 | (80 - 120) | SW846 6010B | 11/06-11/08/06 | JH3J91A1 |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Cadmium | 99 | (80 - 120) | SW846 6010B | 11/06-11/08/06 | JH3J91A2 |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Cobalt | 98 | (80 - 120) | SW846 6010B | 11/06-11/08/06 | JH3J91A3 |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Copper | 103 | (85 - 120) | SW846 6010B | 11/06-11/08/06 | JH3J91A4 |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Lead | 101 | (75 - 115) | SW846 6010B | 11/06-11/08/06 | JH3J91A5 |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Molybdenum | 101 | (80 - 120) | SW846 6010B | 11/06-11/08/06 | JH3J91A6 |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |

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BOE-C6-0186870

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### TOTAL Metals

**Client Lot #...:** E6K030407 **Matrix.....:** SOLID

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|
| Nickel | 99 | (80 - 120) | SW846 6010B | 11/06-11/08/06 | JH3J91A7 |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Selenium | 100 | (75 - 110) | SW846 6010B | 11/06-11/08/06 | JH3J91A8 |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Silver | 102 | (75 - 120) | SW846 6010B | 11/06-11/08/06 | JH3J91A9 |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Thallium | 101 | (75 - 120) | SW846 6010B | 11/06-11/08/06 | JH3J91CA |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Vanadium | 101 | (80 - 120) | SW846 6010B | 11/06-11/08/06 | JH3J91CC |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Zinc | 108 | (80 - 120) | SW846 6010B | 11/06-11/08/06 | JH3J91CD |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Chromium | 100 | (85 - 120) | SW846 6010B | 11/06-11/08/06 | JH3J91CE |
| | | Dilution Factor: 1 | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |

**LCS Lot-Sample#:** E6K060000-448 **Prep Batch #...:** 6310448

| | | | | | |
|---|---|---|---|---|---|
| Mercury | 111 | (80 - 115) | SW846 7471A | 11/08-11/09/06 | JH3LF1AC |
| | | Dilution Factor: 1 | Analysis Time..: 18:06 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M04 | | | |

**NOTE(S):**

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

## LABORATORY CONTROL SAMPLE DATA REPORT

### TOTAL Metals

**Client Lot #...:** E6K030407 **Matrix.....:** SOLID

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCNT RECVRY | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| **LCS Lot-Sample#:** E6K060000-441 **Prep Batch #...:** 6310441 | | | | | | | |
| Aluminum | 200 | 205 | mg/kg | 102 | SW846 6010B | 11/06-11/08/06 | JH3J91AV |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Antimony | 50.0 | 51.1 | mg/kg | 102 | SW846 6010B | 11/06-11/08/06 | JH3J91AW |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Arsenic | 200 | 204 | mg/kg | 102 | SW846 6010B | 11/06-11/08/06 | JH3J91AX |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Barium | 200 | 206 | mg/kg | 103 | SW846 6010B | 11/06-11/08/06 | JH3J91A0 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Beryllium | 5.00 | 5.23 | mg/kg | 105 | SW846 6010B | 11/06-11/08/06 | JH3J91A1 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Cadmium | 5.00 | 4.95 | mg/kg | 99 | SW846 6010B | 11/06-11/08/06 | JH3J91A2 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Cobalt | 50.0 | 48.9 | mg/kg | 98 | SW846 6010B | 11/06-11/08/06 | JH3J91A3 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Copper | 25.0 | 25.8 | mg/kg | 103 | SW846 6010B | 11/06-11/08/06 | JH3J91A4 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Lead | 50.0 | 50.4 | mg/kg | 101 | SW846 6010B | 11/06-11/08/06 | JH3J91A5 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Molybdenum | 100 | 101 | mg/kg | 101 | SW846 6010B | 11/06-11/08/06 | JH3J91A6 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |

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## LABORATORY CONTROL SAMPLE DATA REPORT

### TOTAL Metals

**Client Lot #...:** E6K030407 **Matrix.....:** SOLID

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCNT RECVRY | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| Nickel | 50.0 | 49.5 | mg/kg | 99 | SW846 6010B | 11/06-11/08/06 | JH3J91A7 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Selenium | 200 | 200 | mg/kg | 100 | SW846 6010B | 11/06-11/08/06 | JH3J91A8 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Silver | 5.00 | 5.10 | mg/kg | 102 | SW846 6010B | 11/06-11/08/06 | JH3J91A9 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Thallium | 200 | 202 | mg/kg | 101 | SW846 6010B | 11/06-11/08/06 | JH3J91CA |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Vanadium | 50.0 | 50.6 | mg/kg | 101 | SW846 6010B | 11/06-11/08/06 | JH3J91CC |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Zinc | 50.0 | 54.1 | mg/kg | 108 | SW846 6010B | 11/06-11/08/06 | JH3J91CD |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Chromium | 20.0 | 19.9 | mg/kg | 100 | SW846 6010B | 11/06-11/08/06 | JH3J91CE |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |

**LCS Lot-Sample#:** E6K060000-448 **Prep Batch #...:** 6310448

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mercury | 0.833 | 0.922 | mg/kg | 111 | SW846 7471A | 11/08-11/09/06 | JH3LF1AC |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:06 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M04 | | | | |

**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 #...: | E6K030407 | Work Order #...: | JH0EE1A1-MS | Matrix.....: | SO |
| MS Lot-Sample #: | E6K030407-002 | | JH0EE1A2-MSD | | |
| Date Sampled...: | 11/02/06 16:44 | Date Received..: | 11/03/06 08:55 | MS Run #.....: | 6312057 |
| Prep Date.....: | 11/07/06 | Analysis Date..: | 11/07/06 | | |
| Prep Batch #...: | 6312127 | Analysis Time..: | 15:11 | | |
| Dilution Factor: | 0.97 | Analyst ID.....: | 004648 | Instrument ID..: | MSO |

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| Benzene | 103 | (70 - 130) | | | SW846 8260B |
| | 102 | (70 - 130) | 0.96 | (0-30) | SW846 8260B |
| Bromodichloromethane | 111 | (70 - 135) | | | SW846 8260B |
| | 110 | (70 - 135) | 1.1 | (0-30) | SW846 8260B |
| Carbon tetrachloride | 103 | (60 - 140) | | | SW846 8260B |
| | 103 | (60 - 140) | 1.2 | (0-30) | SW846 8260B |
| m-Xylene & p-Xylene | 89 | (70 - 130) | | | SW846 8260B |
| | 88 | (70 - 130) | 1.6 | (0-30) | SW846 8260B |
| Chloroform | 102 | (70 - 130) | | | SW846 8260B |
| | 101 | (70 - 130) | 1.2 | (0-30) | SW846 8260B |
| o-Xylene | 91 | (70 - 130) | | | SW846 8260B |
| | 90 | (70 - 130) | 1.0 | (0-30) | SW846 8260B |
| 1,1-Dichloroethane | 105 | (70 - 130) | | | SW846 8260B |
| | 105 | (70 - 130) | 2.3 | (0-30) | SW846 8260B |
| 1,2-Dichloroethane | 107 | (70 - 130) | | | SW846 8260B |
| | 106 | (70 - 130) | 1.0 | (0-30) | SW846 8260B |
| cis-1,2-Dichloroethene | 107 | (70 - 130) | | | SW846 8260B |
| | 107 | (70 - 130) | 2.6 | (0-30) | SW846 8260B |
| 1,1-Dichloroethene | 95 | (50 - 160) | | | SW846 8260B |
| | 110 | (50 - 160) | 16 | (0-30) | SW846 8260B |
| Ethylbenzene | 89 | (70 - 130) | | | SW846 8260B |
| | 90 | (70 - 130) | 2.5 | (0-30) | SW846 8260B |
| Tetrachloroethene | 87 | (70 - 130) | | | SW846 8260B |
| | 88 | (70 - 130) | 2.7 | (0-30) | SW846 8260B |
| Toluene | 88 | (70 - 130) | | | SW846 8260B |
| | 87 | (70 - 130) | 0.46 | (0-30) | SW846 8260B |
| 1,1,1-Trichloroethane | 102 | (65 - 140) | | | SW846 8260B |
| | 102 | (65 - 140) | 2.6 | (0-30) | SW846 8260B |
| Trichloroethene | 106 | (70 - 135) | | | SW846 8260B |
| | 107 | (70 - 135) | 2.5 | (0-30) | SW846 8260B |
| Vinyl chloride | 92 | (40 - 160) | | | SW846 8260B |
| | 93 | (40 - 160) | 3.4 | (0-35) | SW846 8260B |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 78 | (60 - 125) |
| | 77 | (60 - 125) |
| 1,2-Dichloroethane-d4 | 93 | (55 - 125) |
| | 95 | (55 - 125) |

(Continued on next page)

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K030407 **Work Order #...:** JH0EE1A1-MS **Matrix.....:** SO
**MS Lot-Sample #:** E6K030407-002 JH0EE1A2-MSD

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Toluene-d8 | 82 | (60 - 125) |
| | 82 | (60 - 125) |

**NOTE(S):**

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

Bold print denotes control parameters



BOE-C6-0186875

## MATRIX SPIKE SAMPLE DATA REPORT

### GC/MS Volatiles

| | | | | | |
|---|---|---|---|---|---|
| Client Lot #...: | E6K030407 | Work Order #...: | JH0EE1A1-MS | Matrix.....: | SO |
| MS Lot-Sample #: | E6K030407-002 | | JH0EE1A2-MSD | | |
| Date Sampled...: | 11/02/06 16:44 | Date Received..: | 11/03/06 08:55 | MS Run #.....: | 6312057 |
| Prep Date.....: | 11/07/06 | Analysis Date..: | 11/07/06 | | |
| Prep Batch #...: | 6312127 | Analysis Time..: | 15:11 | | |
| Dilution Factor: | 0.97 | Analyst ID.....: | 004648 | Instrument ID..: | MSO |

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD |
|---|---|---|---|---|---|---|---|
| Benzene | ND | 48.9 | 50.4 | ug/kg | 103 | | SW846 8260B |
| | ND | 49.9 | 50.9 | ug/kg | 102 | 0.96 | SW846 8260B |
| Bromodichloromethane | ND | 48.9 | 54.3 | ug/kg | 111 | | SW846 8260B |
| | ND | 49.9 | 55.0 | ug/kg | 110 | 1.1 | SW846 8260B |
| Carbon tetrachloride | ND | 48.9 | 50.6 | ug/kg | 103 | | SW846 8260B |
| | ND | 49.9 | 51.2 | ug/kg | 103 | 1.2 | SW846 8260B |
| m-Xylene & p-Xylene | ND | 97.8 | 86.7 | ug/kg | 89 | | SW846 8260B |
| | ND | 99.8 | 88.1 | ug/kg | 88 | 1.6 | SW846 8260B |
| Chloroform | ND | 48.9 | 49.9 | ug/kg | 102 | | SW846 8260B |
| | ND | 49.9 | 50.5 | ug/kg | 101 | 1.2 | SW846 8260B |
| o-Xylene | ND | 48.9 | 44.4 | ug/kg | 91 | | SW846 8260B |
| | ND | 49.9 | 44.9 | ug/kg | 90 | 1.0 | SW846 8260B |
| 1,1-Dichloroethane | ND | 48.9 | 51.2 | ug/kg | 105 | | SW846 8260B |
| | ND | 49.9 | 52.4 | ug/kg | 105 | 2.3 | SW846 8260B |
| 1,2-Dichloroethane | ND | 48.9 | 52.4 | ug/kg | 107 | | SW846 8260B |
| | ND | 49.9 | 53.0 | ug/kg | 106 | 1.0 | SW846 8260B |
| cis-1,2-Dichloroethene | ND | 48.9 | 52.2 | ug/kg | 107 | | SW846 8260B |
| | ND | 49.9 | 53.6 | ug/kg | 107 | 2.6 | SW846 8260B |
| 1,1-Dichloroethene | ND | 48.9 | 46.6 | ug/kg | 95 | | SW846 8260B |
| | ND | 49.9 | 54.9 | ug/kg | 110 | 16 | SW846 8260B |
| Ethylbenzene | ND | 48.9 | 43.7 | ug/kg | 89 | | SW846 8260B |
| | ND | 49.9 | 44.8 | ug/kg | 90 | 2.5 | SW846 8260B |
| Tetrachloroethene | ND | 48.9 | 42.6 | ug/kg | 87 | | SW846 8260B |
| | ND | 49.9 | 43.8 | ug/kg | 88 | 2.7 | SW846 8260B |
| Toluene | ND | 48.9 | 43.0 | ug/kg | 88 | | SW846 8260B |
| | ND | 49.9 | 43.2 | ug/kg | 87 | 0.46 | SW846 8260B |
| 1,1,1-Trichloroethane | ND | 48.9 | 49.7 | ug/kg | 102 | | SW846 8260B |
| | ND | 49.9 | 51.0 | ug/kg | 102 | 2.6 | SW846 8260B |
| Trichloroethene | ND | 48.9 | 51.9 | ug/kg | 106 | | SW846 8260B |
| | ND | 49.9 | 53.2 | ug/kg | 107 | 2.5 | SW846 8260B |
| Vinyl chloride | ND | 48.9 | 45.1 | ug/kg | 92 | | SW846 8260B |
| | ND | 49.9 | 46.6 | ug/kg | 93 | 3.4 | SW846 8260B |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 78 | (60 - 125) |
| | 77 | (60 - 125) |
| 1,2-Dichloroethane-d4 | 93 | (55 - 125) |
| | 95 | (55 - 125) |

(Continued on next page)

## MATRIX SPIKE SAMPLE DATA REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K030407 **Work Order #...:** JH0EE1A1-MS **Matrix.....:** SO
**MS Lot-Sample #:** E6K030407-002 JH0EE1A2-MSD

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Toluene-d8 | 82 | (60 - 125) |
| | 82 | (60 - 125) |

**NOTE(S):**

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

Bold print denotes control parameters

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC Volatiles

| | | | | | |
|---|---|---|---|---|---|
| **Client Lot #...:** | E6K030407 | **Work Order #...:** | JH0ED1C5-MS | **Matrix.....:** | SO |
| **MS Lot-Sample #:** | E6K030407-001 | | JH0ED1C6-MSD | | |
| **Date Sampled...:** | 11/02/06 16:31 | **Date Received..:** | 11/03/06 08:55 | **MS Run #.....:** | 6312174 |
| **Prep Date.....:** | 11/07/06 | **Analysis Date..:** | 11/07/06 | | |
| **Prep Batch #...:** | 6312334 | **Analysis Time..:** | 22:06 | | |
| **Dilution Factor:** | 1 | **Analyst ID.....:** | 001464 | **Instrument ID..:** | G15 |

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| **TPH (as Gasoline)** | **82** | **(65 - 135)** | | | **SW846 8015B** |
| | **80** | **(65 - 135)** | **2.1** | **(0-30)** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 111 | (70 - 130) |
| | 112 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters

## MATRIX SPIKE SAMPLE DATA REPORT

### GC Volatiles

| | | | | | |
|---|---|---|---|---|---|
| **Client Lot #...:** | E6K030407 | **Work Order #...:** | JH0ED1C5-MS | **Matrix.....:** | SO |
| **MS Lot-Sample #:** | E6K030407-001 | | JH0ED1C6-MSD | | |
| **Date Sampled...:** | 11/02/06 16:31 | **Date Received..:** | 11/03/06 08:55 | **MS Run #.....:** | 6312174 |
| **Prep Date.....:** | 11/07/06 | **Analysis Date..:** | 11/07/06 | | |
| **Prep Batch #...:** | 6312334 | **Analysis Time..:** | 22:06 | | |
| **Dilution Factor:** | 1 | **Analyst ID.....:** | 001464 | **Instrument ID..:** | G15 |

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD |
|---|---|---|---|---|---|---|---|
| **TPH (as Gasoline)** | **ND** | **5.00** | **4.11** | **mg/kg** | **82** | | **SW846 8015B** |
| | **ND** | **5.00** | **4.02** | **mg/kg** | **80** | **2.1** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 111 | (70 - 130) |
| | 112 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC Semivolatiles

| | | | | | |
|---|---|---|---|---|---|
| **Client Lot #...:** | E6K030407 | **Work Order #...:** | JHXF11AG-MS | **Matrix.....:** | SOLID |
| **MS Lot-Sample #:** | E6K030301-001 | | JHXF11AH-MSD | | |
| **Date Sampled...:** | 11/02/06 10:30 | **Date Received..:** | 11/03/06 12:05 | **MS Run #.....:** | 6310152 |
| **Prep Date.....:** | 11/06/06 | **Analysis Date..:** | 11/09/06 | | |
| **Prep Batch #...:** | 6310229 | **Analysis Time..:** | 13:09 | | |
| **Dilution Factor:** | 1 | **% Moisture.....:** | 5.4 | **Analyst ID.....:** | 402479 |
| **Instrument ID..:** | G12 | | | | |

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| **TPH (as Diesel)** | **67** | **(65 - 135)** | | | **SW846 8015B** |
| | **88** | **(65 - 135)** | **27** | **(0-35)** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 74 | (60 - 120) |
| | 94 | (60 - 120) |

**NOTE(S):**

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

Bold print denotes control parameters

## MATRIX SPIKE SAMPLE DATA REPORT

### GC Semivolatiles

| | | | | | |
|---|---|---|---|---|---|
| **Client Lot #...:** | E6K030407 | **Work Order #...:** | JHXF11AG-MS | **Matrix.....:** | SOLID |
| **MS Lot-Sample #:** | E6K030301-001 | | JHXF11AH-MSD | | |
| **Date Sampled...:** | 11/02/06 10:30 | **Date Received..:** | 11/03/06 12:05 | **MS Run #.....:** | 6310152 |
| **Prep Date.....:** | 11/06/06 | **Analysis Date..:** | 11/09/06 | | |
| **Prep Batch #...:** | 6310229 | **Analysis Time..:** | 13:09 | | |
| **Dilution Factor:** | 1 | **% Moisture.....:** | 5.4 | **Analyst ID.....:** | 402479 |
| **Instrument ID..:** | G12 | | | | |

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD |
|---|---|---|---|---|---|---|---|
| **TPH (as Diesel)** | **ND** | **125** | **84.2** | **mg/kg** | **67** | | **SW846 8015B** |
| | **ND** | **125** | **110** | **mg/kg** | **88** | **27** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 74 | (60 - 120) |
| | 94 | (60 - 120) |

**NOTE(S):**

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

Bold print denotes control parameters

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### TOTAL Metals

**Client Lot #...:** E6K030407 **Matrix.....:** SO
**Date Sampled...:** 11/02/06 16:31 **Date Received..:** 11/03/06 08:55

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| **MS Lot-Sample #:** E6K030407-001 **Prep Batch #...:** 6310441 | | | | | | | |
| Aluminum | NC | (70 - 115) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1A1 |
| | NC | (70 - 115) | | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1A2 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Antimony | 18 N | (70 - 115) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1A3 |
| | 19 N | (70 - 115) | 3.8 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1A4 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Arsenic | 73 N | (80 - 115) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1A5 |
| | 77 N | (80 - 115) | 3.9 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1A6 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Barium | 79 N | (80 - 115) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1A7 |
| | 81 | (80 - 115) | 1.8 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1A8 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Beryllium | 75 N | (80 - 120) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1A9 |
| | 78 N | (80 - 120) | 2.7 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1CA |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Cadmium | 69 N | (80 - 120) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1CC |
| | 72 N | (80 - 120) | 3.5 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1CD |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Chromium | 75 N | (85 - 120) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1C3 |
| | 69 N | (85 - 120) | 4.0 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1C4 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |

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BOE-C6-0186882

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### TOTAL Metals

**Client Lot #...:** E6K030407 **Matrix.....:** SO
**Date Sampled...:** 11/02/06 16:31 **Date Received..:** 11/03/06 08:55

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| Cobalt | 73 N | (80 - 120) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1CE |
| | 74 N | (80 - 120) | 0.66 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1CF |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Copper | 83 N | (85 - 120) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1CG |
| | 78 N | (85 - 120) | 3.8 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1CH |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Lead | 74 N | (75 - 115) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1CJ |
| | 75 | (75 - 115) | 0.64 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1CK |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Molybdenum | 71 N | (80 - 120) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1CL |
| | 74 N | (80 - 120) | 4.0 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1CM |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Nickel | 74 N | (80 - 120) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1CN |
| | 74 N | (80 - 120) | 0.24 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1CP |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Selenium | 71 N | (75 - 110) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1CQ |
| | 75 | (75 - 110) | 4.7 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1CR |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Silver | 71 N | (75 - 120) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1CT |
| | 75 | (75 - 120) | 5.3 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1CU |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |

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## MATRIX SPIKE SAMPLE EVALUATION REPORT

### TOTAL Metals

**Client Lot #...:** E6K030407 **Matrix.....:** SO
**Date Sampled...:** 11/02/06 16:31 **Date Received..:** 11/03/06 08:55

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| Thallium | 72 N | (75 - 120) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1CV |
| | 75 | (75 - 120) | 4.0 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1CW |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Vanadium | 79 N | (80 - 120) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1CX |
| | 75 N | (80 - 120) | 2.8 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1C0 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |
| Zinc | 85 | (80 - 120) | | | SW846 6010B | 11/06-11/08/06 | JH0ED1C1 |
| | 79 N | (80 - 120) | 3.8 | (0-20) | SW846 6010B | 11/06-11/08/06 | JH0ED1C2 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:36 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6310281 | | | | | |

**NOTE(S):**

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

NC The recovery and/or RPD were not calculated.

N Spiked analyte recovery is outside stated control limits.

**MATRIX SPIKE SAMPLE DATA REPORT**

**TOTAL Metals**

**Client Lot #...:** E6K030407 **Matrix.....:** SO
**Date Sampled...:** 11/02/06 16:31 **Date Received..:** 11/03/06 08:55

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|---|---|
| **MS Lot-Sample #:** E6K030407-001 **Prep Batch #...:** 6310441 | | | | | | | | | |
| Aluminum | | | | | | | | | |
| | 9750 | 200 | 11900 | mg/kg | | | SW846 6010B | 11/06-11/08/06 | JH0ED1A1 |
| | | | Qualifiers: NC | | | | | | |
| | 9750 | 200 | 10500 | mg/kg | | | SW846 6010B | 11/06-11/08/06 | JH0ED1A2 |
| | | | Qualifiers: NC | | | | | | |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Antimony | | | | | | | | | |
| | ND | 50.0 | 8.92 N | mg/kg | 18 | | SW846 6010B | 11/06-11/08/06 | JH0ED1A3 |
| | ND | 50.0 | 9.26 N | mg/kg | 19 | 3.8 | SW846 6010B | 11/06-11/08/06 | JH0ED1A4 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Arsenic | | | | | | | | | |
| | 5.8 | 200 | 153 N | mg/kg | 73 | | SW846 6010B | 11/06-11/08/06 | JH0ED1A5 |
| | 5.8 | 200 | 159 N | mg/kg | 77 | 3.9 | SW846 6010B | 11/06-11/08/06 | JH0ED1A6 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Barium | | | | | | | | | |
| | 74.9 | 200 | 234 N | mg/kg | 79 | | SW846 6010B | 11/06-11/08/06 | JH0ED1A7 |
| | 74.9 | 200 | 238 | mg/kg | 81 | 1.8 | SW846 6010B | 11/06-11/08/06 | JH0ED1A8 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Beryllium | | | | | | | | | |
| | 0.27 | 5.00 | 4.04 N | mg/kg | 75 | | SW846 6010B | 11/06-11/08/06 | JH0ED1A9 |
| | 0.27 | 5.00 | 4.15 N | mg/kg | 78 | 2.7 | SW846 6010B | 11/06-11/08/06 | JH0ED1CA |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Cadmium | | | | | | | | | |
| | ND | 5.00 | 3.46 N | mg/kg | 69 | | SW846 6010B | 11/06-11/08/06 | JH0ED1CC |
| | ND | 5.00 | 3.58 N | mg/kg | 72 | 3.5 | SW846 6010B | 11/06-11/08/06 | JH0ED1CD |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |

(Continued on next page)



BOE-C6-0186885

## MATRIX SPIKE SAMPLE DATA REPORT

### TOTAL Metals

**Client Lot #...:** E6K030407 **Matrix.....:** SO
**Date Sampled...:** 11/02/06 16:31 **Date Received..:** 11/03/06 08:55

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|---|---|
| Chromium | | | | | | | | | |
| | 15.2 | 20.0 | 30.3 N | mg/kg | 75 | | SW846 6010B | 11/06-11/08/06 | JH0ED1C3 |
| | 15.2 | 20.0 | 29.1 N | mg/kg | 69 | 4.0 | SW846 6010B | 11/06-11/08/06 | JH0ED1C4 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Cobalt | | | | | | | | | |
| | 5.3 | 50.0 | 41.9 N | mg/kg | 73 | | SW846 6010B | 11/06-11/08/06 | JH0ED1CE |
| | 5.3 | 50.0 | 42.2 N | mg/kg | 74 | 0.66 | SW846 6010B | 11/06-11/08/06 | JH0ED1CF |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Copper | | | | | | | | | |
| | 13.2 | 25.0 | 33.9 N | mg/kg | 83 | | SW846 6010B | 11/06-11/08/06 | JH0ED1CG |
| | 13.2 | 25.0 | 32.6 N | mg/kg | 78 | 3.8 | SW846 6010B | 11/06-11/08/06 | JH0ED1CH |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Lead | | | | | | | | | |
| | 3.6 | 50.0 | 40.7 N | mg/kg | 74 | | SW846 6010B | 11/06-11/08/06 | JH0ED1CJ |
| | 3.6 | 50.0 | 41.0 | mg/kg | 75 | 0.64 | SW846 6010B | 11/06-11/08/06 | JH0ED1CK |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Molybdenum | | | | | | | | | |
| | 0.72 | 100 | 71.6 N | mg/kg | 71 | | SW846 6010B | 11/06-11/08/06 | JH0ED1CL |
| | 0.72 | 100 | 74.5 N | mg/kg | 74 | 4.0 | SW846 6010B | 11/06-11/08/06 | JH0ED1CM |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Nickel | | | | | | | | | |
| | 10.3 | 50.0 | 47.2 N | mg/kg | 74 | | SW846 6010B | 11/06-11/08/06 | JH0ED1CN |
| | 10.3 | 50.0 | 47.1 N | mg/kg | 74 | 0.24 | SW846 6010B | 11/06-11/08/06 | JH0ED1CP |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |

(Continued on next page)



BOE-C6-0186886

## MATRIX SPIKE SAMPLE DATA REPORT

### TOTAL Metals

**Client Lot #...:** E6K030407 **Matrix.....:** SO
**Date Sampled...:** 11/02/06 16:31 **Date Received..:** 11/03/06 08:55

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|---|---|
| Selenium | | | | | | | | | |
| | ND | 200 | 143 N | mg/kg | 71 | | SW846 6010B | 11/06-11/08/06 | JH0ED1CQ |
| | ND | 200 | 150 | mg/kg | 75 | 4.7 | SW846 6010B | 11/06-11/08/06 | JH0ED1CR |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Silver | | | | | | | | | |
| | ND | 5.00 | 3.55 N | mg/kg | 71 | | SW846 6010B | 11/06-11/08/06 | JH0ED1CT |
| | ND | 5.00 | 3.74 | mg/kg | 75 | 5.3 | SW846 6010B | 11/06-11/08/06 | JH0ED1CU |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Thallium | | | | | | | | | |
| | 0.60 | 200 | 145 N | mg/kg | 72 | | SW846 6010B | 11/06-11/08/06 | JH0ED1CV |
| | 0.60 | 200 | 151 | mg/kg | 75 | 4.0 | SW846 6010B | 11/06-11/08/06 | JH0ED1CW |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Vanadium | | | | | | | | | |
| | 32.1 | 50.0 | 71.4 N | mg/kg | 79 | | SW846 6010B | 11/06-11/08/06 | JH0ED1CX |
| | 32.1 | 50.0 | 69.5 N | mg/kg | 75 | 2.8 | SW846 6010B | 11/06-11/08/06 | JH0ED1C0 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |
| Zinc | | | | | | | | | |
| | 33.7 | 50.0 | 76.0 | mg/kg | 85 | | SW846 6010B | 11/06-11/08/06 | JH0ED1C1 |
| | 33.7 | 50.0 | 73.1 N | mg/kg | 79 | 3.8 | SW846 6010B | 11/06-11/08/06 | JH0ED1C2 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:36 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6310281 | | | | | | |

**NOTE(S):**

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

NC The recovery and/or RPD were not calculated.

N Spiked analyte recovery is outside stated control limits.

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### TOTAL Metals

**Client Lot #...:** E6K030407 **Matrix.....:** SOLID
**Date Sampled...:** 11/01/06 10:00 **Date Received..:** 11/02/06 10:20

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| **MS Lot-Sample #:** E6K020226-001 **Prep Batch #...:** 6310448 | | | | | | | |
| | | | | | | **% Moisture.....:** 35 | |
| Mercury | 84 | (80 - 120) | | | SW846 7471A | 11/08-11/09/06 | JHR3A1A0 |
| | 75 N | (80 - 120) | 7.5 | (0-20) | SW846 7471A | 11/08-11/09/06 | JHR3A1A1 |

Dilution Factor: 1
Analysis Time..: 18:10 Instrument ID..: M04 Analyst ID.....: 021088
MS Run #.....: 6310285

**NOTE(S):**

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

N Spiked analyte recovery is outside stated control limits.

## MATRIX SPIKE SAMPLE DATA REPORT

### TOTAL Metals

**Client Lot #...:** E6K030407 **Matrix.....:** SOLID
**Date Sampled...:** 11/01/06 10:00 **Date Received..:** 11/02/06 10:20

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|---|---|
| **MS Lot-Sample #:** E6K020226-001 **Prep Batch #...:** 6310448 | | | | | | | | | |
| | | | | | | | | **% Moisture.....:** 35 | |
| Mercury | | | | | | | | | |
| | 0.066 | 0.167 | 0.207 | mg/kg | 84 | | SW846 7471A | 11/08-11/09/06 | JHR3A1A0 |
| | 0.066 | 0.167 | 0.192 N | mg/kg | 75 | 7.5 | SW846 7471A | 11/08-11/09/06 | JHR3A1A1 |

Dilution Factor: 1
Analysis Time..: 18:10 Instrument ID..: M04 Analyst ID.....: 021088
MS Run #.....: 6310285

**NOTE(S):**

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

N Spiked analyte recovery is outside stated control limits.

SEVERN TRENT STL

**STL Los Angeles**
1721 South Grand Avenue
Santa Ana, CA 92705

Tel: 714 258 8610 Fax: 714 258 0921
www.stl-inc.com

November 20, 2006

STL LOT NUMBER: **E6K100363**
PO/CONTRACT: 1155.002

MICHAEL RENDINA
Avocet Environmental Inc
16 Technology Drive, Suite 154
Irvine, CA 92618-2327

Dear MICHAEL RENDINA,

This report contains the analytical results for the four samples received under chain of custody by STL Los Angeles on November 10, 2006. These samples are associated with your The Boeing Company - C6 Facility project.

STL Los Angeles certifies that the test results provided in this report meet all the requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of the report. NELAP Certification Number for STL Los Angeles is 01118CA/E87652.

Any matrix related anomaly is footnoted within the report. A cooler receipt temperature between 2-6 degrees Celsius is within EPA acceptance criteria. The temperature(s) of the coolers received for this project can be found on the Project Receipt Checklist.

The preliminary report was sent today, November 20, 2006.

This report shall not be reproduced except in full, without the written approval of the laboratory.

This report contains 000050 pages.



BOE-C6-0186890

## CASE NARRATIVE

Historical control limits for the LCS are used to define the estimate of uncertainty for a method.

All applicable quality control procedures met method-specified acceptance criteria.

If you have any questions, please feel free to call me at 714.258.8610.

Sincerely,

Trupti Mistry
Project Manager
CC: Project File



BOE-C6-0186891

E6K100363

# CHAIN OF CUSTODY RECORD

AVO110906A

AVOCET ENVIRONMENTAL, INC.
16 Technology Drive, Suite 154
Irvine, California 92618-2327
(949) 296-0977
FAX (949) 296-0978

| | |
|---|---|
| Project Name | The Boeing Company - C6 Facility |
| Project No. | 1155.002 |
| Location | Los Angeles, CA |
| Project Manager | Michael A. Rendina |
| email: | mrendina@avocetenv.com |
| Sheet | 1 of 1 |

| Sample Identification | Sample Date | Sample Time | Matrix | Samplers Initials | Number of containers | TPH by EPA Method 8015B-CC | VOCs by EPA Method 8260B | Title 22 Metals by EPA 6010 (Mercury by 7471A) | | | | | | | | | | Hold | Rem. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bin 3W | 11/9/2006 | 7:57 | SS | MAR | 1 | x | x | x | | | | | | | | | | | 5-day TAT |
| Bin 3E | 11/9/2006 | 7:58 | SS | MAR | 1 | x | x | x | | | | | | | | | | | 5-day TAT |
| Bin 3N | 11/9/2006 | 7:59 | SS | MAR | 1 | x | x | x | | | | | | | | | | | 5-day TAT |

Please composite samples Bin 3W, 3E, and 3N into one sample and test one sample Bin 3-composite for TPH, VOCs, and metals. Do not send confirmation or results to Boeing EDMS. Thanks, Mike Rendina

| | Signature | Company | Date | Time |
|---|---|---|---|---|
| Collected by | [signature] | Avocet Environmental, Inc. | 11/9/06 | 13:30 |
| Relinquished by | [signature] | Avocet Environmental, Inc. | 11/10/06 | |
| Received by | [signature] | STL | 11/10/06 | 1435 |
| Relinquished by | [signature] | STL | 11/10/06 | 1515 |
| Received by | [signature] | STL | 11/10/06 | 1515 |
| Relinquished by | | | | |
| Received by | | | | |

Temp — 5.7 - 0.2 = 5.5



BOE-C6-0186892

# STL LOS ANGELES - PROJECT RECEIPT CHECKLIST Date: 11/10/06

**Single Cooler Only**

LIMS Lot #: E6K-100363 Quote #: 73051

Client Name: Avcat Project: Boeing C6 facility

Received by: SG Date/Time Received: 11/10/06 1315

Delivered by : ☐ Client ☒ STL ☐ DHL ☐ Fed Ex ☐ UPS ☐ Other

**********

| | Initial / Date |
|---|---|
| Custody Seal Status Cooler: ☐Intact ☐Broken ☒None | SG 11/10/06 |
| Custody Seal Status Samples: ☐Intact ☐Broken ☒None | |
| Custody Seal #(s): N/A ☒No Seal # | |
| Sampler Signature on COC ☐ Yes ☐No ☒N/A | |
| IR Gun # B Correction Factor -.2 °C IR passed daily verification ☒ Yes ☐No | |
| Temperature - **BLANK** 5.7 °C - .2 CF = 5.5 °C ...**Cooler #1 ID** N/A | |
| Temperature – **COOLER** ( °C °C °C °C) = avg °C - .2 CF = °C | |
| Samples outside temperature criteria but received within 6 hours of final sampling ☐ Yes ☒N/A | |
| Sample Container(s): ☒ STL-LA ☐ Client | |
| pH measured: ☐ Yes ☐ Anomaly (if checked, notify lab and file NCM) ☒ N/A | |
| Anomalies: ☒No ☐Yes – complete CUR and Create NCM | |

Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times. ☒ Yes ☐ No

Labeled by: SG

**********

Turn Around Time: ☐RUSH–24HR ☐RUSH–48HR ☒RUSH–72HR ☐NORMAL 5 day SG 11/10/06

********** LEAVE NO BLANK SPACES ; USE N/A **********

**Headspace Anomaly** ☐YES ☒N/A SG 11/10/06

| Lab ID | Container(s) # | Headspace | Lab ID | Container(s) # | Headspace |
|---|---|---|---|---|---|
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |

LIMS Lot # E6K100363

**PROJECT RECEIPT CHECKLIST Cont'd**

| Fraction | 1-3 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VOAH | | | | | | | | | | | | | | |
| 4oz CGJ | 1 | | | | | | | | | | | | | |
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11/10/06

H: HCL, S: H2SO4, N: HNO3, V: VOA, SL, Sleeve, E: Encore, PB: Poly Bottle, CGB: Clear Glass Bottle, AGJ: Amber Glass Jar, T: Terracore
AGB: Amber Glass Bottle, n/f/l:HNO3-Lab filtered, n/f:HNO3-Field filtered, znna: Zinc Acetate/Sodium Hydroxide, Na2s2o3: sodium thiosulfate

## Condition Upon Receipt Anomaly Form

**Anomalies** ☐YES ☒N/A 11/10/06

- **COOLERS**
  - ☐ Not Received (received COC only)
  - ☐ Leaking
  - ☐ Other:
- **CUSTODY SEALS (COOLER(S)**
  - ☐ None
  - ☐ Not Intact
  - ☐ Other
- **CONTAINER(S)**
  - ☐ None
  - ☐ Not Intact
  - ☐ Other
- **TEMPERATURE (SPECS 4 ± 2°C)**
  - ☐ Cooler Temp(s)
  - ☐ Temperature Blank(s)
- **CHAIN OF CUSTODY (COC)**
  - ☐ Not relinquished by Client; No date/time relinquished
  - ☐ Incomplete information provided
  - ☐ Other ☐ COC not received – notify PM
- **CONTAINERS**
  - ☐ Leaking ☐ Voa Vials with Bubbles > 6mm
  - ☐ Broken
  - ☐ Extra
  - ☐ Without Labels
  - ☐ Other:
- **LABELS**
  - ☐ Not the same ID/info as in COC
  - ☐ Incomplete Information
  - ☐ Markings/Info illegible
  - ☐ Torn
- **SAMPLES**
  - ☐ Samples NOT RECEIVED but listed on COC
  - ☐ Samples received but NOT LISTED on COC
  - ☐ Logged based on Label Information
  - ☐ Logged based on info from other samples on COC
  - ☐ Logged according to Work Plan
  - ☐ Logged on HOLD UNTIL FURTHER NOTICE
  - ☐ Will be noted on COC--Client to send samples with new COC
  - ☐ Mislabeled as to tests, preservatives, etc.
  - ☐ Holding time expired – list sample ID and test
  - ☐ Improper container used
  - ☐ Not preserved/Improper preservative used
  - ☐ Improper pH _____ Lab to preserve sample and document
  - ☐ Insufficient quantities for analysis ☐ Other

Comments:

☐ Corrective Action Implemented:

☐ Client Informed: verbally on _____ By: _____ ☐ In writing on _____ By: _____

☐ Sample(s) on hold until: _____ ☐ Sample(s) processed "as is."

**Logged by/Date:** Logged in by other STL ☐ ____ 11/10/06

**PM Review/Date:**

STL

# Analytical Report

# ANALYTICAL REPORT

**PROJECT NO. 1155.002**

**The Boeing Co - C6 Facility**

**Lot #: E6K100363**

**MICHAEL RENDINA**

**Avocet Environmental Inc**

**SEVERN TRENT LABORATORIES, INC.**

**Trupti Mistry**
Project Manager

**November 20, 2006**

# EXECUTIVE SUMMARY - Detection Highlights

**E6K100363**

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|---|---|---|---|---|
| **COMPOSITE 1,2, AND 3 11/09/06 07:57 004** | | | | |
| Mercury | 0.031 B | 0.10 | mg/kg | SW846 7471A |
| Aluminum | 11700 | 20.0 | mg/kg | SW846 6010B |
| Arsenic | 9.7 | 1.0 | mg/kg | SW846 6010B |
| Barium | 88.3 J | 2.0 | mg/kg | SW846 6010B |
| Beryllium | 0.48 B,J | 0.50 | mg/kg | SW846 6010B |
| Cobalt | 7.3 | 5.0 | mg/kg | SW846 6010B |
| Chromium | 17.8 | 1.0 | mg/kg | SW846 6010B |
| Copper | 17.0 | 2.5 | mg/kg | SW846 6010B |
| Molybdenum | 0.96 B | 4.0 | mg/kg | SW846 6010B |
| Nickel | 12.1 | 4.0 | mg/kg | SW846 6010B |
| Lead | 3.4 | 0.50 | mg/kg | SW846 6010B |
| Thallium | 0.83 B | 1.0 | mg/kg | SW846 6010B |
| Vanadium | 37.1 | 5.0 | mg/kg | SW846 6010B |
| Zinc | 42.4 | 2.0 | mg/kg | SW846 6010B |



BOE-C6-0186897

# METHODS SUMMARY

**E6K100363**

| PARAMETER | ANALYTICAL METHOD | PREPARATION METHOD |
|---|---|---|
| Extractable Petroleum Hydrocarbons | SW846 8015B | SANA AUTO-SHAKE |
| Inductively Coupled Plasma (ICP) Metals | SW846 6010B | SW846 3050B |
| Mercury in Solid Waste (Manual Cold-Vapor) | SW846 7471A | SW846 7471A |
| Volatile Organics by GC/MS | SW846 8260B | SW846 5030B/826 |
| Volatile Petroleum Hydrocarbons | SW846 8015B | SW846 5030 |

**References:**

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



BOE-C6-0186898

# SAMPLE SUMMARY

**E6K100363**

| WO # | SAMPLE# | CLIENT SAMPLE ID | SAMPLED DATE | SAMP TIME |
|---|---|---|---|---|
| JJG38 | 004 | COMPOSITE 1,2, AND 3 | 11/09/06 | 07:57 |

**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.



BOE-C6-0186899

**Avocet Environmental Inc**

**Client Sample ID: COMPOSITE 1,2, AND 3**

**GC/MS Volatiles**

**Lot-Sample #...:** E6K100363-004 **Work Order #...:** JJG381AD **Matrix.....:** SO
**Date Sampled...:** 11/09/06 07:57 **Date Received..:** 11/10/06 15:15 **MS Run #.....:** 6318188
**Prep Date.....:** 11/13/06 **Analysis Date..:** 11/13/06
**Prep Batch #...:** 6318282 **Analysis Time..:** 10:21
**Dilution Factor:** 0.99
**% Moisture.....:** **Analyst ID.....:** 004648 **Instrument ID..:** MSO
**Method.....:** SW846 8260B

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| Acetone | ND | 25 | ug/kg | 11 |
| Acrolein | ND | 99 | ug/kg | 30 |
| Acrylonitrile | ND | 50 | ug/kg | 40 |
| Benzene | ND | 5.0 | ug/kg | 2.0 |
| Bromobenzene | ND | 5.0 | ug/kg | 2.0 |
| Bromochloromethane | ND | 5.0 | ug/kg | 0.99 |
| Bromodichloromethane | ND | 5.0 | ug/kg | 0.99 |
| Bromoform | ND | 5.0 | ug/kg | 2.5 |
| Bromomethane | ND | 9.9 | ug/kg | 3.0 |
| t-Butanol | ND | 99 | ug/kg | 50 |
| 2-Butanone | ND | 25 | ug/kg | 11 |
| n-Butylbenzene | ND | 5.0 | ug/kg | 2.0 |
| sec-Butylbenzene | ND | 5.0 | ug/kg | 2.0 |
| tert-Butylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Carbon disulfide | ND | 5.0 | ug/kg | 3.0 |
| Carbon tetrachloride | ND | 5.0 | ug/kg | 0.99 |
| Chlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| Dibromochloromethane | ND | 5.0 | ug/kg | 0.99 |
| Chloroethane | ND | 9.9 | ug/kg | 2.0 |
| 2-Chloroethyl vinyl ether | ND | 9.9 | ug/kg | 5.0 |
| Chloroform | ND | 5.0 | ug/kg | 0.99 |
| Chloromethane | ND | 9.9 | ug/kg | 3.0 |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | 2.0 |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | 2.0 |
| 1,2-Dibromo-3-chloro-propane | ND | 9.9 | ug/kg | 3.0 |
| 1,2-Dibromoethane | ND | 5.0 | ug/kg | 2.5 |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| Dichlorodifluoromethane | ND | 9.9 | ug/kg | 2.0 |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | 0.99 |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | 0.99 |
| cis-1,2-Dichloroethene | ND | 5.0 | ug/kg | 2.0 |
| trans-1,2-Dichloroethene | ND | 5.0 | ug/kg | 2.0 |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | 2.0 |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | 0.99 |

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BOE-C6-0186900

**Avocet Environmental Inc**

**Client Sample ID: COMPOSITE 1,2, AND 3**

**GC/MS Volatiles**

**Lot-Sample #...:** E6K100363-004 **Work Order #...:** JJG381AD **Matrix.....:** SO

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | 2.0 |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | 0.99 |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | 2.0 |
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | 0.99 |
| Tert-amyl methyl ether | ND | 9.9 | ug/kg | 2.0 |
| Tert-butyl ethyl ether | ND | 9.9 | ug/kg | 0.99 |
| Ethylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | 2.0 |
| 2-Hexanone | ND | 25 | ug/kg | 12 |
| Iodomethane | ND | 9.9 | ug/kg | 9.9 |
| Isopropylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Isopropyl ether | ND | 9.9 | ug/kg | 0.99 |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | 2.0 |
| Methylene chloride | ND | 5.0 | ug/kg | 2.0 |
| 4-Methyl-2-pentanone | ND | 25 | ug/kg | 9.9 |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | 0.99 |
| n-Propylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Styrene | ND | 9.9 | ug/kg | 2.0 |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | 2.0 |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | 2.5 |
| Tetrachloroethene | ND | 5.0 | ug/kg | 2.0 |
| Tetrahydrofuran | ND | 20 | ug/kg | 2.0 |
| Toluene | ND | 5.0 | ug/kg | 2.0 |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | 2.0 |
| 1,2,4-Trichloro-benzene | ND | 5.0 | ug/kg | 2.0 |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | 0.99 |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | 2.0 |
| Trichloroethene | ND | 5.0 | ug/kg | 2.0 |
| Trichlorofluoromethane | ND | 9.9 | ug/kg | 2.0 |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | 2.5 |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | 2.0 |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | 2.0 |
| Vinyl acetate | ND | 9.9 | ug/kg | 5.0 |
| Vinyl chloride | ND | 9.9 | ug/kg | 2.5 |
| Xylenes (total) | ND | 5.0 | ug/kg | 2.0 |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 74 | (60 - 125) |
| 1,2-Dichloroethane-d4 | 83 | (55 - 125) |
| Toluene-d8 | 76 | (60 - 125) |

**Avocet Environmental Inc**

**Client Sample ID: COMPOSITE 1,2, AND 3**

**GC Volatiles**

| | | | | | |
|---|---|---|---|---|---|
| **Lot-Sample #...:** | E6K100363-004 | **Work Order #...:** | JJG381AC | **Matrix.....:** | SO |
| **Date Sampled...:** | 11/09/06 07:57 | **Date Received..:** | 11/10/06 15:15 | **MS Run #.....:** | 6319235 |
| **Prep Date.....:** | 11/14/06 | **Analysis Date..:** | 11/14/06 | | |
| **Prep Batch #...:** | 6319372 | **Analysis Time..:** | 12:08 | | |
| **Dilution Factor:** | 1 | | | | |
| **% Moisture.....:** | | **Analyst ID.....:** | 001464 | **Instrument ID..:** | G15 |
| | | **Method.....:** | SW846 8015B | | |

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| C6-C8 | ND | 1.0 | mg/kg | 0.20 |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 83 | (70 - 130) |

**Avocet Environmental Inc**

**Client Sample ID: COMPOSITE 1,2, AND 3**

**GC Semivolatiles**

| | | | | | |
|---|---|---|---|---|---|
| **Lot-Sample #...:** | E6K100363-004 | **Work Order #...:** | JJG381AA | **Matrix.....:** | SO |
| **Date Sampled...:** | 11/09/06 07:57 | **Date Received..:** | 11/10/06 15:15 | **MS Run #.....:** | 6317246 |
| **Prep Date.....:** | 11/13/06 | **Analysis Date..:** | 11/14/06 | | |
| **Prep Batch #...:** | 6317408 | **Analysis Time..:** | 13:24 | | |
| **Dilution Factor:** | 1 | | | | |
| **% Moisture.....:** | | **Analyst ID.....:** | 402479 | **Instrument ID..:** | G12 |
| | | **Method.....:** | SW846 8015B | | |

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| C8-C9 | ND | 5.0 | mg/kg | 2.0 |
| C10-C11 | ND | 5.0 | mg/kg | 2.0 |
| C12-C13 | ND | 5.0 | mg/kg | 2.0 |
| C14-C15 | ND | 5.0 | mg/kg | 2.0 |
| C16-C17 | ND | 5.0 | mg/kg | 2.0 |
| C18-C19 | ND | 5.0 | mg/kg | 2.0 |
| C20-C23 | ND | 5.0 | mg/kg | 2.0 |
| C24-C27 | ND | 5.0 | mg/kg | 2.0 |
| C28-C31 | ND | 5.0 | mg/kg | 2.0 |
| C32-C35 | ND | 5.0 | mg/kg | 2.0 |
| C36-C39 | ND | 5.0 | mg/kg | 2.0 |
| C40+ | ND | 5.0 | mg/kg | 2.0 |
| Total Carbon Chain Range | ND | 5.0 | mg/kg | 2.0 |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 77 | (60 - 120) |

**Avocet Environmental Inc**

**Client Sample ID: COMPOSITE 1,2, AND 3**

**TOTAL Metals**

**Lot-Sample #...:** E6K100363-004 **Matrix.....:** SO
**Date Sampled...:** 11/09/06 07:57 **Date Received..:** 11/10/06 15:15
**% Moisture.....:**

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Prep Batch #...:** 6314542 | | | | | | |
| **Mercury** | **0.031 B** | **0.10** | **mg/kg** | **SW846 7471A** | **11/13-11/14/06** | **JJG381A0** |
| | | Dilution Factor: 1 | | Analysis Time..: 13:43 | Analyst ID.....: 000023 | |
| | | Instrument ID..: M04 | | MS Run #.....: 6314315 | MDL.....: 0.020 | |
| **Prep Batch #...:** 6317548 | | | | | | |
| Silver | ND | 1.0 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJG381AT |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.10 | |
| **Aluminum** | **11700** | **20.0** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJG381AE** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 20.0 | |
| **Arsenic** | **9.7** | **1.0** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJG381AG** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.40 | |
| **Barium** | **88.3 J** | **2.0** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJG381AH** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.10 | |
| **Beryllium** | **0.48 B,J** | **0.50** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJG381AJ** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.060 | |
| Cadmium | ND | 0.50 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJG381AK |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.080 | |
| **Cobalt** | **7.3** | **5.0** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJG381AL** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.20 | |
| **Chromium** | **17.8** | **1.0** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJG381AX** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.20 | |

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**Avocet Environmental Inc**

**Client Sample ID: COMPOSITE 1,2, AND 3**

**TOTAL Metals**

**Lot-Sample #...:** E6K100363-004 **Matrix.....:** SO

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Copper** | **17.0** | **2.5** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJG381AM** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.40 | |
| **Molybdenum** | **0.96 B** | **4.0** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJG381AP** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.30 | |
| **Nickel** | **12.1** | **4.0** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJG381AQ** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.30 | |
| **Lead** | **3.4** | **0.50** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJG381AN** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.25 | |
| Antimony | ND | 6.0 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJG381AF |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.60 | |
| Selenium | ND | 0.50 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJG381AR |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.50 | |
| **Thallium** | **0.83 B** | **1.0** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJG381AU** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.50 | |
| **Vanadium** | **37.1** | **5.0** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJG381AV** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 0.20 | |
| **Zinc** | **42.4** | **2.0** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJG381AW** |
| | | Dilution Factor: 1 | | Analysis Time..: 19:02 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6317320 | MDL.....: 1.0 | |

**NOTE(S):**

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

STL

# QA/QC

# QC DATA ASSOCIATION SUMMARY

**E6K100363**

Sample Preparation and Analysis Control Numbers

| SAMPLE# | MATRIX | ANALYTICAL METHOD | LEACH BATCH # | PREP BATCH # | MS RUN# |
|---|---|---|---|---|---|
| 004 | SO | SW846 8015B | | 6317408 | 6317246 |
| | SO | SW846 8015B | | 6319372 | 6319235 |
| | SO | SW846 7471A | | 6314542 | 6314315 |
| | SO | SW846 8260B | | 6318282 | 6318188 |
| | SO | SW846 6010B | | 6317548 | 6317320 |



BOE-C6-0186907

## METHOD BLANK REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K100363
**MB Lot-Sample #:** E6K140000-282

**Work Order #...:** JJM1Q1AA
**Prep Date.....:** 11/13/06
**Prep Batch #...:** 6318282
**Analyst ID.....:** 004648

**Matrix.....:** SOLID
**Analysis Time..:** 09:41
**Instrument ID..:** MSO

**Analysis Date..:** 11/13/06
**Dilution Factor:** 1

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 25 | ug/kg | SW846 8260B |
| Acrolein | ND | 100 | ug/kg | SW846 8260B |
| Acrylonitrile | ND | 50 | ug/kg | SW846 8260B |
| Benzene | ND | 5.0 | ug/kg | SW846 8260B |
| Bromobenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Bromochloromethane | ND | 5.0 | ug/kg | SW846 8260B |
| Bromodichloromethane | ND | 5.0 | ug/kg | SW846 8260B |
| Bromoform | ND | 5.0 | ug/kg | SW846 8260B |
| Bromomethane | ND | 10 | ug/kg | SW846 8260B |
| t-Butanol | ND | 100 | ug/kg | SW846 8260B |
| 2-Butanone | ND | 25 | ug/kg | SW846 8260B |
| n-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| sec-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| tert-Butylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Carbon disulfide | ND | 5.0 | ug/kg | SW846 8260B |
| Carbon tetrachloride | ND | 5.0 | ug/kg | SW846 8260B |
| Chlorobenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Dibromochloromethane | ND | 5.0 | ug/kg | SW846 8260B |
| Chloroethane | ND | 10 | ug/kg | SW846 8260B |
| 2-Chloroethyl vinyl ether | ND | 10 | ug/kg | SW846 8260B |
| Chloroform | ND | 5.0 | ug/kg | SW846 8260B |
| Chloromethane | ND | 10 | ug/kg | SW846 8260B |
| 2-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260B |
| 4-Chlorotoluene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2-Dibromo-3-chloro-propane | ND | 10 | ug/kg | SW846 8260B |
| 1,2-Dibromoethane | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,3-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,4-Dichlorobenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Dichlorodifluoromethane | ND | 10 | ug/kg | SW846 8260B |
| 1,1-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2-Dichloroethane | ND | 5.0 | ug/kg | SW846 8260B |
| cis-1,2-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260B |
| trans-1,2-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,1-Dichloroethene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260B |
| 2,2-Dichloropropane | ND | 5.0 | ug/kg | SW846 8260B |
| cis-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260B |
| trans-1,3-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260B |

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BOE-C6-0186908

## METHOD BLANK REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K100363 **Work Order #...:** JJM1Q1AA **Matrix.....:** SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| 1,1-Dichloropropene | ND | 5.0 | ug/kg | SW846 8260B |
| Tert-amyl methyl ether | ND | 10 | ug/kg | SW846 8260B |
| Tert-butyl ethyl ether | ND | 10 | ug/kg | SW846 8260B |
| Ethylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Hexachlorobutadiene | ND | 5.0 | ug/kg | SW846 8260B |
| 2-Hexanone | ND | 25 | ug/kg | SW846 8260B |
| Iodomethane | ND | 10 | ug/kg | SW846 8260B |
| Isopropylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Isopropyl ether | ND | 10 | ug/kg | SW846 8260B |
| p-Isopropyltoluene | ND | 5.0 | ug/kg | SW846 8260B |
| Methylene chloride | ND | 5.0 | ug/kg | SW846 8260B |
| 4-Methyl-2-pentanone | ND | 25 | ug/kg | SW846 8260B |
| Methyl tert-butyl ether | ND | 5.0 | ug/kg | SW846 8260B |
| n-Propylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Styrene | ND | 10 | ug/kg | SW846 8260B |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260B |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | ug/kg | SW846 8260B |
| Tetrachloroethene | ND | 5.0 | ug/kg | SW846 8260B |
| Tetrahydrofuran | ND | 20 | ug/kg | SW846 8260B |
| Toluene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2,4-Trichloro-benzene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,1,1-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260B |
| 1,1,2-Trichloroethane | ND | 5.0 | ug/kg | SW846 8260B |
| Trichloroethene | ND | 5.0 | ug/kg | SW846 8260B |
| Trichlorofluoromethane | ND | 10 | ug/kg | SW846 8260B |
| 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | SW846 8260B |
| Vinyl acetate | ND | 10 | ug/kg | SW846 8260B |
| Vinyl chloride | ND | 10 | ug/kg | SW846 8260B |
| Xylenes (total) | ND | 5.0 | ug/kg | SW846 8260B |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 74 | (60 - 125) |
| 1,2-Dichloroethane-d4 | 83 | (55 - 125) |
| Toluene-d8 | 75 | (60 - 125) |

**NOTE(S):**

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



BOE-C6-0186909

## METHOD BLANK REPORT

### GC Volatiles

**Client Lot #...:** E6K100363
**MB Lot-Sample #:** E6K150000-372

**Analysis Date..:** 11/14/06
**Dilution Factor:** 1

**Work Order #...:** JJQA61AA

**Prep Date.....:** 11/14/06
**Prep Batch #...:** 6319372

**Analyst ID.....:** 001464

**Matrix.....:** SOLID

**Analysis Time..:** 11:14
**Instrument ID..:** G15

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| C6-C8 | ND | 1.0 | mg/kg | SW846 8015B |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 94 | (70 - 130) |

**NOTE(S):**

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

## METHOD BLANK REPORT

### GC Semivolatiles

**Client Lot #...:** E6K100363
**MB Lot-Sample #:** E6K130000-408
**Analysis Date..:** 11/14/06
**Dilution Factor:** 1

**Work Order #...:** JJK1V1AA
**Prep Date.....:** 11/13/06
**Prep Batch #...:** 6317408
**Analyst ID.....:** 402479

**Matrix.....:** SOLID
**Analysis Time..:** 13:04
**Instrument ID..:** G12

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| C8-C9 | ND | 5.0 | mg/kg | SW846 8015B |
| C10-C11 | ND | 5.0 | mg/kg | SW846 8015B |
| C12-C13 | ND | 5.0 | mg/kg | SW846 8015B |
| C14-C15 | ND | 5.0 | mg/kg | SW846 8015B |
| C16-C17 | ND | 5.0 | mg/kg | SW846 8015B |
| C18-C19 | ND | 5.0 | mg/kg | SW846 8015B |
| C20-C23 | ND | 5.0 | mg/kg | SW846 8015B |
| C24-C27 | ND | 5.0 | mg/kg | SW846 8015B |
| C28-C31 | ND | 5.0 | mg/kg | SW846 8015B |
| C32-C35 | ND | 5.0 | mg/kg | SW846 8015B |
| C36-C39 | ND | 5.0 | mg/kg | SW846 8015B |
| C40+ | ND | 5.0 | mg/kg | SW846 8015B |
| Total Carbon Chain Range | ND | 5.0 | mg/kg | SW846 8015B |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 80 | (60 - 120) |

**NOTE(S):**

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



BOE-C6-0186911

## METHOD BLANK REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **MB Lot-Sample #:** E6K100000-542 **Prep Batch #...:** 6314542 | | | | | | |
| Mercury | ND | 0.10 | mg/kg | SW846 7471A | 11/13-11/14/06 | JJGEA1AA |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 13:20 | | Analyst ID.....: 000023 | Instrument ID..: M04 | |
| **MB Lot-Sample #:** E6K130000-548 **Prep Batch #...:** 6317548 | | | | | | |
| Aluminum | ND | 20.0 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AA |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Antimony | ND | 6.0 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AC |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Arsenic | ND | 1.0 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AD |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| **Barium** | **0.21 B** | **2.0** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJLGD1AE** |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| **Beryllium** | **0.19 B** | **0.50** | **mg/kg** | **SW846 6010B** | **11/13-11/15/06** | **JJLGD1AF** |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Cadmium | ND | 0.50 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AG |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Chromium | ND | 1.0 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AU |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Cobalt | ND | 5.0 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AH |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Copper | ND | 2.5 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AJ |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |

(Continued on next page)



BOE-C6-0186912

## METHOD BLANK REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SOLID

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| Lead | ND | 0.50 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AK |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Molybdenum | ND | 4.0 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AL |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Nickel | ND | 4.0 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AM |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Selenium | ND | 0.50 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AN |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Silver | ND | 1.0 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AP |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Thallium | ND | 1.0 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AQ |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Vanadium | ND | 5.0 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AR |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Zinc | ND | 2.0 | mg/kg | SW846 6010B | 11/13-11/15/06 | JJLGD1AT |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:48 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |

**NOTE(S):**

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

B Estimated result. Result is less than RL.

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K100363 **Work Order #...:** JJM1Q1AC **Matrix.....:** SOLID
**LCS Lot-Sample#:** E6K140000-282
**Prep Date.....:** 11/13/06 **Analysis Date..:** 11/13/06
**Prep Batch #...:** 6318282 **Analysis Time..:** 09:21
**Dilution Factor:** 1 **Instrument ID..:** MSO
**Analyst ID.....:** 004648

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| **Benzene** | **90** | **(70 - 130)** | **SW846 8260B** |
| **Bromodichloromethane** | **102** | **(70 - 135)** | **SW846 8260B** |
| **Carbon tetrachloride** | **93** | **(60 - 140)** | **SW846 8260B** |
| **m-Xylene & p-Xylene** | **87** | **(70 - 130)** | **SW846 8260B** |
| **Chloroform** | **94** | **(70 - 130)** | **SW846 8260B** |
| **o-Xylene** | **90** | **(70 - 130)** | **SW846 8260B** |
| **1,1-Dichloroethane** | **93** | **(70 - 130)** | **SW846 8260B** |
| **1,2-Dichloroethane** | **99** | **(70 - 130)** | **SW846 8260B** |
| **cis-1,2-Dichloroethene** | **95** | **(70 - 130)** | **SW846 8260B** |
| **1,1-Dichloroethene** | **95** | **(50 - 160)** | **SW846 8260B** |
| **Ethylbenzene** | **88** | **(70 - 130)** | **SW846 8260B** |
| **Tetrachloroethene** | **86** | **(70 - 130)** | **SW846 8260B** |
| **Toluene** | **87** | **(70 - 130)** | **SW846 8260B** |
| **1,1,1-Trichloroethane** | **91** | **(65 - 140)** | **SW846 8260B** |
| **Trichloroethene** | **88** | **(70 - 135)** | **SW846 8260B** |
| **Vinyl chloride** | **91** | **(40 - 160)** | **SW846 8260B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 75 | (60 - 125) |
| 1,2-Dichloroethane-d4 | 81 | (55 - 125) |
| Toluene-d8 | 76 | (60 - 125) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE DATA REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K100363 **Work Order #...:** JJM1Q1AC **Matrix.....:** SOLID
**LCS Lot-Sample#:** E6K140000-282
**Prep Date.....:** 11/13/06 **Analysis Date..:** 11/13/06
**Prep Batch #...:** 6318282 **Analysis Time..:** 09:21
**Dilution Factor:** 1 **Instrument ID..:** MSO
**Analyst ID.....:** 004648

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCENT RECOVERY | METHOD |
|---|---|---|---|---|---|
| **Benzene** | **50.0** | **45.2** | **ug/kg** | **90** | **SW846 8260B** |
| **Bromodichloromethane** | **50.0** | **51.0** | **ug/kg** | **102** | **SW846 8260B** |
| **Carbon tetrachloride** | **50.0** | **46.7** | **ug/kg** | **93** | **SW846 8260B** |
| **m-Xylene & p-Xylene** | **100** | **87.4** | **ug/kg** | **87** | **SW846 8260B** |
| **Chloroform** | **50.0** | **47.1** | **ug/kg** | **94** | **SW846 8260B** |
| **o-Xylene** | **50.0** | **45.1** | **ug/kg** | **90** | **SW846 8260B** |
| **1,1-Dichloroethane** | **50.0** | **46.6** | **ug/kg** | **93** | **SW846 8260B** |
| **1,2-Dichloroethane** | **50.0** | **49.4** | **ug/kg** | **99** | **SW846 8260B** |
| **cis-1,2-Dichloroethene** | **50.0** | **47.4** | **ug/kg** | **95** | **SW846 8260B** |
| **1,1-Dichloroethene** | **50.0** | **47.7** | **ug/kg** | **95** | **SW846 8260B** |
| **Ethylbenzene** | **50.0** | **44.1** | **ug/kg** | **88** | **SW846 8260B** |
| **Tetrachloroethene** | **50.0** | **43.0** | **ug/kg** | **86** | **SW846 8260B** |
| **Toluene** | **50.0** | **43.4** | **ug/kg** | **87** | **SW846 8260B** |
| **1,1,1-Trichloroethane** | **50.0** | **45.7** | **ug/kg** | **91** | **SW846 8260B** |
| **Trichloroethene** | **50.0** | **44.1** | **ug/kg** | **88** | **SW846 8260B** |
| **Vinyl chloride** | **50.0** | **45.5** | **ug/kg** | **91** | **SW846 8260B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 75 | (60 - 125) |
| 1,2-Dichloroethane-d4 | 81 | (55 - 125) |
| Toluene-d8 | 76 | (60 - 125) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC Volatiles

**Client Lot #...:** E6K100363 **Work Order #...:** JJQA61AC **Matrix.....:** SOLID
**LCS Lot-Sample#:** E6K150000-372
**Prep Date.....:** 11/14/06 **Analysis Date..:** 11/14/06
**Prep Batch #...:** 6319372 **Analysis Time..:** 11:41
**Dilution Factor:** 1 **Instrument ID..:** G15
**Analyst ID.....:** 001464

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| **TPH (as Gasoline)** | **90** | **(65 - 135)** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 119 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE DATA REPORT

### GC Volatiles

**Client Lot #...:** E6K100363 **Work Order #...:** JJQA61AC **Matrix.....:** SOLID
**LCS Lot-Sample#:** E6K150000-372
**Prep Date.....:** 11/14/06 **Analysis Date..:** 11/14/06
**Prep Batch #...:** 6319372 **Analysis Time..:** 11:41
**Dilution Factor:** 1 **Instrument ID..:** G15
**Analyst ID.....:** 001464

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCENT RECOVERY | METHOD |
|---|---|---|---|---|---|
| **TPH (as Gasoline)** | **5.00** | **4.52** | **mg/kg** | **90** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 119 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC Semivolatiles

**Client Lot #...:** E6K100363 **Work Order #...:** JJK1V1AC **Matrix.....:** SOLID
**LCS Lot-Sample#:** E6K130000-408
**Prep Date.....:** 11/13/06 **Analysis Date..:** 11/14/06
**Prep Batch #...:** 6317408 **Analysis Time..:** 13:14
**Dilution Factor:** 1 **Instrument ID..:** G12
**Analyst ID.....:** 402479

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| **TPH (as Diesel)** | **99** | **(65 - 135)** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 85 | (60 - 120) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE DATA REPORT

### GC Semivolatiles

**Client Lot #...:** E6K100363 **Work Order #...:** JJK1V1AC **Matrix.....:** SOLID
**LCS Lot-Sample#:** E6K130000-408
**Prep Date.....:** 11/13/06 **Analysis Date..:** 11/14/06
**Prep Batch #...:** 6317408 **Analysis Time..:** 13:14
**Dilution Factor:** 1 **Instrument ID..:** G12
**Analyst ID.....:** 402479

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCENT RECOVERY | METHOD |
|---|---|---|---|---|---|
| **TPH (as Diesel)** | **125** | **124** | **mg/kg** | **99** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 85 | (60 - 120) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SOLID

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|
| **LCS Lot-Sample#:** E6K100000-542 **Prep Batch #...:** 6314542 | | | | | |
| Mercury | 112 | (80 - 115) | SW846 7471A | 11/13-11/14/06 | JJGEA1AC |
| | | Dilution Factor: 1 | Analysis Time..: 13:22 | Analyst ID.....: 000023 | |
| | | Instrument ID..: M04 | | | |
| **LCS Lot-Sample#:** E6K130000-548 **Prep Batch #...:** 6317548 | | | | | |
| Aluminum | 101 | (70 - 115) | SW846 6010B | 11/13-11/15/06 | JJLGD1AV |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Antimony | 102 | (70 - 115) | SW846 6010B | 11/13-11/15/06 | JJLGD1AW |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Arsenic | 104 | (80 - 115) | SW846 6010B | 11/13-11/15/06 | JJLGD1AX |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Barium | 104 | (80 - 115) | SW846 6010B | 11/13-11/15/06 | JJLGD1A0 |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Beryllium | 101 | (80 - 120) | SW846 6010B | 11/13-11/15/06 | JJLGD1A1 |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Cadmium | 98 | (80 - 120) | SW846 6010B | 11/13-11/15/06 | JJLGD1A2 |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Cobalt | 95 | (80 - 120) | SW846 6010B | 11/13-11/15/06 | JJLGD1A3 |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Copper | 104 | (85 - 120) | SW846 6010B | 11/13-11/15/06 | JJLGD1A4 |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Lead | 100 | (75 - 115) | SW846 6010B | 11/13-11/15/06 | JJLGD1A5 |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |

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BOE-C6-0186920

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SOLID

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|
| Molybdenum | 99 | (80 - 120) | SW846 6010B | 11/13-11/15/06 | JJLGD1A6 |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Nickel | 98 | (80 - 120) | SW846 6010B | 11/13-11/15/06 | JJLGD1A7 |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Selenium | 97 | (75 - 110) | SW846 6010B | 11/13-11/15/06 | JJLGD1A8 |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Silver | 108 | (75 - 120) | SW846 6010B | 11/13-11/15/06 | JJLGD1A9 |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Thallium | 100 | (75 - 120) | SW846 6010B | 11/13-11/15/06 | JJLGD1CA |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Vanadium | 97 | (80 - 120) | SW846 6010B | 11/13-11/15/06 | JJLGD1CC |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Zinc | 104 | (80 - 120) | SW846 6010B | 11/13-11/15/06 | JJLGD1CD |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |
| Chromium | 96 | (85 - 120) | SW846 6010B | 11/13-11/15/06 | JJLGD1CE |
| | | Dilution Factor: 1 | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | | |

**NOTE(S):**

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

## LABORATORY CONTROL SAMPLE DATA REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SOLID

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCNT RECVRY | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| **LCS Lot-Sample#:** E6K100000-542 **Prep Batch #...:** 6314542 | | | | | | | |
| Mercury | 0.833 | 0.932 | mg/kg | 112 | SW846 7471A | 11/13-11/14/06 | JJGEA1AC |
| | | | Dilution Factor: 1 | | Analysis Time..: 13:22 | Analyst ID.....: 000023 | |
| | | | Instrument ID..: M04 | | | | |
| **LCS Lot-Sample#:** E6K130000-548 **Prep Batch #...:** 6317548 | | | | | | | |
| Aluminum | 200 | 203 | mg/kg | 101 | SW846 6010B | 11/13-11/15/06 | JJLGD1AV |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Antimony | 50.0 | 51.2 | mg/kg | 102 | SW846 6010B | 11/13-11/15/06 | JJLGD1AW |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Arsenic | 200 | 208 | mg/kg | 104 | SW846 6010B | 11/13-11/15/06 | JJLGD1AX |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Barium | 200 | 207 | mg/kg | 104 | SW846 6010B | 11/13-11/15/06 | JJLGD1A0 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Beryllium | 5.00 | 5.03 | mg/kg | 101 | SW846 6010B | 11/13-11/15/06 | JJLGD1A1 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Cadmium | 5.00 | 4.91 | mg/kg | 98 | SW846 6010B | 11/13-11/15/06 | JJLGD1A2 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Cobalt | 50.0 | 47.6 | mg/kg | 95 | SW846 6010B | 11/13-11/15/06 | JJLGD1A3 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Copper | 25.0 | 26.1 | mg/kg | 104 | SW846 6010B | 11/13-11/15/06 | JJLGD1A4 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Lead | 50.0 | 49.9 | mg/kg | 100 | SW846 6010B | 11/13-11/15/06 | JJLGD1A5 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |

(Continued on next page)

## LABORATORY CONTROL SAMPLE DATA REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SOLID

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCNT RECVRY | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| Molybdenum | 100 | 98.7 | mg/kg | 99 | SW846 6010B | 11/13-11/15/06 | JJLGD1A6 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Nickel | 50.0 | 48.9 | mg/kg | 98 | SW846 6010B | 11/13-11/15/06 | JJLGD1A7 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Selenium | 200 | 194 | mg/kg | 97 | SW846 6010B | 11/13-11/15/06 | JJLGD1A8 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Silver | 5.00 | 5.39 | mg/kg | 108 | SW846 6010B | 11/13-11/15/06 | JJLGD1A9 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Thallium | 200 | 200 | mg/kg | 100 | SW846 6010B | 11/13-11/15/06 | JJLGD1CA |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Vanadium | 50.0 | 48.6 | mg/kg | 97 | SW846 6010B | 11/13-11/15/06 | JJLGD1CC |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Zinc | 50.0 | 51.8 | mg/kg | 104 | SW846 6010B | 11/13-11/15/06 | JJLGD1CD |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Chromium | 20.0 | 19.2 | mg/kg | 96 | SW846 6010B | 11/13-11/15/06 | JJLGD1CE |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:54 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |

**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 #...:** | E6K100363 | **Work Order #...:** | JJHLN1AD-MS | **Matrix.....:** | SOLID |
| **MS Lot-Sample #:** | E6K090429-002 | | JJHLN1AE-MSD | | |
| **Date Sampled...:** | 11/09/06 12:10 | **Date Received..:** | 11/09/06 18:45 | **MS Run #.....:** | 6318188 |
| **Prep Date.....:** | 11/13/06 | **Analysis Date..:** | 11/13/06 | | |
| **Prep Batch #...:** | 6318282 | **Analysis Time..:** | 11:42 | | |
| **Dilution Factor:** | 1 | **% Moisture.....:** | 0.0 | **Analyst ID.....:** | 004648 |
| **Instrument ID..:** | MSO | | | | |

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| **Benzene** | **88** | **(70 - 130)** | | | **SW846 8260B** |
| | **88** | **(70 - 130)** | **0.02** | **(0-30)** | **SW846 8260B** |
| **Bromodichloromethane** | **96** | **(70 - 135)** | | | **SW846 8260B** |
| | **98** | **(70 - 135)** | **1.6** | **(0-30)** | **SW846 8260B** |
| **Carbon tetrachloride** | **89** | **(60 - 140)** | | | **SW846 8260B** |
| | **89** | **(60 - 140)** | **0.47** | **(0-30)** | **SW846 8260B** |
| **m-Xylene & p-Xylene** | **86** | **(70 - 130)** | | | **SW846 8260B** |
| | **87** | **(70 - 130)** | **0.40** | **(0-30)** | **SW846 8260B** |
| **Chloroform** | **88** | **(70 - 130)** | | | **SW846 8260B** |
| | **88** | **(70 - 130)** | **0.16** | **(0-30)** | **SW846 8260B** |
| **o-Xylene** | **88** | **(70 - 130)** | | | **SW846 8260B** |
| | **89** | **(70 - 130)** | **0.24** | **(0-30)** | **SW846 8260B** |
| **1,1-Dichloroethane** | **87** | **(70 - 130)** | | | **SW846 8260B** |
| | **90** | **(70 - 130)** | **3.2** | **(0-30)** | **SW846 8260B** |
| **1,2-Dichloroethane** | **94** | **(70 - 130)** | | | **SW846 8260B** |
| | **94** | **(70 - 130)** | **0.57** | **(0-30)** | **SW846 8260B** |
| **cis-1,2-Dichloroethene** | **92** | **(70 - 130)** | | | **SW846 8260B** |
| | **92** | **(70 - 130)** | **0.13** | **(0-30)** | **SW846 8260B** |
| **1,1-Dichloroethene** | **83** | **(50 - 160)** | | | **SW846 8260B** |
| | **85** | **(50 - 160)** | **1.3** | **(0-30)** | **SW846 8260B** |
| **Ethylbenzene** | **87** | **(70 - 130)** | | | **SW846 8260B** |
| | **88** | **(70 - 130)** | **0.43** | **(0-30)** | **SW846 8260B** |
| **Tetrachloroethene** | **84** | **(70 - 130)** | | | **SW846 8260B** |
| | **86** | **(70 - 130)** | **2.6** | **(0-30)** | **SW846 8260B** |
| **Toluene** | **86** | **(70 - 130)** | | | **SW846 8260B** |
| | **86** | **(70 - 130)** | **0.09** | **(0-30)** | **SW846 8260B** |
| **1,1,1-Trichloroethane** | **84** | **(65 - 140)** | | | **SW846 8260B** |
| | **85** | **(65 - 140)** | **1.1** | **(0-30)** | **SW846 8260B** |
| **Trichloroethene** | **88** | **(70 - 135)** | | | **SW846 8260B** |
| | **87** | **(70 - 135)** | **0.59** | **(0-30)** | **SW846 8260B** |
| **Vinyl chloride** | **87** | **(40 - 160)** | | | **SW846 8260B** |
| | **88** | **(40 - 160)** | **0.91** | **(0-35)** | **SW846 8260B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 77 | (60 - 125) |
| | 79 | (60 - 125) |

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BOE-C6-0186924

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K100363 **Work Order #...:** JJHLN1AD-MS **Matrix.....:** SOLID
**MS Lot-Sample #:** E6K090429-002 JJHLN1AE-MSD

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 81 | (55 - 125) |
| | 78 | (55 - 125) |
| Toluene-d8 | 79 | (60 - 125) |
| | 79 | (60 - 125) |

**NOTE(S):**

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

Bold print denotes control parameters

## MATRIX SPIKE SAMPLE DATA REPORT

### GC/MS Volatiles

| | | | | | |
|---|---|---|---|---|---|
| Client Lot #...: | E6K100363 | Work Order #...: | JJHLN1AD-MS | Matrix.....: | SOLID |
| MS Lot-Sample #: | E6K090429-002 | | JJHLN1AE-MSD | | |
| Date Sampled...: | 11/09/06 12:10 | Date Received..: | 11/09/06 18:45 | MS Run #.....: | 6318188 |
| Prep Date.....: | 11/13/06 | Analysis Date..: | 11/13/06 | | |
| Prep Batch #...: | 6318282 | Analysis Time..: | 11:42 | | |
| Dilution Factor: | 1 | % Moisture.....: | 0.0 | Analyst ID.....: | 004648 |
| Instrument ID..: | MSO | | | | |

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD |
|---|---|---|---|---|---|---|---|
| Benzene | ND | 50.0 | 44.1 | ug/kg | 88 | | SW846 8260B |
| | ND | 49.9 | 44.1 | ug/kg | 88 | 0.02 | SW846 8260B |
| Bromodichloromethane | ND | 50.0 | 48.2 | ug/kg | 96 | | SW846 8260B |
| | ND | 49.9 | 49.0 | ug/kg | 98 | 1.6 | SW846 8260B |
| Carbon tetrachloride | ND | 50.0 | 44.3 | ug/kg | 89 | | SW846 8260B |
| | ND | 49.9 | 44.5 | ug/kg | 89 | 0.47 | SW846 8260B |
| m-Xylene & p-Xylene | ND | 100 | 86.4 | ug/kg | 86 | | SW846 8260B |
| | ND | 99.8 | 86.7 | ug/kg | 87 | 0.40 | SW846 8260B |
| Chloroform | ND | 50.0 | 43.8 | ug/kg | 88 | | SW846 8260B |
| | ND | 49.9 | 43.9 | ug/kg | 88 | 0.16 | SW846 8260B |
| o-Xylene | ND | 50.0 | 44.2 | ug/kg | 88 | | SW846 8260B |
| | ND | 49.9 | 44.3 | ug/kg | 89 | 0.24 | SW846 8260B |
| 1,1-Dichloroethane | 1.1 | 50.0 | 44.6 | ug/kg | 87 | | SW846 8260B |
| | 1.1 | 49.9 | 46.0 | ug/kg | 90 | 3.2 | SW846 8260B |
| 1,2-Dichloroethane | ND | 50.0 | 47.2 | ug/kg | 94 | | SW846 8260B |
| | ND | 49.9 | 46.9 | ug/kg | 94 | 0.57 | SW846 8260B |
| cis-1,2-Dichloroethene | ND | 50.0 | 46.0 | ug/kg | 92 | | SW846 8260B |
| | ND | 49.9 | 46.1 | ug/kg | 92 | 0.13 | SW846 8260B |
| 1,1-Dichloroethene | 3.8 | 50.0 | 45.5 | ug/kg | 83 | | SW846 8260B |
| | 3.8 | 49.9 | 46.0 | ug/kg | 85 | 1.3 | SW846 8260B |
| Ethylbenzene | ND | 50.0 | 43.6 | ug/kg | 87 | | SW846 8260B |
| | ND | 49.9 | 43.7 | ug/kg | 88 | 0.43 | SW846 8260B |
| Tetrachloroethene | ND | 50.0 | 41.8 | ug/kg | 84 | | SW846 8260B |
| | ND | 49.9 | 42.9 | ug/kg | 86 | 2.6 | SW846 8260B |
| Toluene | ND | 50.0 | 43.0 | ug/kg | 86 | | SW846 8260B |
| | ND | 49.9 | 43.1 | ug/kg | 86 | 0.09 | SW846 8260B |
| 1,1,1-Trichloroethane | 3.7 | 50.0 | 45.5 | ug/kg | 84 | | SW846 8260B |
| | 3.7 | 49.9 | 46.0 | ug/kg | 85 | 1.1 | SW846 8260B |
| Trichloroethene | ND | 50.0 | 43.9 | ug/kg | 88 | | SW846 8260B |
| | ND | 49.9 | 43.6 | ug/kg | 87 | 0.59 | SW846 8260B |
| Vinyl chloride | ND | 50.0 | 43.4 | ug/kg | 87 | | SW846 8260B |
| | ND | 49.9 | 43.8 | ug/kg | 88 | 0.91 | SW846 8260B |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 77 | (60 - 125) |
| | 79 | (60 - 125) |

(Continued on next page)

## MATRIX SPIKE SAMPLE DATA REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K100363 **Work Order #...:** JJHLN1AD-MS **Matrix.....:** SOLID
**MS Lot-Sample #:** E6K090429-002 JJHLN1AE-MSD

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| 1,2-Dichloroethane-d4 | 81 | (55 - 125) |
| | 78 | (55 - 125) |
| Toluene-d8 | 79 | (60 - 125) |
| | 79 | (60 - 125) |

**NOTE(S):**

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

Bold print denotes control parameters

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC Volatiles

| | | | | | |
|---|---|---|---|---|---|
| **Client Lot #...:** | E6K100363 | **Work Order #...:** | JJG381C7-MS | **Matrix.....:** | SO |
| **MS Lot-Sample #:** | E6K100363-004 | | JJG381C8-MSD | | |
| **Date Sampled...:** | 11/09/06 07:59 | **Date Received..:** | 11/10/06 15:15 | **MS Run #.....:** | 6319235 |
| **Prep Date.....:** | 11/14/06 | **Analysis Date..:** | 11/14/06 | | |
| **Prep Batch #...:** | 6319372 | **Analysis Time..:** | 12:34 | | |
| **Dilution Factor:** | 1 | **Analyst ID.....:** | 001464 | **Instrument ID..:** | G15 |

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| **TPH (as Gasoline)** | **89** | **(65 - 135)** | | | **SW846 8015B** |
| | **89** | **(65 - 135)** | **0.24** | **(0-30)** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 121 | (70 - 130) |
| | 118 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters

## MATRIX SPIKE SAMPLE DATA REPORT

### GC Volatiles

| | | | | | |
|---|---|---|---|---|---|
| **Client Lot #...:** | E6K100363 | **Work Order #...:** | JJG381C7-MS | **Matrix.....:** | SO |
| **MS Lot-Sample #:** | E6K100363-004 | | JJG381C8-MSD | | |
| **Date Sampled...:** | 11/09/06 07:59 | **Date Received..:** | 11/10/06 15:15 | **MS Run #.....:** | 6319235 |
| **Prep Date.....:** | 11/14/06 | **Analysis Date..:** | 11/14/06 | | |
| **Prep Batch #...:** | 6319372 | **Analysis Time..:** | 12:34 | | |
| **Dilution Factor:** | 1 | **Analyst ID.....:** | 001464 | **Instrument ID..:** | G15 |

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD |
|---|---|---|---|---|---|---|---|
| **TPH (as Gasoline)** | **ND** | **5.00** | **4.45** | **mg/kg** | **89** | | **SW846 8015B** |
| | **ND** | **5.00** | **4.44** | **mg/kg** | **89** | **0.24** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 121 | (70 - 130) |
| | 118 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC Semivolatiles

| | | | | | |
|---|---|---|---|---|---|
| **Client Lot #...:** | E6K100363 | **Work Order #...:** | JJG381A1-MS | **Matrix.....:** | SO |
| **MS Lot-Sample #:** | E6K100363-004 | | JJG381A2-MSD | | |
| **Date Sampled...:** | 11/09/06 07:59 | **Date Received..:** | 11/10/06 15:15 | **MS Run #.....:** | 6317246 |
| **Prep Date.....:** | 11/13/06 | **Analysis Date..:** | 11/14/06 | | |
| **Prep Batch #...:** | 6317408 | **Analysis Time..:** | 13:34 | | |
| **Dilution Factor:** | 1 | **Analyst ID.....:** | 402479 | **Instrument ID..:** | G12 |

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| **TPH (as Diesel)** | **108** | **(65 - 135)** | | | **SW846 8015B** |
| | **81** | **(65 - 135)** | **27** | **(0-35)** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 85 | (60 - 120) |
| | 66 | (60 - 120) |

**NOTE(S):**

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

Bold print denotes control parameters

## MATRIX SPIKE SAMPLE DATA REPORT

### GC Semivolatiles

| | | | | | |
|---|---|---|---|---|---|
| **Client Lot #...:** | E6K100363 | **Work Order #...:** | JJG381A1-MS | **Matrix.....:** | SO |
| **MS Lot-Sample #:** | E6K100363-004 | | JJG381A2-MSD | | |
| **Date Sampled...:** | 11/09/06 07:59 | **Date Received..:** | 11/10/06 15:15 | **MS Run #.....:** | 6317246 |
| **Prep Date.....:** | 11/13/06 | **Analysis Date..:** | 11/14/06 | | |
| **Prep Batch #...:** | 6317408 | **Analysis Time..:** | 13:34 | | |
| **Dilution Factor:** | 1 | **Analyst ID.....:** | 402479 | **Instrument ID..:** | G12 |

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD |
|---|---|---|---|---|---|---|---|
| **TPH (as Diesel)** | **3.0** | **125** | **138** | **mg/kg** | **108** | | **SW846 8015B** |
| | **3.0** | **125** | **104** | **mg/kg** | **81** | **27** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 85 | (60 - 120) |
| | 66 | (60 - 120) |

**NOTE(S):**

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

Bold print denotes control parameters

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SOLID
**Date Sampled...:** 11/02/06 11:30 **Date Received..:** 11/03/06 08:55

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| **MS Lot-Sample #:** E6K030210-001 **Prep Batch #...:** 6314542 | | | | | | | |
| | | | | | | **% Moisture.....:** 12 | |
| Mercury | 102 | (80 - 120) | | | SW846 7471A | 11/13-11/14/06 | JHWND1DK |
| | 124 N | (80 - 120) | 16 | (0-20) | SW846 7471A | 11/13-11/14/06 | JHWND1DL |

Dilution Factor: 1
Analysis Time..: 13:26 Instrument ID..: M04 Analyst ID.....: 000023
MS Run #.....: 6314315

**NOTE(S):**

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

N Spiked analyte recovery is outside stated control limits.

## MATRIX SPIKE SAMPLE DATA REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SOLID
**Date Sampled...:** 11/02/06 11:30 **Date Received..:** 11/03/06 08:55

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|---|---|
| **MS Lot-Sample #:** E6K030210-001 **Prep Batch #...:** 6314542 | | | | | | | | | |
| | | | | | | | | **% Moisture.....:** 12 | |
| Mercury | | | | | | | | | |
| | 0.056 | 0.167 | 0.225 | mg/kg | 102 | | SW846 7471A | 11/13-11/14/06 | JHWND1DK |
| | 0.056 | 0.167 | 0.263 N | mg/kg | 124 | 16 | SW846 7471A | 11/13-11/14/06 | JHWND1DL |

Dilution Factor: 1
Analysis Time..: 13:26 Instrument ID..: M04 Analyst ID.....: 000023
MS Run #.....: 6314315

**NOTE(S):**

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

N Spiked analyte recovery is outside stated control limits.

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SO
**Date Sampled...:** 11/09/06 07:59 **Date Received..:** 11/10/06 15:15

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| **MS Lot-Sample #:** E6K100363-004 **Prep Batch #...:** 6317548 | | | | | | | |
| Aluminum | NC | (70 - 115) | | | SW846 6010B | 11/13-11/15/06 | JJG381A3 |
| | NC | (70 - 115) | | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381A4 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Antimony | 37 N | (70 - 115) | | | SW846 6010B | 11/13-11/15/06 | JJG381A5 |
| | 34 N | (70 - 115) | 6.9 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381A6 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Arsenic | 95 | (80 - 115) | | | SW846 6010B | 11/13-11/15/06 | JJG381A7 |
| | 96 | (80 - 115) | 1.0 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381A8 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Barium | 90 | (80 - 115) | | | SW846 6010B | 11/13-11/15/06 | JJG381A9 |
| | 94 | (80 - 115) | 2.4 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381CA |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Beryllium | 91 | (80 - 120) | | | SW846 6010B | 11/13-11/15/06 | JJG381CC |
| | 92 | (80 - 120) | 0.59 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381CD |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Cadmium | 89 | (80 - 120) | | | SW846 6010B | 11/13-11/15/06 | JJG381CE |
| | 90 | (80 - 120) | 0.93 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381CF |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Chromium | 90 | (85 - 120) | | | SW846 6010B | 11/13-11/15/06 | JJG381C5 |
| | 94 | (85 - 120) | 2.1 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381C6 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |

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BOE-C6-0186934

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SO
**Date Sampled...:** 11/09/06 07:59 **Date Received..:** 11/10/06 15:15

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| Cobalt | 90 | (80 - 120) | | | SW846 6010B | 11/13-11/15/06 | JJG381CG |
| | 90 | (80 - 120) | 0.12 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381CH |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Copper | 99 | (85 - 120) | | | SW846 6010B | 11/13-11/15/06 | JJG381CJ |
| | 103 | (85 - 120) | 2.4 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381CK |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Lead | 92 | (75 - 115) | | | SW846 6010B | 11/13-11/15/06 | JJG381CL |
| | 93 | (75 - 115) | 0.85 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381CM |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Molybdenum | 89 | (80 - 120) | | | SW846 6010B | 11/13-11/15/06 | JJG381CN |
| | 89 | (80 - 120) | 0.33 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381CP |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Nickel | 92 | (80 - 120) | | | SW846 6010B | 11/13-11/15/06 | JJG381CQ |
| | 93 | (80 - 120) | 0.70 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381CR |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Selenium | 92 | (75 - 110) | | | SW846 6010B | 11/13-11/15/06 | JJG381CT |
| | 92 | (75 - 110) | 0.55 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381CU |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Silver | 97 | (75 - 120) | | | SW846 6010B | 11/13-11/15/06 | JJG381CV |
| | 98 | (75 - 120) | 1.5 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381CW |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |

(Continued on next page)



BOE-C6-0186935

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SO
**Date Sampled...:** 11/09/06 07:59 **Date Received..:** 11/10/06 15:15

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| Thallium | 92 | (75 - 120) | | | SW846 6010B | 11/13-11/15/06 | JJG381CX |
| | 92 | (75 - 120) | 0.67 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381C0 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Vanadium | 84 | (80 - 120) | | | SW846 6010B | 11/13-11/15/06 | JJG381C1 |
| | 87 | (80 - 120) | 1.8 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381C2 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |
| Zinc | 99 | (80 - 120) | | | SW846 6010B | 11/13-11/15/06 | JJG381C3 |
| | 97 | (80 - 120) | 0.75 | (0-20) | SW846 6010B | 11/13-11/15/06 | JJG381C4 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 19:17 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6317320 | | | | | |

**NOTE(S):**

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

NC The recovery and/or RPD were not calculated.

N Spiked analyte recovery is outside stated control limits.

## MATRIX SPIKE SAMPLE DATA REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SO
**Date Sampled...:** 11/09/06 07:59 **Date Received..:** 11/10/06 15:15

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|---|---|
| **MS Lot-Sample #:** E6K100363-004 **Prep Batch #...:** 6317548 | | | | | | | | | |
| Aluminum | | | | | | | | | |
| | 11700 | 200 | 11600 | mg/kg | | | SW846 6010B | 11/13-11/15/06 | JJG381A3 |
| | | | Qualifiers: NC | | | | | | |
| | 11700 | 200 | 12100 | mg/kg | | | SW846 6010B | 11/13-11/15/06 | JJG381A4 |
| | | | Qualifiers: NC | | | | | | |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Antimony | | | | | | | | | |
| | ND | 50.0 | 18.4 N | mg/kg | 37 | | SW846 6010B | 11/13-11/15/06 | JJG381A5 |
| | ND | 50.0 | 17.2 N | mg/kg | 34 | 6.9 | SW846 6010B | 11/13-11/15/06 | JJG381A6 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Arsenic | | | | | | | | | |
| | 9.7 | 200 | 200 | mg/kg | 95 | | SW846 6010B | 11/13-11/15/06 | JJG381A7 |
| | 9.7 | 200 | 202 | mg/kg | 96 | 1.0 | SW846 6010B | 11/13-11/15/06 | JJG381A8 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Barium | | | | | | | | | |
| | 88.3 | 200 | 269 | mg/kg | 90 | | SW846 6010B | 11/13-11/15/06 | JJG381A9 |
| | 88.3 | 200 | 276 | mg/kg | 94 | 2.4 | SW846 6010B | 11/13-11/15/06 | JJG381CA |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Beryllium | | | | | | | | | |
| | 0.48 | 5.00 | 5.04 | mg/kg | 91 | | SW846 6010B | 11/13-11/15/06 | JJG381CC |
| | 0.48 | 5.00 | 5.07 | mg/kg | 92 | 0.59 | SW846 6010B | 11/13-11/15/06 | JJG381CD |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Cadmium | | | | | | | | | |
| | ND | 5.00 | 4.47 | mg/kg | 89 | | SW846 6010B | 11/13-11/15/06 | JJG381CE |
| | ND | 5.00 | 4.51 | mg/kg | 90 | 0.93 | SW846 6010B | 11/13-11/15/06 | JJG381CF |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |

(Continued on next page)

## MATRIX SPIKE SAMPLE DATA REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SO
**Date Sampled...:** 11/09/06 07:59 **Date Received..:** 11/10/06 15:15

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|---|---|
| Chromium | | | | | | | | | |
| | 17.8 | 20.0 | 35.8 | mg/kg | 90 | | SW846 6010B | 11/13-11/15/06 | JJG381C5 |
| | 17.8 | 20.0 | 36.6 | mg/kg | 94 | 2.1 | SW846 6010B | 11/13-11/15/06 | JJG381C6 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Cobalt | | | | | | | | | |
| | 7.3 | 50.0 | 52.0 | mg/kg | 90 | | SW846 6010B | 11/13-11/15/06 | JJG381CG |
| | 7.3 | 50.0 | 52.1 | mg/kg | 90 | 0.12 | SW846 6010B | 11/13-11/15/06 | JJG381CH |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Copper | | | | | | | | | |
| | 17.0 | 25.0 | 41.6 | mg/kg | 99 | | SW846 6010B | 11/13-11/15/06 | JJG381CJ |
| | 17.0 | 25.0 | 42.7 | mg/kg | 103 | 2.4 | SW846 6010B | 11/13-11/15/06 | JJG381CK |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Lead | | | | | | | | | |
| | 3.4 | 50.0 | 49.3 | mg/kg | 92 | | SW846 6010B | 11/13-11/15/06 | JJG381CL |
| | 3.4 | 50.0 | 49.7 | mg/kg | 93 | 0.85 | SW846 6010B | 11/13-11/15/06 | JJG381CM |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Molybdenum | | | | | | | | | |
| | 0.96 | 100 | 89.8 | mg/kg | 89 | | SW846 6010B | 11/13-11/15/06 | JJG381CN |
| | 0.96 | 100 | 90.1 | mg/kg | 89 | 0.33 | SW846 6010B | 11/13-11/15/06 | JJG381CP |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Nickel | | | | | | | | | |
| | 12.1 | 50.0 | 58.3 | mg/kg | 92 | | SW846 6010B | 11/13-11/15/06 | JJG381CQ |
| | 12.1 | 50.0 | 58.7 | mg/kg | 93 | 0.70 | SW846 6010B | 11/13-11/15/06 | JJG381CR |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |

(Continued on next page)



BOE-C6-0186938

## MATRIX SPIKE SAMPLE DATA REPORT

### TOTAL Metals

**Client Lot #...:** E6K100363 **Matrix.....:** SO
**Date Sampled...:** 11/09/06 07:59 **Date Received..:** 11/10/06 15:15

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|---|---|
| Selenium | | | | | | | | | |
| | ND | 200 | 183 | mg/kg | 92 | | SW846 6010B | 11/13-11/15/06 | JJG381CT |
| | ND | 200 | 184 | mg/kg | 92 | 0.55 | SW846 6010B | 11/13-11/15/06 | JJG381CU |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Silver | | | | | | | | | |
| | ND | 5.00 | 4.84 | mg/kg | 97 | | SW846 6010B | 11/13-11/15/06 | JJG381CV |
| | ND | 5.00 | 4.91 | mg/kg | 98 | 1.5 | SW846 6010B | 11/13-11/15/06 | JJG381CW |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Thallium | | | | | | | | | |
| | 0.83 | 200 | 185 | mg/kg | 92 | | SW846 6010B | 11/13-11/15/06 | JJG381CX |
| | 0.83 | 200 | 186 | mg/kg | 92 | 0.67 | SW846 6010B | 11/13-11/15/06 | JJG381C0 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Vanadium | | | | | | | | | |
| | 37.1 | 50.0 | 79.3 | mg/kg | 84 | | SW846 6010B | 11/13-11/15/06 | JJG381C1 |
| | 37.1 | 50.0 | 80.7 | mg/kg | 87 | 1.8 | SW846 6010B | 11/13-11/15/06 | JJG381C2 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |
| Zinc | | | | | | | | | |
| | 42.4 | 50.0 | 91.7 | mg/kg | 99 | | SW846 6010B | 11/13-11/15/06 | JJG381C3 |
| | 42.4 | 50.0 | 91.0 | mg/kg | 97 | 0.75 | SW846 6010B | 11/13-11/15/06 | JJG381C4 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 19:17 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6317320 | | | | | | |

**NOTE(S):**

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

NC The recovery and/or RPD were not calculated.

N Spiked analyte recovery is outside stated control limits.

SEVERN TRENT STL

**STL Los Angeles**
1721 South Grand Avenue
Santa Ana, CA 92705

Tel: 714 258 8610 Fax: 714 258 0921
www.stl-inc.com

November 24, 2006

STL LOT NUMBER: **E6K150191**
PO/CONTRACT: 1155.002

Michael Rendina
Avocet Environmental Inc
16 Technology Drive, Suite 154
Irvine, CA 92618-2327

Dear Michael Rendina,

This report contains the analytical results for the two samples received under chain of custody by STL Los Angeles on November 15, 2006. These samples are associated with your The Boeing Co - C6 Facility project.

STL Los Angeles certifies that the test results provided in this report meet all the requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of the report. NELAP Certification Number for STL Los Angeles is 01118CA/E87652.

Any matrix related anomaly is footnoted within the report. A cooler receipt temperature between 2-6 degrees Celsius is within EPA acceptance criteria. The temperature(s) of the coolers received for this project can be found on the Project Receipt Checklist.

The preliminary report was sent on November 22, 2006.

This report shall not be reproduced except in full, without the written approval of the laboratory.

000063

This report contains _____ pages.



BOE-C6-0186940

## CASE NARRATIVE

Historical control limits for the LCS are used to define the estimate of uncertainty for a method.

All applicable quality control procedures met method-specified acceptance criteria except as noted on the following page.

If you have any questions, please feel free to call me at 714.258.8610.

Sincerely,

Trupti Mistry
Project Manager
CC: Project File

LOT NUMBER E6K150191

**Nonconformance 05-0018015**

**Affected Samples:**
E6K150191 (1): SUNRIDER BAKER TANK
E6K150191 (2): LOT 8 BAKER TANK

**Affected Methods:**
8015B (E)

**Case Narrative:**
*There was insufficient sample volume provided to prepare a project-specific MS/MSD. A duplicate LCS has been prepared to provide accuracy and precision measurement for the samples in this project.*

**Nonconformance 05-0018069**

**Affected Samples:**
E6K150191 (1): SUNRIDER BAKER TANK
E6K150191 (2): LOT 8 BAKER TANK

**Affected Methods:**
None specified.

**Case Narrative:**
*Samples were received unfiltered and unpreserved for Dissolved Metals Analysis. Samples were filtered and preserved at the laboratory with Nitric Acid (Lot # 6623B51037) to a Ph < 2 on 11/15/06.*



BOE-C6-0186942

E6K150191

E6K150191

**CHAIN OF CUSTODY RECORD** AVO111406A

AVOCET ENVIRONMENTAL, INC.
16 Technology Drive, Suite 154
Irvine, California 92618-2327
(949) 296-0977
FAX (949) 296-0978

| | |
|---|---|
| Project Name | The Boeing Company - C6 Facility |
| Project No. | 1155.002 |
| Location | Los Angeles, CA |
| Project Manager | Michael A. Rendina |
| email: | mrendina@avocetenv.com |
| Sheet 1 of 1 | |

| Sample Identification | Sample Date | Sample Time | Matrix | Samplers Initials | Number of containers | TPH by EPA Method 8015M | VOCs by EPA Method 8260B | Title 22 Metals by EPA 6010/7000 | Hold | Rem. |
|---|---|---|---|---|---|---|---|---|---|---|
| Sunrider Baker Tank | 11/14/2006 | 1307 | Aq | Deb | 54 | x | x | x | | 5-day TAT |
| Lot 8 Baker Tank | 11/14/2006 | 1517 | Aq | Deb | 54 | x | x | x | | 5-day TAT |
| | | | | | | | | | | ~~5-day TAT~~ |

Please filter and preserve samples for metals analysis in laboratory. Do not send confirmation or results to Boeing EDMS. Thanks, Mike Rendina

| | Signature | Company | Date | Time |
|---|---|---|---|---|
| Collected by | [illegible] | Avocet Environmental, Inc. | 11-14-06 | 1517 |
| Relinquished by | [illegible] | Avocet Environmental, Inc. | 11-15-06 | 0825 |
| Received by | [illegible] | STL | 11-15-06 | 0825 |
| Relinquished by | [illegible] | STL | 11-15-06 | 0940 |
| Received by | [illegible] | STL | 11-15-06 | 9:40 |
| Relinquished by | | | | |
| Received by | | | | |

Temp — 4.6 - 0.2 = 4.4

4

BOE-C6-0186943

# STL LOS ANGELES - PROJECT RECEIPT CHECKLIST Date: 11/15/20

**Single Cooler Only**

LIMS Lot #: E6K150191 Quote #: 73051

Client Name: Avcet Project: Boeing C6 facility

Received by: MG Date/Time Received: 11/15/20 1940

Delivered by : ☐ Client ☒ STL ☐ DHL ☐ Fed Ex ☐ UPS ☐ Other

**********

**Initial / Date**

Custody Seal Status Cooler: ☐Intact ☐Broken ☒None ..... 11/15/20

Custody Seal Status Samples: ☐Intact ☐Broken ☒None .....

Custody Seal #(s): N/A ☒No Seal #.....

Sampler Signature on COC ☐ Yes ☐No ☒N/A.....

IR Gun # __B_ Correction Factor __-.2_°C IR passed daily verification ☒Yes ☐No .....

Temperature - **BLANK** 4.6 °C - .2 CF = 4.4 °C ...**Cooler #1 ID** NA .....

Temperature – **COOLER** (____°C ____°C ____°C ____°C) = _____ avg °C -__.2 __ CF = _____ °C.....

Samples outside temperature criteria but received within 6 hours of final sampling ☐ Yes ☒N/A...

Sample Container(s): ☒STL-LA ☐ Client .....

pH measured: ☐ Yes ☐ Anomaly (if checked, notify lab and file NCM) ☒N/A..

Anomalies: ☒No ☐Yes – complete CUR and Create NCM .....

Complete shipment received in good condition with correct temperatures, containers, labels, volumes preservatives and within method specified holding times. ☒ Yes ☐ No.....

Labeled by: SQ .....

**********

Turn Around Time: ☐RUSH–24HR ☐RUSH–48HR ☐RUSH–72HR ☒ 5day ☐NORMAL..... 11/15/20

********** LEAVE NO BLANK SPACES ; USE N/A **********

**Headspace Anomaly** ☐YES ☒N/A 11/15/20

| Lab ID | Container(s) # | Headspace | Lab ID | Container(s) # | Headspace |
|---|---|---|---|---|---|
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |
| | | ☐ > 6mm | | | ☐ > 6mm |

LIMS Lot # E6K150191

**PROJECT RECEIPT CHECKLIST Cont'd**

| Fraction | 1-2 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VOAH | 3 | | | | | | | | | | | | | |
| LAGB | 2 | | | | | | | | | | | | | |

SB 11/15/06

H: HCL, S: H2SO4, N: HNO3, V: VOA, SL, Sleeve, E: Encore, PB: Poly Bottle, CGB: Clear Glass Bottle, AGJ: Amber Glass Jar, T: Terracore
AGB: Amber Glass Bottle, n/f/l:HNO3-Lab filtered, n/f:HNO3-Field filtered, znna: Zinc Acetate/Sodium Hydroxide, Na2s2o3: sodium thiosulfate

## Condition Upon Receipt Anomaly Form

**Anomalies** ☐YES ☒N/A 11/15/06

- **COOLERS**
  - ☐ Not Received (received COC only)
  - ☐ Leaking
  - ☐ Other:
- **CUSTODY SEALS (COOLER(S)**
  - ☐ None
  - ☐ Not Intact
  - ☐ Other
- **CONTAINER(S)**
  - ☐ None
  - ☐ Not Intact
  - ☐ Other
- **TEMPERATURE (SPECS 4 ± 2°C)**
  - ☐ Cooler Temp(s)
  - ☐ Temperature Blank(s)
- **CHAIN OF CUSTODY (COC)**
  - ☐ Not relinquished by Client; No date/time relinquished
  - ☐ Incomplete information provided
  - ☐ Other ☐ COC not received – notify PM
- **CONTAINERS**
  - ☐ Leaking ☐ Voa Vials with Bubbles > 6mm
  - ☐ Broken
  - ☐ Extra
  - ☐ Without Labels
  - ☐ Other:
- **LABELS**
  - ☐ Not the same ID/info as in COC
  - ☐ Incomplete Information
  - ☐ Markings/Info illegible
  - ☐ Torn
- **SAMPLES**
  - ☐ Samples NOT RECEIVED but listed on COC
  - ☐ Samples received but NOT LISTED on COC
  - ☐ Logged based on Label Information
  - ☐ Logged based on info from other samples on COC
  - ☐ Logged according to Work Plan
  - ☐ Logged on HOLD UNTIL FURTHER NOTICE
  - ☐ Will be noted on COC--Client to send samples with new COC
  - ☐ Mislabeled as to tests, preservatives, etc.
  - ☐ Holding time expired – list sample ID and test
  - ☐ Improper container used
  - ☐ Not preserved/Improper preservative used
  - ☐ Improper pH _____ Lab to preserve sample and document
  - ☐ Insufficient quantities for analysis ☐ Other

Comments:

☐ Corrective Action Implemented:

☐ Client Informed: verbally on _____ By: _____ ☐ In writing on _____ By: _____

☐ Sample(s) on hold until: _____ ☐ Sample(s) processed "as is."

**Logged by/Date:** CA 11/15/06 Logged in by other STL ☐ ____ **PM Review/Date:** 11/15/06



BOE-C6-0186945

[redacted] STL

# Analytical Report

# ANALYTICAL REPORT

PROJECT NO. 1155.002

The Boeing Co - C6 Facility

Lot #: E6K150191

MICHAEL RENDINA

Avocet Environmental Inc

SEVERN TRENT LABORATORIES, INC.

Trupti Mistry
Project Manager

November 22, 2006



BOE-C6-0186947

# EXECUTIVE SUMMARY - Detection Highlights

**E6K150191**

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | ANALYTICAL METHOD |
|---|---|---|---|---|
| **SUNRIDER BAKER TANK 11/14/06 13:07 001** | | | | |
| C20-C23 | 0.22 | 0.12 | mg/L | SW846 8015B |
| Total Carbon Chain Range | 0.22 | 0.12 | mg/L | SW846 8015B |
| C6-C8 | 0.24 | 0.10 | mg/L | SW846 8015B |
| Barium - DISSOLVED | 0.053 J | 0.020 | mg/L | SW846 6010B |
| Chromium - DISSOLVED | 0.031 | 0.010 | mg/L | SW846 6010B |
| Molybdenum - DISSOLVED | 0.037 B | 0.040 | mg/L | SW846 6010B |
| Vanadium - DISSOLVED | 0.0095 B | 0.050 | mg/L | SW846 6010B |
| Acetone | 85 J | 100 | ug/L | SW846 8260B |
| Chloroform | 77 | 10 | ug/L | SW846 8260B |
| 1,1-Dichloroethene | 15 | 10 | ug/L | SW846 8260B |
| Trichloroethene | 680 | 10 | ug/L | SW846 8260B |
| **LOT 8 BAKER TANK 11/14/06 15:17 002** | | | | |
| C8-C9 | 0.18 | 0.12 | mg/L | SW846 8015B |
| Total Carbon Chain Range | 0.18 | 0.12 | mg/L | SW846 8015B |
| C6-C8 | 18 | 1.0 | mg/L | SW846 8015B |
| Arsenic - DISSOLVED | 0.020 | 0.012 | mg/L | SW846 6010B |
| Barium - DISSOLVED | 0.14 J | 0.020 | mg/L | SW846 6010B |
| Molybdenum - DISSOLVED | 0.012 B | 0.040 | mg/L | SW846 6010B |
| Vanadium - DISSOLVED | 0.0023 B | 0.050 | mg/L | SW846 6010B |
| Zinc - DISSOLVED | 0.010 B | 0.020 | mg/L | SW846 6010B |
| Acetone | 530 J | 2000 | ug/L | SW846 8260B |
| 2-Butanone | 10000 | 1000 | ug/L | SW846 8260B |
| 1,1-Dichloroethane | 44 J | 200 | ug/L | SW846 8260B |
| cis-1,2-Dichloroethene | 180 J | 200 | ug/L | SW846 8260B |
| 1,1-Dichloroethene | 3300 | 200 | ug/L | SW846 8260B |
| 4-Methyl-2-pentanone | 11000 | 1000 | ug/L | SW846 8260B |
| Toluene | 10000 | 200 | ug/L | SW846 8260B |
| 1,1,1-Trichloroethane | 120 J | 200 | ug/L | SW846 8260B |
| Trichloroethene | 1300 | 200 | ug/L | SW846 8260B |



BOE-C6-0186948

# METHODS SUMMARY

**E6K150191**

| PARAMETER | ANALYTICAL METHOD | PREPARATION METHOD |
|---|---|---|
| Extractable Petroleum Hydrocarbons | SW846 8015B | SW846 3510 |
| Inductively Coupled Plasma (ICP) Metals | SW846 6010B | SW846 3005A |
| Mercury in Liquid Waste (Manual Cold-Vapor) | SW846 7470A | SW846 7470A |
| Volatile Organics by GC/MS | SW846 8260B | SW846 5030B/826 |
| Volatile Petroleum Hydrocarbons | SW846 8015B | SW846 5030 |

**References:**

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



BOE-C6-0186949

# SAMPLE SUMMARY

**E6K150191**

| WO # | SAMPLE# | CLIENT SAMPLE ID | SAMPLED DATE | SAMP TIME |
|---|---|---|---|---|
| JJQHN | 001 | SUNRIDER BAKER TANK | 11/14/06 | 13:07 |
| JJQQ2 | 002 | LOT 8 BAKER TANK | 11/14/06 | 15:17 |

**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.



BOE-C6-0186950

**Avocet Environmental Inc**

**Client Sample ID: SUNRIDER BAKER TANK**

**GC/MS Volatiles**

**Lot-Sample #...:** E6K150191-001 **Work Order #...:** JJQHN1AA **Matrix.....:** WG
**Date Sampled...:** 11/14/06 13:07 **Date Received..:** 11/15/06 09:40 **MS Run #.....:** 6321380
**Prep Date.....:** 11/16/06 **Analysis Date..:** 11/16/06
**Prep Batch #...:** 6321602 **Analysis Time..:** 22:13
**Dilution Factor:** 10
**Analyst ID.....:** 015590 **Instrument ID..:** MSR
**Method.....:** SW846 8260B

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| **Acetone** | **85 J** | **100** | **ug/L** | **20** |
| Acrolein | ND | 200 | ug/L | 100 |
| Acrylonitrile | ND | 200 | ug/L | 100 |
| Benzene | ND | 10 | ug/L | 3.0 |
| Bromobenzene | ND | 10 | ug/L | 3.0 |
| Bromochloromethane | ND | 10 | ug/L | 4.0 |
| Bromodichloromethane | ND | 10 | ug/L | 3.0 |
| Bromoform | ND | 10 | ug/L | 4.0 |
| Bromomethane | ND | 20 | ug/L | 10 |
| t-Butanol | ND | 250 | ug/L | 60 |
| 2-Butanone | ND | 50 | ug/L | 25 |
| n-Butylbenzene | ND | 10 | ug/L | 3.0 |
| sec-Butylbenzene | ND | 10 | ug/L | 3.0 |
| tert-Butylbenzene | ND | 10 | ug/L | 2.0 |
| Carbon disulfide | ND | 10 | ug/L | 4.0 |
| Carbon tetrachloride | ND | 5.0 | ug/L | 3.0 |
| Chlorobenzene | ND | 10 | ug/L | 3.0 |
| Dibromochloromethane | ND | 10 | ug/L | 4.0 |
| Chloroethane | ND | 20 | ug/L | 4.0 |
| 2-Chloroethyl vinyl ether | ND | 50 | ug/L | 20 |
| **Chloroform** | **77** | **10** | **ug/L** | **3.0** |
| Chloromethane | ND | 20 | ug/L | 3.0 |
| 2-Chlorotoluene | ND | 10 | ug/L | 3.0 |
| 4-Chlorotoluene | ND | 10 | ug/L | 3.0 |
| 1,2-Dibromo-3-chloro-propane | ND | 20 | ug/L | 10 |
| 1,2-Dibromoethane | ND | 10 | ug/L | 3.0 |
| 1,2-Dichlorobenzene | ND | 10 | ug/L | 3.0 |
| 1,3-Dichlorobenzene | ND | 10 | ug/L | 3.0 |
| 1,4-Dichlorobenzene | ND | 10 | ug/L | 3.0 |
| Dichlorodifluoromethane | ND | 10 | ug/L | 4.0 |
| 1,1-Dichloroethane | ND | 10 | ug/L | 2.0 |
| 1,2-Dichloroethane | ND | 5.0 | ug/L | 4.0 |
| cis-1,2-Dichloroethene | ND | 10 | ug/L | 3.0 |
| trans-1,2-Dichloroethene | ND | 10 | ug/L | 3.0 |
| **1,1-Dichloroethene** | **15** | **10** | **ug/L** | **3.0** |
| 2,2-Dichloropropane | ND | 10 | ug/L | 4.0 |

(Continued on next page)

**Avocet Environmental Inc**

**Client Sample ID: SUNRIDER BAKER TANK**

**GC/MS Volatiles**

**Lot-Sample #...:** E6K150191-001 **Work Order #...:** JJQHN1AA **Matrix.....:** WG

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| 1,1-Dichloropropene | ND | 10 | ug/L | 3.0 |
| Tert-amyl methyl ether | ND | 20 | ug/L | 5.0 |
| Tert-butyl ethyl ether | ND | 20 | ug/L | 5.0 |
| Ethylbenzene | ND | 10 | ug/L | 3.0 |
| Hexachlorobutadiene | ND | 10 | ug/L | 3.0 |
| 2-Hexanone | ND | 50 | ug/L | 20 |
| Iodomethane | ND | 20 | ug/L | 10 |
| Isopropylbenzene | ND | 10 | ug/L | 3.0 |
| Isopropyl ether | ND | 20 | ug/L | 5.0 |
| p-Isopropyltoluene | ND | 10 | ug/L | 3.0 |
| Methylene chloride | ND | 10 | ug/L | 3.0 |
| 4-Methyl-2-pentanone | ND | 50 | ug/L | 20 |
| Methyl tert-butyl ether | ND | 10 | ug/L | 5.0 |
| n-Propylbenzene | ND | 10 | ug/L | 4.0 |
| Styrene | ND | 10 | ug/L | 3.0 |
| 1,1,1,2-Tetrachloroethane | ND | 10 | ug/L | 3.0 |
| 1,1,2,2-Tetrachloroethane | ND | 10 | ug/L | 4.0 |
| Tetrachloroethene | ND | 10 | ug/L | 4.0 |
| Tetrahydrofuran | ND | 100 | ug/L | 20 |
| Toluene | ND | 10 | ug/L | 3.0 |
| 1,2,3-Trichlorobenzene | ND | 10 | ug/L | 4.0 |
| 1,2,4-Trichloro-benzene | ND | 10 | ug/L | 3.0 |
| 1,1,1-Trichloroethane | ND | 10 | ug/L | 2.0 |
| 1,1,2-Trichloroethane | ND | 10 | ug/L | 3.0 |
| **Trichloroethene** | **680** | **10** | **ug/L** | **3.0** |
| Trichlorofluoromethane | ND | 20 | ug/L | 3.0 |
| 1,2,3-Trichloropropane | ND | 10 | ug/L | 4.0 |
| 1,1,2-Trichlorotrifluoro-ethane | ND | 10 | ug/L | 4.0 |
| 1,2,4-Trimethylbenzene | ND | 10 | ug/L | 3.0 |
| 1,3,5-Trimethylbenzene | ND | 10 | ug/L | 2.0 |
| Vinyl acetate | ND | 5.0 | ug/L | 20 |
| Vinyl chloride | ND | 20 | ug/L | 3.0 |
| Xylenes (total) | ND | 10 | ug/L | 2.0 |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 90 | (70 - 125) |
| 1,2-Dichloroethane-d4 | 87 | (55 - 135) |
| Toluene-d8 | 92 | (70 - 130) |

**NOTE(S):**

J Estimated result. Result is less than RL.

**Avocet Environmental Inc**

**Client Sample ID: SUNRIDER BAKER TANK**

**GC Volatiles**

| | | | | | |
|---|---|---|---|---|---|
| **Lot-Sample #...:** | E6K150191-001 | **Work Order #...:** | JJQHN1A0 | **Matrix.....:** | WG |
| **Date Sampled...:** | 11/14/06 13:07 | **Date Received..:** | 11/15/06 09:40 | **MS Run #.....:** | 6320235 |
| **Prep Date.....:** | 11/15/06 | **Analysis Date..:** | 11/16/06 | | |
| **Prep Batch #...:** | 6320478 | **Analysis Time..:** | 01:34 | | |
| **Dilution Factor:** | 1 | | | | |
| **Analyst ID.....:** | 001464 | **Instrument ID..:** | G15 | | |
| | | **Method.....:** | SW846 8015B | | |

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| **C6-C8** | **0.24** | **0.10** | **mg/L** | **0.040** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 87 | (70 - 130) |

**NOTE(S):**

Unknown peak.

**Avocet Environmental Inc**

**Client Sample ID: SUNRIDER BAKER TANK**

**GC Semivolatiles**

**Lot-Sample #...:** E6K150191-001 **Work Order #...:** JJQHN2AX **Matrix.....:** WG
**Date Sampled...:** 11/14/06 13:07 **Date Received..:** 11/15/06 09:40 **MS Run #.....:**
**Prep Date.....:** 11/20/06 **Analysis Date..:** 11/22/06
**Prep Batch #...:** 6324270 **Analysis Time..:** 10:47
**Dilution Factor:** 1.24
**Analyst ID.....:** 402479 **Instrument ID..:** G12
**Method.....:** SW846 8015B

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| C8-C9 | ND | 0.12 | mg/L | 0.062 |
| C10-C11 | ND | 0.12 | mg/L | 0.062 |
| C12-C13 | ND | 0.12 | mg/L | 0.062 |
| C14-C15 | ND | 0.12 | mg/L | 0.062 |
| C16-C17 | ND | 0.12 | mg/L | 0.062 |
| C18-C19 | ND | 0.12 | mg/L | 0.062 |
| **C20-C23** | **0.22** | **0.12** | **mg/L** | **0.062** |
| C24-C27 | ND | 0.12 | mg/L | 0.062 |
| C28-C31 | ND | 0.12 | mg/L | 0.062 |
| C32-C35 | ND | 0.12 | mg/L | 0.062 |
| C36-C39 | ND | 0.12 | mg/L | 0.062 |
| C40+ | ND | 0.12 | mg/L | 0.062 |
| **Total Carbon Chain Range** | **0.22** | **0.12** | **mg/L** | **0.062** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 100 | (60 - 140) |

**Avocet Environmental Inc**

**Client Sample ID: SUNRIDER BAKER TANK**

**DISSOLVED Metals**

**Lot-Sample #...:** E6K150191-001 **Matrix.....:** WG
**Date Sampled...:** 11/14/06 13:07 **Date Received..:** 11/15/06 09:40

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Prep Batch #...:** 6320224 | | | | | | |
| Mercury | ND | 0.00020 | mg/L | SW846 7470A | 11/17/06 | JJQHN1AW |
| | | Dilution Factor: 1 | | Analysis Time..: 15:37 | Analyst ID.....: 000023 | |
| | | Instrument ID..: M04 | | MS Run #.....: 6320127 | MDL.....: 0.00010 | |
| **Prep Batch #...:** 6321229 | | | | | | |
| Aluminum | ND | 0.40 | mg/L | SW846 6010B | 11/21/06 | JJQHN1AC |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.20 | |
| Arsenic | ND | 0.012 | mg/L | SW846 6010B | 11/21/06 | JJQHN1AD |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0060 | |
| Antimony | ND | 0.060 | mg/L | SW846 6010B | 11/21/06 | JJQHN1AE |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0060 | |
| **Barium** | **0.053 J** | **0.020** | **mg/L** | **SW846 6010B** | **11/21/06** | **JJQHN1AF** |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0010 | |
| Cadmium | ND | 0.0050 | mg/L | SW846 6010B | 11/21/06 | JJQHN1AG |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.00060 | |
| **Chromium** | **0.031** | **0.010** | **mg/L** | **SW846 6010B** | **11/21/06** | **JJQHN1AH** |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0010 | |
| Beryllium | ND | 0.0050 | mg/L | SW846 6010B | 11/21/06 | JJQHN1AJ |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.00070 | |
| Lead | ND | 0.0050 | mg/L | SW846 6010B | 11/21/06 | JJQHN1AK |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0025 | |

(Continued on next page)

**Avocet Environmental Inc**

**Client Sample ID: SUNRIDER BAKER TANK**

**DISSOLVED Metals**

**Lot-Sample #...:** E6K150191-001 **Matrix.....:** WG

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| Selenium | ND | 0.010 | mg/L | SW846 6010B | 11/21/06 | JJQHN1AL |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0050 | |
| Silver | ND | 0.010 | mg/L | SW846 6010B | 11/21/06 | JJQHN1AM |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0010 | |
| Cobalt | ND | 0.050 | mg/L | SW846 6010B | 11/21/06 | JJQHN1AN |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0020 | |
| Copper | ND | 0.025 | mg/L | SW846 6010B | 11/21/06 | JJQHN1AP |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0040 | |
| **Molybdenum** | **0.037 B** | **0.040** | **mg/L** | **SW846 6010B** | **11/21/06** | **JJQHN1AQ** |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0030 | |
| Nickel | ND | 0.040 | mg/L | SW846 6010B | 11/21/06 | JJQHN1AR |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0030 | |
| Thallium | ND | 0.010 | mg/L | SW846 6010B | 11/21/06 | JJQHN1AT |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0050 | |
| **Vanadium** | **0.0095 B** | **0.050** | **mg/L** | **SW846 6010B** | **11/21/06** | **JJQHN1AU** |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0020 | |
| Zinc | ND | 0.020 | mg/L | SW846 6010B | 11/21/06 | JJQHN1AV |
| | | Dilution Factor: 1 | | Analysis Time..: 18:29 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.010 | |

**NOTE(S):**

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.

Avocet Environmental Inc

Client Sample ID: LOT 8 BAKER TANK

GC/MS Volatiles

**Lot-Sample #...:** E6K150191-002 **Work Order #...:** JJQQ21AC **Matrix.....:** WG
**Date Sampled...:** 11/14/06 15:17 **Date Received..:** 11/15/06 09:40 **MS Run #.....:** 6321380
**Prep Date.....:** 11/16/06 **Analysis Date..:** 11/16/06
**Prep Batch #...:** 6321602 **Analysis Time..:** 22:39
**Dilution Factor:** 200
**Analyst ID.....:** 015590 **Instrument ID..:** MSR
**Method.....:** SW846 8260B

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| **Acetone** | **530 J** | **2000** | **ug/L** | **400** |
| Acrolein | ND | 4000 | ug/L | 2000 |
| Acrylonitrile | ND | 4000 | ug/L | 2000 |
| Benzene | ND | 200 | ug/L | 60 |
| Bromobenzene | ND | 200 | ug/L | 60 |
| Bromochloromethane | ND | 200 | ug/L | 80 |
| Bromodichloromethane | ND | 200 | ug/L | 60 |
| Bromoform | ND | 200 | ug/L | 80 |
| Bromomethane | ND | 400 | ug/L | 200 |
| t-Butanol | ND | 5000 | ug/L | 1200 |
| **2-Butanone** | **10000** | **1000** | **ug/L** | **500** |
| n-Butylbenzene | ND | 200 | ug/L | 60 |
| sec-Butylbenzene | ND | 200 | ug/L | 60 |
| tert-Butylbenzene | ND | 200 | ug/L | 40 |
| Carbon disulfide | ND | 200 | ug/L | 80 |
| Carbon tetrachloride | ND | 100 | ug/L | 60 |
| Chlorobenzene | ND | 200 | ug/L | 60 |
| Dibromochloromethane | ND | 200 | ug/L | 80 |
| Chloroethane | ND | 400 | ug/L | 80 |
| 2-Chloroethyl vinyl ether | ND | 1000 | ug/L | 400 |
| Chloroform | ND | 200 | ug/L | 60 |
| Chloromethane | ND | 400 | ug/L | 60 |
| 2-Chlorotoluene | ND | 200 | ug/L | 60 |
| 4-Chlorotoluene | ND | 200 | ug/L | 60 |
| 1,2-Dibromo-3-chloro-propane | ND | 400 | ug/L | 200 |
| 1,2-Dibromoethane | ND | 200 | ug/L | 60 |
| 1,2-Dichlorobenzene | ND | 200 | ug/L | 60 |
| 1,3-Dichlorobenzene | ND | 200 | ug/L | 60 |
| 1,4-Dichlorobenzene | ND | 200 | ug/L | 60 |
| Dichlorodifluoromethane | ND | 200 | ug/L | 80 |
| **1,1-Dichloroethane** | **44 J** | **200** | **ug/L** | **40** |
| 1,2-Dichloroethane | ND | 100 | ug/L | 80 |
| **cis-1,2-Dichloroethene** | **180 J** | **200** | **ug/L** | **60** |
| trans-1,2-Dichloroethene | ND | 200 | ug/L | 60 |
| **1,1-Dichloroethene** | **3300** | **200** | **ug/L** | **60** |
| 2,2-Dichloropropane | ND | 200 | ug/L | 80 |

(Continued on next page)

**Avocet Environmental Inc**

**Client Sample ID: LOT 8 BAKER TANK**

**GC/MS Volatiles**

**Lot-Sample #...:** E6K150191-002 **Work Order #...:** JJQQ21AC **Matrix.....:** WG

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| 1,1-Dichloropropene | ND | 200 | ug/L | 60 |
| Tert-amyl methyl ether | ND | 400 | ug/L | 100 |
| Tert-butyl ethyl ether | ND | 400 | ug/L | 100 |
| Ethylbenzene | ND | 200 | ug/L | 60 |
| Hexachlorobutadiene | ND | 200 | ug/L | 60 |
| 2-Hexanone | ND | 1000 | ug/L | 400 |
| Iodomethane | ND | 400 | ug/L | 200 |
| Isopropylbenzene | ND | 200 | ug/L | 60 |
| Isopropyl ether | ND | 400 | ug/L | 100 |
| p-Isopropyltoluene | ND | 200 | ug/L | 60 |
| Methylene chloride | ND | 200 | ug/L | 60 |
| **4-Methyl-2-pentanone** | **11000** | **1000** | **ug/L** | **400** |
| Methyl tert-butyl ether | ND | 200 | ug/L | 100 |
| n-Propylbenzene | ND | 200 | ug/L | 80 |
| Styrene | ND | 200 | ug/L | 60 |
| 1,1,1,2-Tetrachloroethane | ND | 200 | ug/L | 60 |
| 1,1,2,2-Tetrachloroethane | ND | 200 | ug/L | 80 |
| Tetrachloroethene | ND | 200 | ug/L | 80 |
| Tetrahydrofuran | ND | 2000 | ug/L | 400 |
| **Toluene** | **10000** | **200** | **ug/L** | **60** |
| 1,2,3-Trichlorobenzene | ND | 200 | ug/L | 80 |
| 1,2,4-Trichloro-benzene | ND | 200 | ug/L | 60 |
| **1,1,1-Trichloroethane** | **120 J** | **200** | **ug/L** | **40** |
| 1,1,2-Trichloroethane | ND | 200 | ug/L | 60 |
| **Trichloroethene** | **1300** | **200** | **ug/L** | **60** |
| Trichlorofluoromethane | ND | 400 | ug/L | 60 |
| 1,2,3-Trichloropropane | ND | 200 | ug/L | 80 |
| 1,1,2-Trichlorotrifluoro-ethane | ND | 200 | ug/L | 80 |
| 1,2,4-Trimethylbenzene | ND | 200 | ug/L | 60 |
| 1,3,5-Trimethylbenzene | ND | 200 | ug/L | 40 |
| Vinyl acetate | ND | 100 | ug/L | 400 |
| Vinyl chloride | ND | 400 | ug/L | 60 |
| Xylenes (total) | ND | 200 | ug/L | 40 |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 88 | (70 - 125) |
| 1,2-Dichloroethane-d4 | 90 | (55 - 135) |
| Toluene-d8 | 92 | (70 - 130) |

**NOTE(S):**

J Estimated result. Result is less than RL.

**Avocet Environmental Inc**

**Client Sample ID: LOT 8 BAKER TANK**

**GC Volatiles**

| | | | | | |
|---|---|---|---|---|---|
| **Lot-Sample #...:** | E6K150191-002 | **Work Order #...:** | JJQQ21AA | **Matrix.....:** | WG |
| **Date Sampled...:** | 11/14/06 15:17 | **Date Received..:** | 11/15/06 09:40 | **MS Run #.....:** | 6320235 |
| **Prep Date.....:** | 11/15/06 | **Analysis Date..:** | 11/16/06 | | |
| **Prep Batch #...:** | 6320478 | **Analysis Time..:** | 11:05 | | |
| **Dilution Factor:** | 10 | | | | |
| **Analyst ID.....:** | 001464 | **Instrument ID..:** | G15 | | |
| | | **Method.....:** | SW846 8015B | | |

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| **C6-C8** | **18** | **1.0** | **mg/L** | **0.40** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 91 | (70 - 130) |

**NOTE(S):**

Unknown peaks.

**Avocet Environmental Inc**

**Client Sample ID: LOT 8 BAKER TANK**

**GC Semivolatiles**

| | | | | | |
|---|---|---|---|---|---|
| **Lot-Sample #...:** | E6K150191-002 | **Work Order #...:** | JJQQ22A0 | **Matrix.....:** | WG |
| **Date Sampled...:** | 11/14/06 15:17 | **Date Received..:** | 11/15/06 09:40 | **MS Run #.....:** | |
| **Prep Date.....:** | 11/20/06 | **Analysis Date..:** | 11/22/06 | | |
| **Prep Batch #...:** | 6324270 | **Analysis Time..:** | 10:56 | | |
| **Dilution Factor:** | 1.18 | | | | |
| **Analyst ID.....:** | 402479 | **Instrument ID..:** | G12 | | |
| | | **Method.....:** | SW846 8015B | | |

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | MDL |
|---|---|---|---|---|
| **C8-C9** | **0.18** | **0.12** | **mg/L** | **0.059** |
| C10-C11 | ND | 0.12 | mg/L | 0.059 |
| C12-C13 | ND | 0.12 | mg/L | 0.059 |
| C14-C15 | ND | 0.12 | mg/L | 0.059 |
| C16-C17 | ND | 0.12 | mg/L | 0.059 |
| C18-C19 | ND | 0.12 | mg/L | 0.059 |
| C20-C23 | ND | 0.12 | mg/L | 0.059 |
| C24-C27 | ND | 0.12 | mg/L | 0.059 |
| C28-C31 | ND | 0.12 | mg/L | 0.059 |
| C32-C35 | ND | 0.12 | mg/L | 0.059 |
| C36-C39 | ND | 0.12 | mg/L | 0.059 |
| C40+ | ND | 0.12 | mg/L | 0.059 |
| **Total Carbon Chain Range** | **0.18** | **0.12** | **mg/L** | **0.059** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 98 | (60 - 140) |

**Avocet Environmental Inc**

**Client Sample ID: LOT 8 BAKER TANK**

**DISSOLVED Metals**

**Lot-Sample #...:** E6K150191-002 **Matrix.....:** WG
**Date Sampled...:** 11/14/06 15:17 **Date Received..:** 11/15/06 09:40

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **Prep Batch #...:** 6320224 | | | | | | |
| Mercury | ND | 0.00020 | mg/L | SW846 7470A | 11/17/06 | JJQQ21AX |
| | | Dilution Factor: 1 | | Analysis Time..: 15:40 | Analyst ID.....: 000023 | |
| | | Instrument ID..: M04 | | MS Run #.....: 6320127 | MDL.....: 0.00010 | |
| **Prep Batch #...:** 6321229 | | | | | | |
| Aluminum | ND | 0.40 | mg/L | SW846 6010B | 11/21/06 | JJQQ21AD |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.20 | |
| **Arsenic** | **0.020** | **0.012** | **mg/L** | **SW846 6010B** | **11/21/06** | **JJQQ21AE** |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0060 | |
| Antimony | ND | 0.060 | mg/L | SW846 6010B | 11/21/06 | JJQQ21AF |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0060 | |
| **Barium** | **0.14 J** | **0.020** | **mg/L** | **SW846 6010B** | **11/21/06** | **JJQQ21AG** |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0010 | |
| Cadmium | ND | 0.0050 | mg/L | SW846 6010B | 11/21/06 | JJQQ21AH |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.00060 | |
| Chromium | ND | 0.010 | mg/L | SW846 6010B | 11/21/06 | JJQQ21AJ |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0010 | |
| Beryllium | ND | 0.0050 | mg/L | SW846 6010B | 11/21/06 | JJQQ21AK |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.00070 | |
| Lead | ND | 0.0050 | mg/L | SW846 6010B | 11/21/06 | JJQQ21AL |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0025 | |

(Continued on next page)

**Avocet Environmental Inc**

**Client Sample ID: LOT 8 BAKER TANK**

**DISSOLVED Metals**

**Lot-Sample #...:** E6K150191-002 **Matrix.....:** WG

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| Selenium | ND | 0.010 | mg/L | SW846 6010B | 11/21/06 | JJQQ21AM |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0050 | |
| Silver | ND | 0.010 | mg/L | SW846 6010B | 11/21/06 | JJQQ21AN |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0010 | |
| Cobalt | ND | 0.050 | mg/L | SW846 6010B | 11/21/06 | JJQQ21AP |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0020 | |
| Copper | ND | 0.025 | mg/L | SW846 6010B | 11/21/06 | JJQQ21AQ |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0040 | |
| **Molybdenum** | **0.012 B** | **0.040** | **mg/L** | **SW846 6010B** | **11/21/06** | **JJQQ21AR** |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0030 | |
| Nickel | ND | 0.040 | mg/L | SW846 6010B | 11/21/06 | JJQQ21AT |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0030 | |
| Thallium | ND | 0.010 | mg/L | SW846 6010B | 11/21/06 | JJQQ21AU |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0050 | |
| **Vanadium** | **0.0023 B** | **0.050** | **mg/L** | **SW846 6010B** | **11/21/06** | **JJQQ21AV** |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.0020 | |
| **Zinc** | **0.010 B** | **0.020** | **mg/L** | **SW846 6010B** | **11/21/06** | **JJQQ21AW** |
| | | Dilution Factor: 1 | | Analysis Time..: 18:37 | Analyst ID.....: 021088 | |
| | | Instrument ID..: M01 | | MS Run #.....: 6326303 | MDL.....: 0.010 | |

**NOTE(S):**

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

B Estimated result. Result is less than RL.



BOE-C6-0186962

STL

# QA/QC

# QC DATA ASSOCIATION SUMMARY

**E6K150191**

Sample Preparation and Analysis Control Numbers

| SAMPLE# | MATRIX | ANALYTICAL METHOD | LEACH BATCH # | PREP BATCH # | MS RUN# |
|---|---|---|---|---|---|
| 001 | WG | SW846 8015B | | 6324270 | |
| | WG | SW846 8015B | | 6320478 | 6320235 |
| | WG | SW846 7470A | | 6320224 | 6320127 |
| | WG | SW846 8260B | | 6321602 | 6321380 |
| | WG | SW846 6010B | | 6321229 | 6326303 |
| 002 | WG | SW846 8015B | | 6324270 | |
| | WG | SW846 8015B | | 6320478 | 6320235 |
| | WG | SW846 7470A | | 6320224 | 6320127 |
| | WG | SW846 8260B | | 6321602 | 6321380 |
| | WG | SW846 6010B | | 6321229 | 6326303 |



BOE-C6-0186964

## METHOD BLANK REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191
**MB Lot-Sample #:** E6K170000-602

**Analysis Date..:** 11/16/06
**Dilution Factor:** 1

**Work Order #...:** JJ1VT1AA

**Prep Date.....:** 11/16/06
**Prep Batch #...:** 6321602

**Analyst ID.....:** 015590

**Matrix.....:** WATER

**Analysis Time..:** 20:30
**Instrument ID..:** MSR

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Acetone | ND | 10 | ug/L | SW846 8260B |
| Acrolein | ND | 20 | ug/L | SW846 8260B |
| Acrylonitrile | ND | 20 | ug/L | SW846 8260B |
| Benzene | ND | 1.0 | ug/L | SW846 8260B |
| Bromobenzene | ND | 1.0 | ug/L | SW846 8260B |
| Bromochloromethane | ND | 1.0 | ug/L | SW846 8260B |
| Bromodichloromethane | ND | 1.0 | ug/L | SW846 8260B |
| Bromoform | ND | 1.0 | ug/L | SW846 8260B |
| Bromomethane | ND | 2.0 | ug/L | SW846 8260B |
| t-Butanol | ND | 25 | ug/L | SW846 8260B |
| 2-Butanone | ND | 5.0 | ug/L | SW846 8260B |
| n-Butylbenzene | ND | 1.0 | ug/L | SW846 8260B |
| sec-Butylbenzene | ND | 1.0 | ug/L | SW846 8260B |
| tert-Butylbenzene | ND | 1.0 | ug/L | SW846 8260B |
| Carbon disulfide | ND | 1.0 | ug/L | SW846 8260B |
| Carbon tetrachloride | ND | 0.50 | ug/L | SW846 8260B |
| Chlorobenzene | ND | 1.0 | ug/L | SW846 8260B |
| Dibromochloromethane | ND | 1.0 | ug/L | SW846 8260B |
| Chloroethane | ND | 2.0 | ug/L | SW846 8260B |
| 2-Chloroethyl vinyl ether | ND | 5.0 | ug/L | SW846 8260B |
| Chloroform | ND | 1.0 | ug/L | SW846 8260B |
| Chloromethane | ND | 2.0 | ug/L | SW846 8260B |
| 2-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260B |
| 4-Chlorotoluene | ND | 1.0 | ug/L | SW846 8260B |
| 1,2-Dibromo-3-chloro-propane | ND | 2.0 | ug/L | SW846 8260B |
| 1,2-Dibromoethane | ND | 1.0 | ug/L | SW846 8260B |
| 1,2-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260B |
| 1,3-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260B |
| 1,4-Dichlorobenzene | ND | 1.0 | ug/L | SW846 8260B |
| Dichlorodifluoromethane | ND | 1.0 | ug/L | SW846 8260B |
| 1,1-Dichloroethane | ND | 1.0 | ug/L | SW846 8260B |
| 1,2-Dichloroethane | ND | 0.50 | ug/L | SW846 8260B |
| cis-1,2-Dichloroethene | ND | 1.0 | ug/L | SW846 8260B |
| trans-1,2-Dichloroethene | ND | 1.0 | ug/L | SW846 8260B |
| 1,1-Dichloroethene | ND | 1.0 | ug/L | SW846 8260B |
| 2,2-Dichloropropane | ND | 1.0 | ug/L | SW846 8260B |
| 1,1-Dichloropropene | ND | 1.0 | ug/L | SW846 8260B |
| Tert-amyl methyl ether | ND | 2.0 | ug/L | SW846 8260B |
| Tert-butyl ethyl ether | ND | 2.0 | ug/L | SW846 8260B |

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BOE-C6-0186965

## METHOD BLANK REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJ1VT1AA **Matrix.....:** WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| Ethylbenzene | ND | 1.0 | ug/L | SW846 8260B |
| Hexachlorobutadiene | ND | 1.0 | ug/L | SW846 8260B |
| 2-Hexanone | ND | 5.0 | ug/L | SW846 8260B |
| Iodomethane | ND | 2.0 | ug/L | SW846 8260B |
| Isopropylbenzene | ND | 1.0 | ug/L | SW846 8260B |
| Isopropyl ether | ND | 2.0 | ug/L | SW846 8260B |
| p-Isopropyltoluene | ND | 1.0 | ug/L | SW846 8260B |
| Methylene chloride | ND | 1.0 | ug/L | SW846 8260B |
| 4-Methyl-2-pentanone | ND | 5.0 | ug/L | SW846 8260B |
| Methyl tert-butyl ether | ND | 1.0 | ug/L | SW846 8260B |
| n-Propylbenzene | ND | 1.0 | ug/L | SW846 8260B |
| Styrene | ND | 1.0 | ug/L | SW846 8260B |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260B |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/L | SW846 8260B |
| Tetrachloroethene | ND | 1.0 | ug/L | SW846 8260B |
| Tetrahydrofuran | ND | 10 | ug/L | SW846 8260B |
| Toluene | ND | 1.0 | ug/L | SW846 8260B |
| 1,2,3-Trichlorobenzene | ND | 1.0 | ug/L | SW846 8260B |
| 1,2,4-Trichloro-benzene | ND | 1.0 | ug/L | SW846 8260B |
| 1,1,1-Trichloroethane | ND | 1.0 | ug/L | SW846 8260B |
| 1,1,2-Trichloroethane | ND | 1.0 | ug/L | SW846 8260B |
| Trichloroethene | ND | 1.0 | ug/L | SW846 8260B |
| Trichlorofluoromethane | ND | 2.0 | ug/L | SW846 8260B |
| 1,2,3-Trichloropropane | ND | 1.0 | ug/L | SW846 8260B |
| 1,1,2-Trichlorotrifluoro-ethane | ND | 1.0 | ug/L | SW846 8260B |
| 1,2,4-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260B |
| 1,3,5-Trimethylbenzene | ND | 1.0 | ug/L | SW846 8260B |
| Vinyl acetate | ND | 0.50 | ug/L | SW846 8260B |
| Vinyl chloride | ND | 2.0 | ug/L | SW846 8260B |
| Xylenes (total) | ND | 1.0 | ug/L | SW846 8260B |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 91 | (70 - 125) |
| 1,2-Dichloroethane-d4 | 88 | (55 - 135) |
| Toluene-d8 | 91 | (70 - 130) |

**NOTE(S):**

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



BOE-C6-0186966

## METHOD BLANK REPORT

### GC Volatiles

**Client Lot #...:** E6K150191
**MB Lot-Sample #:** E6K160000-478

**Analysis Date..:** 11/15/06
**Dilution Factor:** 1

**Work Order #...:** JJVRD1AA

**Prep Date.....:** 11/15/06
**Prep Batch #...:** 6320478

**Analyst ID.....:** 001464

**Matrix.....:** WATER

**Analysis Time..:** 22:53
**Instrument ID..:** G15

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| C6-C8 | ND | 0.10 | mg/L | SW846 8015B |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 88 | (70 - 130) |

**NOTE(S):**

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

## METHOD BLANK REPORT

### GC Semivolatiles

**Client Lot #...:** E6K150191
**MB Lot-Sample #:** E6K200000-270

**Analysis Date..:** 11/22/06
**Dilution Factor:** 1

**Work Order #...:** JJ3711AA

**Prep Date.....:** 11/20/06
**Prep Batch #...:** 6324270

**Analyst ID.....:** 402479

**Matrix.....:** WATER

**Analysis Time..:** 10:02
**Instrument ID..:** G12

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD |
|---|---|---|---|---|
| C8-C9 | ND | 0.10 | mg/L | SW846 8015B |
| C10-C11 | ND | 0.10 | mg/L | SW846 8015B |
| C12-C13 | ND | 0.10 | mg/L | SW846 8015B |
| C14-C15 | ND | 0.10 | mg/L | SW846 8015B |
| C16-C17 | ND | 0.10 | mg/L | SW846 8015B |
| C18-C19 | ND | 0.10 | mg/L | SW846 8015B |
| C20-C23 | ND | 0.10 | mg/L | SW846 8015B |
| C24-C27 | ND | 0.10 | mg/L | SW846 8015B |
| C28-C31 | ND | 0.10 | mg/L | SW846 8015B |
| C32-C35 | ND | 0.10 | mg/L | SW846 8015B |
| C36-C39 | ND | 0.10 | mg/L | SW846 8015B |
| C40+ | ND | 0.10 | mg/L | SW846 8015B |
| Total Carbon Chain Range | ND | 0.10 | mg/L | SW846 8015B |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 100 | (60 - 140) |

**NOTE(S):**

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

**METHOD BLANK REPORT**

**DISSOLVED Metals**

**Client Lot #...:** E6K150191 **Matrix.....:** WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| **MB Lot-Sample #:** E6K160000-224 **Prep Batch #...:** 6320224 | | | | | | |
| Mercury | ND | 0.00020 | mg/L | SW846 7470A | 11/17/06 | JJTG41AA |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 15:33 | | Analyst ID.....: 000023 | Instrument ID..: M04 | |
| **MB Lot-Sample #:** E6K170000-229 **Prep Batch #...:** 6321229 | | | | | | |
| Aluminum | ND | 0.40 | mg/L | SW846 6010B | 11/21/06 | JJXPX1A2 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Arsenic | ND | 0.012 | mg/L | SW846 6010B | 11/21/06 | JJXPX1AA |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Antimony | ND | 0.060 | mg/L | SW846 6010B | 11/21/06 | JJXPX1A3 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| **Barium** | **0.0041 B** | **0.020** | **mg/L** | **SW846 6010B** | **11/21/06** | **JJXPX1AC** |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Cadmium | ND | 0.0050 | mg/L | SW846 6010B | 11/21/06 | JJXPX1AE |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Chromium | ND | 0.010 | mg/L | SW846 6010B | 11/21/06 | JJXPX1AF |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Beryllium | ND | 0.0050 | mg/L | SW846 6010B | 11/21/06 | JJXPX1A4 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Lead | ND | 0.0050 | mg/L | SW846 6010B | 11/21/06 | JJXPX1AK |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Selenium | ND | 0.010 | mg/L | SW846 6010B | 11/21/06 | JJXPX1AL |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |

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BOE-C6-0186969

## METHOD BLANK REPORT

## DISSOLVED Metals

**Client Lot #...:** E6K150191 **Matrix.....:** WATER

| PARAMETER | RESULT | REPORTING LIMIT | UNITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|
| Silver | ND | 0.010 | mg/L | SW846 6010B | 11/21/06 | JJXPX1A5 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Cobalt | ND | 0.050 | mg/L | SW846 6010B | 11/21/06 | JJXPX1A6 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Copper | ND | 0.025 | mg/L | SW846 6010B | 11/21/06 | JJXPX1AG |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Molybdenum | ND | 0.040 | mg/L | SW846 6010B | 11/21/06 | JJXPX1A7 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Nickel | ND | 0.040 | mg/L | SW846 6010B | 11/21/06 | JJXPX1A8 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Thallium | ND | 0.010 | mg/L | SW846 6010B | 11/21/06 | JJXPX1A9 |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Vanadium | ND | 0.050 | mg/L | SW846 6010B | 11/21/06 | JJXPX1CA |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |
| Zinc | ND | 0.020 | mg/L | SW846 6010B | 11/21/06 | JJXPX1AM |
| | | Dilution Factor: 1 | | | | |
| | | Analysis Time..: 18:15 | | Analyst ID.....: 021088 | Instrument ID..: M01 | |

**NOTE(S):**

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

B Estimated result. Result is less than RL.



BOE-C6-0186970

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJ1VT1AC **Matrix.....:** WATER
**LCS Lot-Sample#:** E6K170000-602
**Prep Date.....:** 11/16/06 **Analysis Date..:** 11/16/06
**Prep Batch #...:** 6321602 **Analysis Time..:** 20:04
**Dilution Factor:** 1 **Instrument ID..:** MSR
**Analyst ID.....:** 015590

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| Acetone | 79 | (60 - 140) | SW846 8260B |
| **Benzene** | **91** | **(60 - 125)** | **SW846 8260B** |
| Bromobenzene | 84 | (70 - 130) | SW846 8260B |
| Bromochloromethane | 75 | (70 - 130) | SW846 8260B |
| Dibromomethane | 93 | (70 - 130) | SW846 8260B |
| **Bromodichloromethane** | **101** | **(60 - 130)** | **SW846 8260B** |
| Bromoform | 92 | (70 - 130) | SW846 8260B |
| Bromomethane | 110 | (60 - 140) | SW846 8260B |
| t-Butanol | 81 | (40 - 150) | SW846 8260B |
| 1,2-Dichloropropane | 89 | (70 - 130) | SW846 8260B |
| 1,3-Dichloropropane | 90 | (70 - 130) | SW846 8260B |
| 2-Butanone | 83 | (60 - 140) | SW846 8260B |
| cis-1,3-Dichloropropene | 101 | (70 - 130) | SW846 8260B |
| trans-1,3-Dichloropropene | 92 | (70 - 130) | SW846 8260B |
| n-Butylbenzene | 87 | (70 - 130) | SW846 8260B |
| sec-Butylbenzene | 90 | (70 - 130) | SW846 8260B |
| tert-Butylbenzene | 86 | (70 - 130) | SW846 8260B |
| Naphthalene | 79 | (60 - 140) | SW846 8260B |
| Carbon disulfide | 105 | (70 - 130) | SW846 8260B |
| **Carbon tetrachloride** | **104** | **(60 - 140)** | **SW846 8260B** |
| Chlorobenzene | 90 | (70 - 125) | SW846 8260B |
| Dibromochloromethane | 100 | (70 - 130) | SW846 8260B |
| Chloroethane | 90 | (60 - 140) | SW846 8260B |
| **m-Xylene & p-Xylene** | **87** | **(65 - 130)** | **SW846 8260B** |
| **Chloroform** | **83** | **(60 - 125)** | **SW846 8260B** |
| **o-Xylene** | **91** | **(70 - 130)** | **SW846 8260B** |
| Chloromethane | 93 | (60 - 140) | SW846 8260B |
| 2-Chlorotoluene | 86 | (70 - 130) | SW846 8260B |
| 4-Chlorotoluene | 90 | (70 - 130) | SW846 8260B |
| 1,2-Dibromo-3-chloro-propane | 73 | (60 - 140) | SW846 8260B |
| 1,2-Dibromoethane | 0 | (70 - 130) | SW846 8260B |
| 1,2-Dichlorobenzene | 84 | (70 - 130) | SW846 8260B |

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BOE-C6-0186971

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJ1VT1AC **Matrix.....:** WATER
**LCS Lot-Sample#:** E6K170000-602

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| 1,3-Dichlorobenzene | 83 | (70 - 130) | SW846 8260B |
| 1,4-Dichlorobenzene | 85 | (70 - 130) | SW846 8260B |
| Dichlorodifluoromethane | 131 | (40 - 160) | SW846 8260B |
| **1,1-Dichloroethane** | **91** | **(65 - 130)** | **SW846 8260B** |
| **1,2-Dichloroethane** | **89** | **(55 - 130)** | **SW846 8260B** |
| **cis-1,2-Dichloroethene** | **92** | **(60 - 125)** | **SW846 8260B** |
| trans-1,2-Dichloroethene | 94 | (70 - 130) | SW846 8260B |
| **1,1-Dichloroethene** | **101** | **(60 - 150)** | **SW846 8260B** |
| 2,2-Dichloropropane | 94 | (70 - 130) | SW846 8260B |
| 1,1-Dichloropropene | 92 | (70 - 130) | SW846 8260B |
| Tert-amyl methyl ether | 84 | (70 - 130) | SW846 8260B |
| Tert-butyl ethyl ether | 85 | (70 - 130) | SW846 8260B |
| **Ethylbenzene** | **91** | **(70 - 130)** | **SW846 8260B** |
| Hexachlorobutadiene | 83 | (70 - 130) | SW846 8260B |
| 2-Hexanone | 86 | (60 - 140) | SW846 8260B |
| Isopropylbenzene | 81 | (70 - 130) | SW846 8260B |
| Isopropyl ether | 93 | (70 - 130) | SW846 8260B |
| p-Isopropyltoluene | 83 | (70 - 130) | SW846 8260B |
| Methylene chloride | 83 | (70 - 130) | SW846 8260B |
| 4-Methyl-2-pentanone | 86 | (60 - 140) | SW846 8260B |
| Methyl tert-butyl ether | 87 | (70 - 130) | SW846 8260B |
| n-Propylbenzene | 86 | (70 - 130) | SW846 8260B |
| Styrene | 93 | (70 - 130) | SW846 8260B |
| 1,1,1,2-Tetrachloroethane | 97 | (70 - 130) | SW846 8260B |
| 1,1,2,2-Tetrachloroethane | 87 | (70 - 130) | SW846 8260B |
| **Tetrachloroethene** | **89** | **(60 - 130)** | **SW846 8260B** |
| **Toluene** | **92** | **(65 - 125)** | **SW846 8260B** |
| 1,2,3-Trichlorobenzene | 84 | (70 - 130) | SW846 8260B |
| 1,2,4-Trichlorobenzene | 83 | (70 - 130) | SW846 8260B |
| **1,1,1-Trichloroethane** | **99** | **(70 - 130)** | **SW846 8260B** |
| 1,1,2-Trichloroethane | 89 | (70 - 130) | SW846 8260B |
| **Trichloroethene** | **89** | **(60 - 130)** | **SW846 8260B** |
| Trichlorofluoromethane | 94 | (70 - 130) | SW846 8260B |
| 1,2,3-Trichloropropane | 79 | (70 - 130) | SW846 8260B |
| 1,1,2-Trichlorotrifluoroethane | 95 | (60 - 140) | SW846 8260B |

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BOE-C6-0186972

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJ1VT1AC **Matrix.....:** WATER
**LCS Lot-Sample#:** E6K170000-602

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| 1,2,4-Trimethylbenzene | 87 | (70 - 130) | SW846 8260B |
| 1,3,5-Trimethylbenzene | 88 | (70 - 130) | SW846 8260B |
| **Vinyl chloride** | **96** | **(30 - 155)** | **SW846 8260B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 92 | (70 - 125) |
| 1,2-Dichloroethane-d4 | 86 | (55 - 135) |
| Toluene-d8 | 92 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE DATA REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJ1VT1AC **Matrix.....:** WATER
**LCS Lot-Sample#:** E6K170000-602
**Prep Date.....:** 11/16/06 **Analysis Date..:** 11/16/06
**Prep Batch #...:** 6321602 **Analysis Time..:** 20:04
**Dilution Factor:** 1 **Instrument ID..:** MSR
**Analyst ID.....:** 015590

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCENT RECOVERY | METHOD |
|---|---|---|---|---|---|
| Acetone | 50.0 | 39.7 | ug/L | 79 | SW846 8260B |
| **Benzene** | **10.0** | **9.09** | **ug/L** | **91** | **SW846 8260B** |
| Bromobenzene | 10.0 | 8.42 | ug/L | 84 | SW846 8260B |
| Bromochloromethane | 10.0 | 7.46 | ug/L | 75 | SW846 8260B |
| Dibromomethane | 10.0 | 9.29 | ug/L | 93 | SW846 8260B |
| **Bromodichloromethane** | **10.0** | **10.1** | **ug/L** | **101** | **SW846 8260B** |
| Bromoform | 10.0 | 9.22 | ug/L | 92 | SW846 8260B |
| Bromomethane | 10.0 | 11.0 | ug/L | 110 | SW846 8260B |
| t-Butanol | 50.0 | 40.6 | ug/L | 81 | SW846 8260B |
| 1,2-Dichloropropane | 10.0 | 8.88 | ug/L | 89 | SW846 8260B |
| 1,3-Dichloropropane | 10.0 | 9.00 | ug/L | 90 | SW846 8260B |
| 2-Butanone | 50.0 | 41.5 | ug/L | 83 | SW846 8260B |
| cis-1,3-Dichloropropene | 10.0 | 10.1 | ug/L | 101 | SW846 8260B |
| trans-1,3-Dichloropropene | 10.0 | 9.18 | ug/L | 92 | SW846 8260B |
| n-Butylbenzene | 10.0 | 8.74 | ug/L | 87 | SW846 8260B |
| sec-Butylbenzene | 10.0 | 9.00 | ug/L | 90 | SW846 8260B |
| tert-Butylbenzene | 10.0 | 8.59 | ug/L | 86 | SW846 8260B |
| Naphthalene | 10.0 | 7.87 | ug/L | 79 | SW846 8260B |
| Carbon disulfide | 50.0 | 52.4 | ug/L | 105 | SW846 8260B |
| **Carbon tetrachloride** | **10.0** | **10.4** | **ug/L** | **104** | **SW846 8260B** |
| Chlorobenzene | 10.0 | 8.98 | ug/L | 90 | SW846 8260B |
| Dibromochloromethane | 10.0 | 9.96 | ug/L | 100 | SW846 8260B |
| Chloroethane | 10.0 | 9.05 | ug/L | 90 | SW846 8260B |
| **m-Xylene & p-Xylene** | **20.0** | **17.4** | **ug/L** | **87** | **SW846 8260B** |
| **Chloroform** | **10.0** | **8.26** | **ug/L** | **83** | **SW846 8260B** |
| **o-Xylene** | **10.0** | **9.08** | **ug/L** | **91** | **SW846 8260B** |
| Chloromethane | 10.0 | 9.27 | ug/L | 93 | SW846 8260B |
| 2-Chlorotoluene | 10.0 | 8.59 | ug/L | 86 | SW846 8260B |
| 4-Chlorotoluene | 10.0 | 8.97 | ug/L | 90 | SW846 8260B |
| 1,2-Dibromo-3-chloro-propane | 10.0 | 7.33 | ug/L | 73 | SW846 8260B |
| 1,2-Dibromoethane | 10.0 | | ug/L | 0 | SW846 8260B |
| 1,2-Dichlorobenzene | 10.0 | 8.36 | ug/L | 84 | SW846 8260B |

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## LABORATORY CONTROL SAMPLE DATA REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJ1VT1AC **Matrix.....:** WATER
**LCS Lot-Sample#:** E6K170000-602

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCENT RECOVERY | METHOD |
|---|---|---|---|---|---|
| 1,3-Dichlorobenzene | 10.0 | 8.32 | ug/L | 83 | SW846 8260B |
| 1,4-Dichlorobenzene | 10.0 | 8.48 | ug/L | 85 | SW846 8260B |
| Dichlorodifluoromethane | 10.0 | 13.1 | ug/L | 131 | SW846 8260B |
| **1,1-Dichloroethane** | **10.0** | **9.11** | **ug/L** | **91** | **SW846 8260B** |
| **1,2-Dichloroethane** | **10.0** | **8.93** | **ug/L** | **89** | **SW846 8260B** |
| **cis-1,2-Dichloroethene** | **10.0** | **9.22** | **ug/L** | **92** | **SW846 8260B** |
| trans-1,2-Dichloroethene | 10.0 | 9.45 | ug/L | 94 | SW846 8260B |
| **1,1-Dichloroethene** | **10.0** | **10.1** | **ug/L** | **101** | **SW846 8260B** |
| 2,2-Dichloropropane | 10.0 | 9.35 | ug/L | 94 | SW846 8260B |
| 1,1-Dichloropropene | 10.0 | 9.22 | ug/L | 92 | SW846 8260B |
| Tert-amyl methyl ether | 10.0 | 8.44 | ug/L | 84 | SW846 8260B |
| Tert-butyl ethyl ether | 10.0 | 8.51 | ug/L | 85 | SW846 8260B |
| **Ethylbenzene** | **10.0** | **9.11** | **ug/L** | **91** | **SW846 8260B** |
| Hexachlorobutadiene | 10.0 | 8.27 | ug/L | 83 | SW846 8260B |
| 2-Hexanone | 50.0 | 43.0 | ug/L | 86 | SW846 8260B |
| Isopropylbenzene | 10.0 | 8.07 | ug/L | 81 | SW846 8260B |
| Isopropyl ether | 10.0 | 9.27 | ug/L | 93 | SW846 8260B |
| p-Isopropyltoluene | 10.0 | 8.32 | ug/L | 83 | SW846 8260B |
| Methylene chloride | 10.0 | 8.28 | ug/L | 83 | SW846 8260B |
| 4-Methyl-2-pentanone | 50.0 | 42.8 | ug/L | 86 | SW846 8260B |
| Methyl tert-butyl ether | 10.0 | 8.67 | ug/L | 87 | SW846 8260B |
| n-Propylbenzene | 10.0 | 8.62 | ug/L | 86 | SW846 8260B |
| Styrene | 10.0 | 9.34 | ug/L | 93 | SW846 8260B |
| 1,1,1,2-Tetrachloroethane | 10.0 | 9.66 | ug/L | 97 | SW846 8260B |
| 1,1,2,2-Tetrachloroethane | 10.0 | 8.71 | ug/L | 87 | SW846 8260B |
| **Tetrachloroethene** | **10.0** | **8.86** | **ug/L** | **89** | **SW846 8260B** |
| **Toluene** | **10.0** | **9.17** | **ug/L** | **92** | **SW846 8260B** |
| 1,2,3-Trichlorobenzene | 10.0 | 8.44 | ug/L | 84 | SW846 8260B |
| 1,2,4-Trichloro-benzene | 10.0 | 8.30 | ug/L | 83 | SW846 8260B |
| **1,1,1-Trichloroethane** | **10.0** | **9.93** | **ug/L** | **99** | **SW846 8260B** |
| 1,1,2-Trichloroethane | 10.0 | 8.93 | ug/L | 89 | SW846 8260B |
| **Trichloroethene** | **10.0** | **8.94** | **ug/L** | **89** | **SW846 8260B** |
| Trichlorofluoromethane | 10.0 | 9.42 | ug/L | 94 | SW846 8260B |
| 1,2,3-Trichloropropane | 10.0 | 7.88 | ug/L | 79 | SW846 8260B |
| 1,1,2-Trichlorotrifluoro-ethane | 10.0 | 9.52 | ug/L | 95 | SW846 8260B |

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BOE-C6-0186975

## LABORATORY CONTROL SAMPLE DATA REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJ1VT1AC **Matrix.....:** WATER
**LCS Lot-Sample#:** E6K170000-602

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCENT RECOVERY | METHOD |
|---|---|---|---|---|---|
| 1,2,4-Trimethylbenzene | 10.0 | 8.71 | ug/L | 87 | SW846 8260B |
| 1,3,5-Trimethylbenzene | 10.0 | 8.76 | ug/L | 88 | SW846 8260B |
| **Vinyl chloride** | **10.0** | **9.61** | **ug/L** | **96** | **SW846 8260B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 92 | (70 - 125) |
| 1,2-Dichloroethane-d4 | 86 | (55 - 135) |
| Toluene-d8 | 92 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters



BOE-C6-0186976

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJVRD1AC **Matrix.....:** WATER
**LCS Lot-Sample#:** E6K160000-478
**Prep Date.....:** 11/15/06 **Analysis Date..:** 11/15/06
**Prep Batch #...:** 6320478 **Analysis Time..:** 23:20
**Dilution Factor:** 1 **Instrument ID..:** G15
**Analyst ID.....:** 001464

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD |
|---|---|---|---|
| **TPH (as Gasoline)** | **95** | **(70 - 130)** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 115 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE DATA REPORT

### GC Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJVRD1AC **Matrix.....:** WATER
**LCS Lot-Sample#:** E6K160000-478
**Prep Date.....:** 11/15/06 **Analysis Date..:** 11/15/06
**Prep Batch #...:** 6320478 **Analysis Time..:** 23:20
**Dilution Factor:** 1 **Instrument ID..:** G15
**Analyst ID.....:** 001464

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCENT RECOVERY | METHOD |
|---|---|---|---|---|---|
| **TPH (as Gasoline)** | **1.00** | **0.952** | **mg/L** | **95** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 115 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### GC Semivolatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJ3711AC-LCS **Matrix.....:** WATER
**LCS Lot-Sample#:** E6K200000-270 JJ3711AD-LCSD
**Prep Date.....:** 11/20/06 **Analysis Date..:** 11/22/06
**Prep Batch #...:** 6324270 **Analysis Time..:** 10:37
**Dilution Factor:** 1 **Instrument ID..:** G12
**Analyst ID.....:** 402479

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| **Diesel Range Organics (C10-C25)** | **126** | **(65 - 135)** | | | **SW846 8015B** |
| | **116** | **(65 - 135)** | **7.8** | **(0-30)** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 124 | (60 - 140) |
| | 112 | (60 - 140) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE DATA REPORT

### GC Semivolatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJ3711AC-LCS **Matrix.....:** WATER
**LCS Lot-Sample#:** E6K200000-270 JJ3711AD-LCSD
**Prep Date.....:** 11/20/06 **Analysis Date..:** 11/22/06
**Prep Batch #...:** 6324270 **Analysis Time..:** 10:37
**Dilution Factor:** 1 **Instrument ID..:** G12
**Analyst ID.....:** 402479

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCENT RECOVERY | RPD | METHOD |
|---|---|---|---|---|---|---|
| **Diesel Range Organics (C10-C25)** | **2.50** | **3.14** | **mg/L** | **126** | | **SW846 8015B** |
| | **2.50** | **2.91** | **mg/L** | **116** | **7.8** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Benzo(a)pyrene | 124 | (60 - 140) |
| | 112 | (60 - 140) |

**NOTE(S):**

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

Bold print denotes control parameters

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### DISSOLVED Metals

**Client Lot #...:** E6K150191 **Matrix.....:** WATER

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|
| **LCS Lot-Sample#:** E6K160000-224 **Prep Batch #...:** 6320224 | | | | | |
| Mercury | 99 | (80 - 120) | SW846 7470A | 11/17/06 | JJTG41AC |
| | | Dilution Factor: 1 | Analysis Time..: 15:36 | | Analyst ID.....: 000023 |
| | | Instrument ID..: M04 | | | |
| **LCS Lot-Sample#:** E6K170000-229 **Prep Batch #...:** 6321229 | | | | | |
| Aluminum | 98 | (80 - 120) | SW846 6010B | 11/21/06 | JJXPX1CC |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Arsenic | 103 | (85 - 120) | SW846 6010B | 11/21/06 | JJXPX1AN |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Antimony | 103 | (85 - 120) | SW846 6010B | 11/21/06 | JJXPX1CD |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Barium | 101 | (85 - 120) | SW846 6010B | 11/21/06 | JJXPX1AP |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Cadmium | 97 | (85 - 120) | SW846 6010B | 11/21/06 | JJXPX1AR |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Chromium | 96 | (85 - 120) | SW846 6010B | 11/21/06 | JJXPX1AT |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Beryllium | 98 | (85 - 120) | SW846 6010B | 11/21/06 | JJXPX1CE |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Lead | 100 | (80 - 120) | SW846 6010B | 11/21/06 | JJXPX1AX |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Selenium | 99 | (80 - 120) | SW846 6010B | 11/21/06 | JJXPX1A0 |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |

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BOE-C6-0186981

## LABORATORY CONTROL SAMPLE EVALUATION REPORT

### DISSOLVED Metals

**Client Lot #...:** E6K150191 **Matrix.....:** WATER

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|
| Silver | 98 | (85 - 120) | SW846 6010B | 11/21/06 | JJXPX1CF |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Cobalt | 95 | (80 - 120) | SW846 6010B | 11/21/06 | JJXPX1CG |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Copper | 106 | (85 - 120) | SW846 6010B | 11/21/06 | JJXPX1AU |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Molybdenum | 98 | (85 - 120) | SW846 6010B | 11/21/06 | JJXPX1CH |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Nickel | 97 | (85 - 120) | SW846 6010B | 11/21/06 | JJXPX1CJ |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Thallium | 101 | (80 - 120) | SW846 6010B | 11/21/06 | JJXPX1CK |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Vanadium | 98 | (85 - 120) | SW846 6010B | 11/21/06 | JJXPX1CL |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |
| Zinc | 106 | (85 - 120) | SW846 6010B | 11/21/06 | JJXPX1A1 |
| | | Dilution Factor: 1 | Analysis Time..: 18:20 | | Analyst ID.....: 021088 |
| | | Instrument ID..: M01 | | | |

**NOTE(S):**

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



BOE-C6-0186982

## LABORATORY CONTROL SAMPLE DATA REPORT

### DISSOLVED Metals

**Client Lot #...:** E6K150191 **Matrix.....:** WATER

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCNT RECVRY | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| **LCS Lot-Sample#:** E6K160000-224 **Prep Batch #...:** 6320224 | | | | | | | |
| Mercury | 0.00500 | 0.00493 | mg/L | 99 | SW846 7470A | 11/17/06 | JJTG41AC |
| | | | Dilution Factor: 1 | | Analysis Time..: 15:36 | Analyst ID.....: 000023 | |
| | | | Instrument ID..: M04 | | | | |
| **LCS Lot-Sample#:** E6K170000-229 **Prep Batch #...:** 6321229 | | | | | | | |
| Aluminum | 2.00 | 1.96 | mg/L | 98 | SW846 6010B | 11/21/06 | JJXPX1CC |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Arsenic | 2.00 | 2.06 | mg/L | 103 | SW846 6010B | 11/21/06 | JJXPX1AN |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Antimony | 0.500 | 0.516 | mg/L | 103 | SW846 6010B | 11/21/06 | JJXPX1CD |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Barium | 2.00 | 2.02 | mg/L | 101 | SW846 6010B | 11/21/06 | JJXPX1AP |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Cadmium | 0.0500 | 0.0484 | mg/L | 97 | SW846 6010B | 11/21/06 | JJXPX1AR |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Chromium | 0.200 | 0.191 | mg/L | 96 | SW846 6010B | 11/21/06 | JJXPX1AT |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Beryllium | 0.0500 | 0.0490 | mg/L | 98 | SW846 6010B | 11/21/06 | JJXPX1CE |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Lead | 0.500 | 0.502 | mg/L | 100 | SW846 6010B | 11/21/06 | JJXPX1AX |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Selenium | 2.00 | 1.98 | mg/L | 99 | SW846 6010B | 11/21/06 | JJXPX1A0 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |

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BOE-C6-0186983

## LABORATORY CONTROL SAMPLE DATA REPORT

### DISSOLVED Metals

**Client Lot #...:** E6K150191 **Matrix.....:** WATER

| PARAMETER | SPIKE AMOUNT | MEASURED AMOUNT | UNITS | PERCNT RECVRY | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| Silver | 0.0500 | 0.0488 | mg/L | 98 | SW846 6010B | 11/21/06 | JJXPX1CF |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Cobalt | 0.500 | 0.475 | mg/L | 95 | SW846 6010B | 11/21/06 | JJXPX1CG |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Copper | 0.250 | 0.265 | mg/L | 106 | SW846 6010B | 11/21/06 | JJXPX1AU |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Molybdenum | 1.00 | 0.975 | mg/L | 98 | SW846 6010B | 11/21/06 | JJXPX1CH |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Nickel | 0.500 | 0.483 | mg/L | 97 | SW846 6010B | 11/21/06 | JJXPX1CJ |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Thallium | 2.00 | 2.01 | mg/L | 101 | SW846 6010B | 11/21/06 | JJXPX1CK |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Vanadium | 0.500 | 0.489 | mg/L | 98 | SW846 6010B | 11/21/06 | JJXPX1CL |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |
| Zinc | 0.500 | 0.528 | mg/L | 106 | SW846 6010B | 11/21/06 | JJXPX1A1 |
| | | | Dilution Factor: 1 | | Analysis Time..: 18:20 | Analyst ID.....: 021088 | |
| | | | Instrument ID..: M01 | | | | |

**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 #...:** E6K150191 **Work Order #...:** JJWD51A2-MS **Matrix.....:** WATER
**MS Lot-Sample #:** E6K160321-015 JJWD51A3-MSD
**Date Sampled...:** 11/14/06 13:30 **Date Received..:** 11/16/06 13:10 **MS Run #.....:** 6321380
**Prep Date.....:** 11/16/06 **Analysis Date..:** 11/16/06
**Prep Batch #...:** 6321602 **Analysis Time..:** 23:05
**Dilution Factor:** 1 **Analyst ID.....:** 015590 **Instrument ID..:** MSR

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| Acetone | 78 | (60 - 140) | | | SW846 8260B |
| | 79 | (60 - 140) | 0.02 | (0-40) | SW846 8260B |
| **Benzene** | **92** | **(60 - 125)** | | | **SW846 8260B** |
| | **94** | **(60 - 125)** | **2.1** | **(0-25)** | **SW846 8260B** |
| Bromobenzene | 85 | (70 - 130) | | | SW846 8260B |
| | 87 | (70 - 130) | 2.9 | (0-30) | SW846 8260B |
| Bromochloromethane | 79 | (70 - 130) | | | SW846 8260B |
| | 77 | (70 - 130) | 2.3 | (0-30) | SW846 8260B |
| Dibromomethane | 93 | (70 - 130) | | | SW846 8260B |
| | 96 | (70 - 130) | 3.5 | (0-30) | SW846 8260B |
| **Bromodichloromethane** | **103** | **(60 - 130)** | | | **SW846 8260B** |
| | **106** | **(60 - 130)** | **2.4** | **(0-30)** | **SW846 8260B** |
| Bromoform | 90 | (70 - 130) | | | SW846 8260B |
| | 94 | (70 - 130) | 4.5 | (0-30) | SW846 8260B |
| Bromomethane | 117 | (60 - 140) | | | SW846 8260B |
| | 110 | (60 - 140) | 5.9 | (0-35) | SW846 8260B |
| t-Butanol | 79 | (40 - 150) | | | SW846 8260B |
| | 76 | (40 - 150) | 2.9 | (0-35) | SW846 8260B |
| 1,2-Dichloropropane | 91 | (70 - 130) | | | SW846 8260B |
| | 93 | (70 - 130) | 2.1 | (0-30) | SW846 8260B |
| 1,3-Dichloropropane | 90 | (70 - 130) | | | SW846 8260B |
| | 94 | (70 - 130) | 3.6 | (0-30) | SW846 8260B |
| 2-Butanone | 85 | (60 - 140) | | | SW846 8260B |
| | 86 | (60 - 140) | 0.44 | (0-40) | SW846 8260B |
| cis-1,3-Dichloropropene | 97 | (70 - 130) | | | SW846 8260B |
| | 102 | (70 - 130) | 4.9 | (0-30) | SW846 8260B |
| trans-1,3-Dichloropropene | 90 | (70 - 130) | | | SW846 8260B |
| | 94 | (70 - 130) | 3.7 | (0-30) | SW846 8260B |
| n-Butylbenzene | 90 | (70 - 130) | | | SW846 8260B |
| | 94 | (70 - 130) | 4.5 | (0-30) | SW846 8260B |
| sec-Butylbenzene | 92 | (70 - 130) | | | SW846 8260B |
| | 96 | (70 - 130) | 4.5 | (0-30) | SW846 8260B |
| tert-Butylbenzene | 88 | (70 - 130) | | | SW846 8260B |
| | 91 | (70 - 130) | 3.5 | (0-30) | SW846 8260B |
| Naphthalene | 79 | (60 - 140) | | | SW846 8260B |
| | 81 | (60 - 140) | 2.1 | (0-35) | SW846 8260B |
| Carbon disulfide | 108 | (70 - 130) | | | SW846 8260B |
| | 112 | (70 - 130) | 4.3 | (0-30) | SW846 8260B |
| **Carbon tetrachloride** | **105** | **(60 - 140)** | | | **SW846 8260B** |
| | **110** | **(60 - 140)** | **4.6** | **(0-30)** | **SW846 8260B** |

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## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJWD51A2-MS **Matrix.....:** WATER
**MS Lot-Sample #:** E6K160321-015 JJWD51A3-MSD

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| Chlorobenzene | 91 | (70 - 125) | | | SW846 8260B |
| | 94 | (70 - 125) | 3.0 | (0-25) | SW846 8260B |
| Dibromochloromethane | 100 | (70 - 130) | | | SW846 8260B |
| | 106 | (70 - 130) | 5.5 | (0-30) | SW846 8260B |
| Chloroethane | 92 | (60 - 140) | | | SW846 8260B |
| | 94 | (60 - 140) | 1.4 | (0-35) | SW846 8260B |
| **m-Xylene & p-Xylene** | **89** | **(65 - 130)** | | | **SW846 8260B** |
| | **92** | **(65 - 130)** | **3.2** | **(0-30)** | **SW846 8260B** |
| **Chloroform** | **85** | **(60 - 125)** | | | **SW846 8260B** |
| | **87** | **(60 - 125)** | **1.9** | **(0-30)** | **SW846 8260B** |
| **o-Xylene** | **92** | **(70 - 130)** | | | **SW846 8260B** |
| | **95** | **(70 - 130)** | **2.6** | **(0-30)** | **SW846 8260B** |
| Chloromethane | 96 | (60 - 140) | | | SW846 8260B |
| | 98 | (60 - 140) | 1.2 | (0-35) | SW846 8260B |
| 2-Chlorotoluene | 87 | (70 - 130) | | | SW846 8260B |
| | 90 | (70 - 130) | 2.7 | (0-30) | SW846 8260B |
| 4-Chlorotoluene | 91 | (70 - 130) | | | SW846 8260B |
| | 93 | (70 - 130) | 2.4 | (0-30) | SW846 8260B |
| 1,2-Dibromo-3-chloro-propane | 70 | (60 - 140) | | | SW846 8260B |
| | 75 | (60 - 140) | 7.2 | (0-35) | SW846 8260B |
| 1,2-Dibromoethane | 0 | (70 - 130) | | | SW846 8260B |
| | | (70 - 130) | | (0-30) | SW846 8260B |
| 1,2-Dichlorobenzene | 85 | (70 - 130) | | | SW846 8260B |
| | 87 | (70 - 130) | 2.9 | (0-30) | SW846 8260B |
| 1,3-Dichlorobenzene | 84 | (70 - 130) | | | SW846 8260B |
| | 88 | (70 - 130) | 3.5 | (0-30) | SW846 8260B |
| 1,4-Dichlorobenzene | 85 | (70 - 130) | | | SW846 8260B |
| | 88 | (70 - 130) | 3.7 | (0-30) | SW846 8260B |
| Dichlorodifluoromethane | 134 | (40 - 160) | | | SW846 8260B |
| | 135 | (40 - 160) | 0.81 | (0-35) | SW846 8260B |
| **1,1-Dichloroethane** | **93** | **(65 - 130)** | | | **SW846 8260B** |
| | **95** | **(65 - 130)** | **1.8** | **(0-30)** | **SW846 8260B** |
| **1,2-Dichloroethane** | **92** | **(55 - 130)** | | | **SW846 8260B** |
| | **94** | **(55 - 130)** | **1.4** | **(0-30)** | **SW846 8260B** |
| **cis-1,2-Dichloroethene** | **95** | **(60 - 125)** | | | **SW846 8260B** |
| | **96** | **(60 - 125)** | **0.73** | **(0-30)** | **SW846 8260B** |
| trans-1,2-Dichloroethene | 97 | (70 - 130) | | | SW846 8260B |
| | 98 | (70 - 130) | 1.3 | (0-30) | SW846 8260B |
| **1,1-Dichloroethene** | **102** | **(60 - 150)** | | | **SW846 8260B** |
| | **105** | **(60 - 150)** | **3.6** | **(0-25)** | **SW846 8260B** |

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BOE-C6-0186986

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJWD51A2-MS **Matrix.....:** WATER
**MS Lot-Sample #:** E6K160321-015 JJWD51A3-MSD

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| 2,2-Dichloropropane | 92 | (70 - 130) | | | SW846 8260B |
| | 97 | (70 - 130) | 5.2 | (0-30) | SW846 8260B |
| 1,1-Dichloropropene | 94 | (70 - 130) | | | SW846 8260B |
| | 97 | (70 - 130) | 3.0 | (0-30) | SW846 8260B |
| Tert-amyl methyl ether | 85 | (70 - 130) | | | SW846 8260B |
| | 86 | (70 - 130) | 1.3 | (0-30) | SW846 8260B |
| Tert-butyl ethyl ether | 84 | (70 - 130) | | | SW846 8260B |
| | 86 | (70 - 130) | 1.4 | (0-30) | SW846 8260B |
| **Ethylbenzene** | **94** | **(70 - 130)** | | | **SW846 8260B** |
| | **97** | **(70 - 130)** | **3.4** | **(0-30)** | **SW846 8260B** |
| Hexachlorobutadiene | 85 | (70 - 130) | | | SW846 8260B |
| | 89 | (70 - 130) | 5.3 | (0-30) | SW846 8260B |
| 2-Hexanone | 86 | (60 - 140) | | | SW846 8260B |
| | 88 | (60 - 140) | 1.3 | (0-40) | SW846 8260B |
| Isopropylbenzene | 82 | (70 - 130) | | | SW846 8260B |
| | 86 | (70 - 130) | 4.9 | (0-30) | SW846 8260B |
| Isopropyl ether | 94 | (70 - 130) | | | SW846 8260B |
| | 95 | (70 - 130) | 0.95 | (0-30) | SW846 8260B |
| p-Isopropyltoluene | 85 | (70 - 130) | | | SW846 8260B |
| | 88 | (70 - 130) | 3.0 | (0-30) | SW846 8260B |
| Methylene chloride | 80 | (70 - 130) | | | SW846 8260B |
| | 80 | (70 - 130) | 0.24 | (0-30) | SW846 8260B |
| 4-Methyl-2-pentanone | 88 | (60 - 140) | | | SW846 8260B |
| | 87 | (60 - 140) | 1.6 | (0-40) | SW846 8260B |
| Methyl tert-butyl ether | 87 | (70 - 130) | | | SW846 8260B |
| | 88 | (70 - 130) | 0.57 | (0-30) | SW846 8260B |
| n-Propylbenzene | 87 | (70 - 130) | | | SW846 8260B |
| | 91 | (70 - 130) | 4.0 | (0-30) | SW846 8260B |
| Styrene | 95 | (70 - 130) | | | SW846 8260B |
| | 98 | (70 - 130) | 3.2 | (0-30) | SW846 8260B |
| 1,1,1,2-Tetrachloroethane | 98 | (70 - 130) | | | SW846 8260B |
| | 102 | (70 - 130) | 4.1 | (0-30) | SW846 8260B |
| 1,1,2,2-Tetrachloroethane | 88 | (70 - 130) | | | SW846 8260B |
| | 90 | (70 - 130) | 2.5 | (0-30) | SW846 8260B |
| **Tetrachloroethene** | **91** | **(60 - 130)** | | | **SW846 8260B** |
| | **94** | **(60 - 130)** | **3.5** | **(0-30)** | **SW846 8260B** |
| **Toluene** | **94** | **(65 - 125)** | | | **SW846 8260B** |
| | **96** | **(65 - 125)** | **2.5** | **(0-25)** | **SW846 8260B** |
| 1,2,3-Trichlorobenzene | 84 | (70 - 130) | | | SW846 8260B |
| | 87 | (70 - 130) | 4.1 | (0-30) | SW846 8260B |

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BOE-C6-0186987

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJWD51A2-MS **Matrix.....:** WATER
**MS Lot-Sample #:** E6K160321-015 JJWD51A3-MSD

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| 1,2,4-Trichloro-benzene | 83 | (70 - 130) | | | SW846 8260B |
| | 86 | (70 - 130) | 3.3 | (0-30) | SW846 8260B |
| **1,1,1-Trichloroethane** | **100** | **(70 - 130)** | | | **SW846 8260B** |
| | **102** | **(70 - 130)** | **2.1** | **(0-30)** | **SW846 8260B** |
| 1,1,2-Trichloroethane | 93 | (70 - 130) | | | SW846 8260B |
| | 93 | (70 - 130) | 0.53 | (0-40) | SW846 8260B |
| **Trichloroethene** | **90** | **(60 - 130)** | | | **SW846 8260B** |
| | **91** | **(60 - 130)** | **1.9** | **(0-25)** | **SW846 8260B** |
| Trichlorofluoromethane | 96 | (70 - 130) | | | SW846 8260B |
| | 100 | (70 - 130) | 4.5 | (0-30) | SW846 8260B |
| 1,2,3-Trichloropropane | 80 | (70 - 130) | | | SW846 8260B |
| | 81 | (70 - 130) | 1.7 | (0-30) | SW846 8260B |
| 1,1,2-Trichlorotrifluoro-ethane | 96 | (60 - 140) | | | SW846 8260B |
| | 101 | (60 - 140) | 5.5 | (0-35) | SW846 8260B |
| 1,2,4-Trimethylbenzene | 88 | (70 - 130) | | | SW846 8260B |
| | 92 | (70 - 130) | 4.2 | (0-30) | SW846 8260B |
| 1,3,5-Trimethylbenzene | 90 | (70 - 130) | | | SW846 8260B |
| | 92 | (70 - 130) | 3.0 | (0-30) | SW846 8260B |
| **Vinyl chloride** | **98** | **(30 - 155)** | | | **SW846 8260B** |
| | **100** | **(30 - 155)** | **1.7** | **(0-35)** | **SW846 8260B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 93 | (70 - 125) |
| | 92 | (70 - 125) |
| 1,2-Dichloroethane-d4 | 87 | (55 - 135) |
| | 87 | (55 - 135) |
| Toluene-d8 | 93 | (70 - 130) |
| | 94 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters



BOE-C6-0186988

## MATRIX SPIKE SAMPLE DATA REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJWD51A2-MS **Matrix.....:** WATER
**MS Lot-Sample #:** E6K160321-015 JJWD51A3-MSD
**Date Sampled...:** 11/14/06 13:30 **Date Received..:** 11/16/06 13:10 **MS Run #.....:** 6321380
**Prep Date.....:** 11/16/06 **Analysis Date..:** 11/16/06
**Prep Batch #...:** 6321602 **Analysis Time..:** 23:05
**Dilution Factor:** 1 **Analyst ID.....:** 015590 **Instrument ID..:** MSR

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD |
|---|---|---|---|---|---|---|---|
| Acetone | ND | 50.0 | 39.2 | ug/L | 78 | | SW846 8260B |
| | ND | 50.0 | 39.3 | ug/L | 79 | 0.02 | SW846 8260B |
| **Benzene** | **ND** | **10.0** | **9.22** | **ug/L** | **92** | | **SW846 8260B** |
| | **ND** | **10.0** | **9.42** | **ug/L** | **94** | **2.1** | **SW846 8260B** |
| Bromobenzene | ND | 10.0 | 8.49 | ug/L | 85 | | SW846 8260B |
| | ND | 10.0 | 8.74 | ug/L | 87 | 2.9 | SW846 8260B |
| Bromochloromethane | ND | 10.0 | 7.92 | ug/L | 79 | | SW846 8260B |
| | ND | 10.0 | 7.74 | ug/L | 77 | 2.3 | SW846 8260B |
| Dibromomethane | ND | 10.0 | 9.30 | ug/L | 93 | | SW846 8260B |
| | ND | 10.0 | 9.63 | ug/L | 96 | 3.5 | SW846 8260B |
| **Bromodichloromethane** | **ND** | **10.0** | **10.3** | **ug/L** | **103** | | **SW846 8260B** |
| | **ND** | **10.0** | **10.6** | **ug/L** | **106** | **2.4** | **SW846 8260B** |
| Bromoform | ND | 10.0 | 8.96 | ug/L | 90 | | SW846 8260B |
| | ND | 10.0 | 9.37 | ug/L | 94 | 4.5 | SW846 8260B |
| Bromomethane | ND | 10.0 | 11.7 | ug/L | 117 | | SW846 8260B |
| | ND | 10.0 | 11.0 | ug/L | 110 | 5.9 | SW846 8260B |
| t-Butanol | ND | 50.0 | 39.3 | ug/L | 79 | | SW846 8260B |
| | ND | 50.0 | 38.2 | ug/L | 76 | 2.9 | SW846 8260B |
| 1,2-Dichloropropane | ND | 10.0 | 9.07 | ug/L | 91 | | SW846 8260B |
| | ND | 10.0 | 9.26 | ug/L | 93 | 2.1 | SW846 8260B |
| 1,3-Dichloropropane | ND | 10.0 | 9.03 | ug/L | 90 | | SW846 8260B |
| | ND | 10.0 | 9.36 | ug/L | 94 | 3.6 | SW846 8260B |
| 2-Butanone | ND | 50.0 | 42.6 | ug/L | 85 | | SW846 8260B |
| | ND | 50.0 | 42.8 | ug/L | 86 | 0.44 | SW846 8260B |
| cis-1,3-Dichloropropene | ND | 10.0 | 9.73 | ug/L | 97 | | SW846 8260B |
| | ND | 10.0 | 10.2 | ug/L | 102 | 4.9 | SW846 8260B |
| trans-1,3-Dichloropropene | ND | 10.0 | 9.03 | ug/L | 90 | | SW846 8260B |
| | ND | 10.0 | 9.37 | ug/L | 94 | 3.7 | SW846 8260B |
| n-Butylbenzene | ND | 10.0 | 8.96 | ug/L | 90 | | SW846 8260B |
| | ND | 10.0 | 9.37 | ug/L | 94 | 4.5 | SW846 8260B |
| sec-Butylbenzene | ND | 10.0 | 9.17 | ug/L | 92 | | SW846 8260B |
| | ND | 10.0 | 9.59 | ug/L | 96 | 4.5 | SW846 8260B |
| tert-Butylbenzene | ND | 10.0 | 8.77 | ug/L | 88 | | SW846 8260B |
| | ND | 10.0 | 9.08 | ug/L | 91 | 3.5 | SW846 8260B |
| Naphthalene | ND | 10.0 | 7.94 | ug/L | 79 | | SW846 8260B |
| | ND | 10.0 | 8.11 | ug/L | 81 | 2.1 | SW846 8260B |
| Carbon disulfide | ND | 50.0 | 53.8 | ug/L | 108 | | SW846 8260B |
| | ND | 50.0 | 56.1 | ug/L | 112 | 4.3 | SW846 8260B |
| **Carbon tetrachloride** | **ND** | **10.0** | **10.5** | **ug/L** | **105** | | **SW846 8260B** |
| | **ND** | **10.0** | **11.0** | **ug/L** | **110** | **4.6** | **SW846 8260B** |

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BOE-C6-0186989

## MATRIX SPIKE SAMPLE DATA REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJWD51A2-MS **Matrix.....:** WATER
**MS Lot-Sample #:** E6K160321-015 JJWD51A3-MSD

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD |
|---|---|---|---|---|---|---|---|
| Chlorobenzene | ND | 10.0 | 9.12 | ug/L | 91 | | SW846 8260B |
| | ND | 10.0 | 9.40 | ug/L | 94 | 3.0 | SW846 8260B |
| Dibromochloromethane | ND | 10.0 | 10.0 | ug/L | 100 | | SW846 8260B |
| | ND | 10.0 | 10.6 | ug/L | 106 | 5.5 | SW846 8260B |
| Chloroethane | ND | 10.0 | 9.25 | ug/L | 92 | | SW846 8260B |
| | ND | 10.0 | 9.38 | ug/L | 94 | 1.4 | SW846 8260B |
| **m-Xylene & p-Xylene** | **ND** | **20.0** | **17.9** | **ug/L** | **89** | | **SW846 8260B** |
| | **ND** | **20.0** | **18.5** | **ug/L** | **92** | **3.2** | **SW846 8260B** |
| **Chloroform** | **ND** | **10.0** | **8.51** | **ug/L** | **85** | | **SW846 8260B** |
| | **ND** | **10.0** | **8.67** | **ug/L** | **87** | **1.9** | **SW846 8260B** |
| **o-Xylene** | **ND** | **10.0** | **9.22** | **ug/L** | **92** | | **SW846 8260B** |
| | **ND** | **10.0** | **9.46** | **ug/L** | **95** | **2.6** | **SW846 8260B** |
| Chloromethane | ND | 10.0 | 9.64 | ug/L | 96 | | SW846 8260B |
| | ND | 10.0 | 9.76 | ug/L | 98 | 1.2 | SW846 8260B |
| 2-Chlorotoluene | ND | 10.0 | 8.71 | ug/L | 87 | | SW846 8260B |
| | ND | 10.0 | 8.95 | ug/L | 90 | 2.7 | SW846 8260B |
| 4-Chlorotoluene | ND | 10.0 | 9.06 | ug/L | 91 | | SW846 8260B |
| | ND | 10.0 | 9.28 | ug/L | 93 | 2.4 | SW846 8260B |
| 1,2-Dibromo-3-chloro-propane | ND | 10.0 | 7.00 | ug/L | 70 | | SW846 8260B |
| | ND | 10.0 | 7.52 | ug/L | 75 | 7.2 | SW846 8260B |
| 1,2-Dibromoethane | ND | 10.0 | | ug/L | 0 | | SW846 8260B |
| | ND | 10.0 | | ug/L | | | SW846 8260B |
| 1,2-Dichlorobenzene | ND | 10.0 | 8.47 | ug/L | 85 | | SW846 8260B |
| | ND | 10.0 | 8.72 | ug/L | 87 | 2.9 | SW846 8260B |
| 1,3-Dichlorobenzene | ND | 10.0 | 8.45 | ug/L | 84 | | SW846 8260B |
| | ND | 10.0 | 8.75 | ug/L | 88 | 3.5 | SW846 8260B |
| 1,4-Dichlorobenzene | ND | 10.0 | 8.51 | ug/L | 85 | | SW846 8260B |
| | ND | 10.0 | 8.83 | ug/L | 88 | 3.7 | SW846 8260B |
| Dichlorodifluoromethane | ND | 10.0 | 13.4 | ug/L | 134 | | SW846 8260B |
| | ND | 10.0 | 13.5 | ug/L | 135 | 0.81 | SW846 8260B |
| **1,1-Dichloroethane** | **ND** | **10.0** | **9.33** | **ug/L** | **93** | | **SW846 8260B** |
| | **ND** | **10.0** | **9.50** | **ug/L** | **95** | **1.8** | **SW846 8260B** |
| **1,2-Dichloroethane** | **ND** | **10.0** | **9.23** | **ug/L** | **92** | | **SW846 8260B** |
| | **ND** | **10.0** | **9.36** | **ug/L** | **94** | **1.4** | **SW846 8260B** |
| **cis-1,2-Dichloroethene** | **ND** | **10.0** | **9.53** | **ug/L** | **95** | | **SW846 8260B** |
| | **ND** | **10.0** | **9.60** | **ug/L** | **96** | **0.73** | **SW846 8260B** |
| trans-1,2-Dichloroethene | ND | 10.0 | 9.71 | ug/L | 97 | | SW846 8260B |
| | ND | 10.0 | 9.84 | ug/L | 98 | 1.3 | SW846 8260B |
| **1,1-Dichloroethene** | **ND** | **10.0** | **10.2** | **ug/L** | **102** | | **SW846 8260B** |
| | **ND** | **10.0** | **10.5** | **ug/L** | **105** | **3.6** | **SW846 8260B** |

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BOE-C6-0186990

## MATRIX SPIKE SAMPLE DATA REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJWD51A2-MS **Matrix.....:** WATER
**MS Lot-Sample #:** E6K160321-015 JJWD51A3-MSD

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD |
|---|---|---|---|---|---|---|---|
| 2,2-Dichloropropane | ND | 10.0 | 9.19 | ug/L | 92 | | SW846 8260B |
| | ND | 10.0 | 9.68 | ug/L | 97 | 5.2 | SW846 8260B |
| 1,1-Dichloropropene | ND | 10.0 | 9.37 | ug/L | 94 | | SW846 8260B |
| | ND | 10.0 | 9.66 | ug/L | 97 | 3.0 | SW846 8260B |
| Tert-amyl methyl ether | ND | 10.0 | 8.47 | ug/L | 85 | | SW846 8260B |
| | ND | 10.0 | 8.58 | ug/L | 86 | 1.3 | SW846 8260B |
| Tert-butyl ethyl ether | ND | 10.0 | 8.44 | ug/L | 84 | | SW846 8260B |
| | ND | 10.0 | 8.56 | ug/L | 86 | 1.4 | SW846 8260B |
| **Ethylbenzene** | **ND** | **10.0** | **9.38** | **ug/L** | **94** | | **SW846 8260B** |
| | **ND** | **10.0** | **9.71** | **ug/L** | **97** | **3.4** | **SW846 8260B** |
| Hexachlorobutadiene | ND | 10.0 | 8.46 | ug/L | 85 | | SW846 8260B |
| | ND | 10.0 | 8.92 | ug/L | 89 | 5.3 | SW846 8260B |
| 2-Hexanone | ND | 50.0 | 43.2 | ug/L | 86 | | SW846 8260B |
| | ND | 50.0 | 43.8 | ug/L | 88 | 1.3 | SW846 8260B |
| Isopropylbenzene | ND | 10.0 | 8.20 | ug/L | 82 | | SW846 8260B |
| | ND | 10.0 | 8.61 | ug/L | 86 | 4.9 | SW846 8260B |
| Isopropyl ether | ND | 10.0 | 9.43 | ug/L | 94 | | SW846 8260B |
| | ND | 10.0 | 9.52 | ug/L | 95 | 0.95 | SW846 8260B |
| p-Isopropyltoluene | ND | 10.0 | 8.54 | ug/L | 85 | | SW846 8260B |
| | ND | 10.0 | 8.80 | ug/L | 88 | 3.0 | SW846 8260B |
| Methylene chloride | ND | 10.0 | 8.03 | ug/L | 80 | | SW846 8260B |
| | ND | 10.0 | 8.01 | ug/L | 80 | 0.24 | SW846 8260B |
| 4-Methyl-2-pentanone | ND | 50.0 | 44.0 | ug/L | 88 | | SW846 8260B |
| | ND | 50.0 | 43.3 | ug/L | 87 | 1.6 | SW846 8260B |
| Methyl tert-butyl ether | ND | 10.0 | 8.72 | ug/L | 87 | | SW846 8260B |
| | ND | 10.0 | 8.77 | ug/L | 88 | 0.57 | SW846 8260B |
| n-Propylbenzene | ND | 10.0 | 8.73 | ug/L | 87 | | SW846 8260B |
| | ND | 10.0 | 9.09 | ug/L | 91 | 4.0 | SW846 8260B |
| Styrene | ND | 10.0 | 9.46 | ug/L | 95 | | SW846 8260B |
| | ND | 10.0 | 9.77 | ug/L | 98 | 3.2 | SW846 8260B |
| 1,1,1,2-Tetrachloroethane | ND | 10.0 | 9.81 | ug/L | 98 | | SW846 8260B |
| | ND | 10.0 | 10.2 | ug/L | 102 | 4.1 | SW846 8260B |
| 1,1,2,2-Tetrachloroethane | ND | 10.0 | 8.79 | ug/L | 88 | | SW846 8260B |
| | ND | 10.0 | 9.01 | ug/L | 90 | 2.5 | SW846 8260B |
| **Tetrachloroethene** | **ND** | **10.0** | **9.06** | **ug/L** | **91** | | **SW846 8260B** |
| | **ND** | **10.0** | **9.38** | **ug/L** | **94** | **3.5** | **SW846 8260B** |
| **Toluene** | **ND** | **10.0** | **9.39** | **ug/L** | **94** | | **SW846 8260B** |
| | **ND** | **10.0** | **9.63** | **ug/L** | **96** | **2.5** | **SW846 8260B** |
| 1,2,3-Trichlorobenzene | ND | 10.0 | 8.35 | ug/L | 84 | | SW846 8260B |
| | ND | 10.0 | 8.70 | ug/L | 87 | 4.1 | SW846 8260B |

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## MATRIX SPIKE SAMPLE DATA REPORT

### GC/MS Volatiles

**Client Lot #...:** E6K150191 **Work Order #...:** JJWD51A2-MS **Matrix.....:** WATER
**MS Lot-Sample #:** E6K160321-015 JJWD51A3-MSD

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD |
|---|---|---|---|---|---|---|---|
| 1,2,4-Trichloro-benzene | ND | 10.0 | 8.32 | ug/L | 83 | | SW846 8260B |
| | ND | 10.0 | 8.60 | ug/L | 86 | 3.3 | SW846 8260B |
| **1,1,1-Trichloroethane** | **ND** | **10.0** | **10.0** | **ug/L** | **100** | | **SW846 8260B** |
| | **ND** | **10.0** | **10.2** | **ug/L** | **102** | **2.1** | **SW846 8260B** |
| 1,1,2-Trichloroethane | ND | 10.0 | 9.26 | ug/L | 93 | | SW846 8260B |
| | ND | 10.0 | 9.31 | ug/L | 93 | 0.53 | SW846 8260B |
| **Trichloroethene** | **ND** | **10.0** | **8.96** | **ug/L** | **90** | | **SW846 8260B** |
| | **ND** | **10.0** | **9.13** | **ug/L** | **91** | **1.9** | **SW846 8260B** |
| Trichlorofluoromethane | ND | 10.0 | 9.60 | ug/L | 96 | | SW846 8260B |
| | ND | 10.0 | 10.0 | ug/L | 100 | 4.5 | SW846 8260B |
| 1,2,3-Trichloropropane | ND | 10.0 | 7.95 | ug/L | 80 | | SW846 8260B |
| | ND | 10.0 | 8.09 | ug/L | 81 | 1.7 | SW846 8260B |
| 1,1,2-Trichlorotrifluoro-ethane | ND | 10.0 | 9.57 | ug/L | 96 | | SW846 8260B |
| | ND | 10.0 | 10.1 | ug/L | 101 | 5.5 | SW846 8260B |
| 1,2,4-Trimethylbenzene | ND | 10.0 | 8.78 | ug/L | 88 | | SW846 8260B |
| | ND | 10.0 | 9.16 | ug/L | 92 | 4.2 | SW846 8260B |
| 1,3,5-Trimethylbenzene | ND | 10.0 | 8.95 | ug/L | 90 | | SW846 8260B |
| | ND | 10.0 | 9.22 | ug/L | 92 | 3.0 | SW846 8260B |
| **Vinyl chloride** | **ND** | **10.0** | **9.81** | **ug/L** | **98** | | **SW846 8260B** |
| | **ND** | **10.0** | **9.98** | **ug/L** | **100** | **1.7** | **SW846 8260B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| Bromofluorobenzene | 93 | (70 - 125) |
| | 92 | (70 - 125) |
| 1,2-Dichloroethane-d4 | 87 | (55 - 135) |
| | 87 | (55 - 135) |
| Toluene-d8 | 93 | (70 - 130) |
| | 94 | (70 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters



BOE-C6-0186992

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### GC Volatiles

| | | | | | |
|---|---|---|---|---|---|
| **Client Lot #...:** | E6K150191 | **Work Order #...:** | JJP0R1AD-MS | **Matrix.....:** | WATER |
| **MS Lot-Sample #:** | E6K150138-001 | | JJP0R1AE-MSD | | |
| **Date Sampled...:** | 11/14/06 06:30 | **Date Received..:** | 11/15/06 07:55 | **MS Run #.....:** | 6320235 |
| **Prep Date.....:** | 11/15/06 | **Analysis Date..:** | 11/16/06 | | |
| **Prep Batch #...:** | 6320473 | **Analysis Time..:** | 02:27 | | |
| **Dilution Factor:** | 1 | **Analyst ID.....:** | 001464 | **Instrument ID..:** | G15 |

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD |
|---|---|---|---|---|---|
| **TPH (as Gasoline)** | **102** | **(70 - 140)** | | | **SW846 8015B** |
| | **96** | **(70 - 140)** | **5.9** | **(0-25)** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 118 | (60 - 130) |
| | 117 | (60 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters

## MATRIX SPIKE SAMPLE DATA REPORT

### GC Volatiles

| | | | | | |
|---|---|---|---|---|---|
| **Client Lot #...:** | E6K150191 | **Work Order #...:** | JJP0R1AD-MS | **Matrix.....:** | WATER |
| **MS Lot-Sample #:** | E6K150138-001 | | JJP0R1AE-MSD | | |
| **Date Sampled...:** | 11/14/06 06:30 | **Date Received..:** | 11/15/06 07:55 | **MS Run #.....:** | 6320235 |
| **Prep Date.....:** | 11/15/06 | **Analysis Date..:** | 11/16/06 | | |
| **Prep Batch #...:** | 6320473 | **Analysis Time..:** | 02:27 | | |
| **Dilution Factor:** | 1 | **Analyst ID.....:** | 001464 | **Instrument ID..:** | G15 |

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD |
|---|---|---|---|---|---|---|---|
| **TPH (as Gasoline)** | **ND** | **1.00** | **1.02** | **mg/L** | **102** | | **SW846 8015B** |
| | **ND** | **1.00** | **0.963** | **mg/L** | **96** | **5.9** | **SW846 8015B** |

| SURROGATE | PERCENT RECOVERY | RECOVERY LIMITS |
|---|---|---|
| a,a,a-Trifluorotoluene (TFT) | 118 | (60 - 130) |
| | 117 | (60 - 130) |

**NOTE(S):**

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

Bold print denotes control parameters



BOE-C6-0186994

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### DISSOLVED Metals

**Client Lot #...:** E6K150191 **Matrix.....:** WATER
**Date Sampled...:** 11/14/06 14:30 **Date Received..:** 11/14/06 18:50

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| **MS Lot-Sample #:** E6K140345-009 **Prep Batch #...:** 6320224 | | | | | | | |
| Mercury | 107 | (80 - 120) | | | SW846 7470A | 11/17/06 | JJN681EJ |
| | 93 | (80 - 120) | 14 | (0-20) | SW846 7470A | 11/17/06 | JJN681EK |

Dilution Factor: 1
Analysis Time..: 15:44 Instrument ID..: M04 Analyst ID.....: 000023
MS Run #.....: 6320127

**NOTE(S):**

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

## MATRIX SPIKE SAMPLE DATA REPORT

### DISSOLVED Metals

**Client Lot #...:** E6K150191 **Matrix.....:** WATER
**Date Sampled...:** 11/14/06 14:30 **Date Received..:** 11/14/06 18:50

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|---|---|
| **MS Lot-Sample #:** E6K140345-009 **Prep Batch #...:** 6320224 | | | | | | | | | |
| Mercury | | | | | | | | | |
| | ND | 0.00100 | 0.00107 | mg/L | 107 | | SW846 7470A | 11/17/06 | JJN681EJ |
| | ND | 0.00100 | 0.00093 | mg/L | 93 | 14 | SW846 7470A | 11/17/06 | JJN681EK |

Qualifiers:
Dilution Factor: 1
Analysis Time..: 15:44 Instrument ID..: M04 Analyst ID.....: 000023
MS Run #.....: 6320127

**NOTE(S):**

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

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### DISSOLVED Metals

**Client Lot #...:** E6K150191 **Matrix.....:** WATER
**Date Sampled...:** 11/15/06 09:43 **Date Received..:** 11/15/06 14:40

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| **MS Lot-Sample #:** E6K150366-001 **Prep Batch #...:** 6321229 | | | | | | | |
| Aluminum | 98 | (80 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1FV |
| | 98 | (80 - 120) | 0.42 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1FW |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |
| Arsenic | 99 | (85 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1E4 |
| | 99 | (85 - 120) | 0.60 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1E5 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |
| Antimony | 101 | (85 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1F0 |
| | 101 | (85 - 120) | 0.0 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1F1 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |
| Barium | 100 | (85 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1E6 |
| | 100 | (85 - 120) | 0.01 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1E7 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |
| Cadmium | 93 | (85 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1FA |
| | 93 | (85 - 120) | 0.58 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1FC |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |
| Chromium | 93 | (85 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1FD |
| | 93 | (85 - 120) | 0.21 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1FE |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |
| Beryllium | 94 | (85 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1F3 |
| | 94 | (85 - 120) | 0.25 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1F4 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |

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BOE-C6-0186997

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### DISSOLVED Metals

**Client Lot #...:** E6K150191 **Matrix.....:** WATER
**Date Sampled...:** 11/15/06 09:43 **Date Received..:** 11/15/06 14:40

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| Lead | 97 | (80 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1FM |
| | 97 | (80 - 120) | 0.14 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1FN |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |
| Selenium | 96 | (80 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1FP |
| | 96 | (80 - 120) | 0.01 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1FQ |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |
| Silver | 98 | (85 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1F6 |
| | 99 | (85 - 120) | 0.60 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1F7 |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |
| Cobalt | 92 | (80 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1F9 |
| | 92 | (80 - 120) | 0.21 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1GA |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |
| Copper | 109 | (85 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1FF |
| | 109 | (85 - 120) | 0.11 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1FG |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |
| Molybdenum | 95 | (85 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1GD |
| | 95 | (85 - 120) | 0.11 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1GE |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |
| Nickel | 93 | (85 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1GG |
| | 93 | (85 - 120) | 0.25 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1GH |
| | | Dilution Factor: 1 | | | | | |
| | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | Analyst ID.....: 021088 | |
| | | MS Run #.....: 6326303 | | | | | |

(Continued on next page)

## MATRIX SPIKE SAMPLE EVALUATION REPORT

### DISSOLVED Metals

**Client Lot #...:** E6K150191 **Matrix.....:** WATER
**Date Sampled...:** 11/15/06 09:43 **Date Received..:** 11/15/06 14:40

| PARAMETER | PERCENT RECOVERY | RECOVERY LIMITS | RPD | RPD LIMITS | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|
| Thallium | 97 | (80 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1GK |
| | 98 | (80 - 120) | 0.31 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1GL |

Dilution Factor: 1
Analysis Time..: 18:57 Instrument ID..: M01 Analyst ID.....: 021088
MS Run #.....: 6326303

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Vanadium | 97 | (85 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1GN |
| | 97 | (85 - 120) | 0.25 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1GP |

Dilution Factor: 1
Analysis Time..: 18:57 Instrument ID..: M01 Analyst ID.....: 021088
MS Run #.....: 6326303

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Zinc | 104 | (85 - 120) | | | SW846 6010B | 11/21/06 | JJR0R1FR |
| | 102 | (85 - 120) | 2.0 | (0-20) | SW846 6010B | 11/21/06 | JJR0R1FT |

Dilution Factor: 1
Analysis Time..: 18:57 Instrument ID..: M01 Analyst ID.....: 021088
MS Run #.....: 6326303

**NOTE(S):**

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



BOE-C6-0186999

## MATRIX SPIKE SAMPLE DATA REPORT

### DISSOLVED Metals

**Client Lot #...:** E6K150191 **Matrix.....:** WATER
**Date Sampled...:** 11/15/06 09:43 **Date Received..:** 11/15/06 14:40

**MS Lot-Sample #:** E6K150366-001 **Prep Batch #...:** 6321229

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | |
| | ND | 2.00 | 1.97 | mg/L | 98 | | SW846 6010B | 11/21/06 | JJR0R1FV |
| | ND | 2.00 | 1.96 | mg/L | 98 | 0.42 | SW846 6010B | 11/21/06 | JJR0R1FW |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Arsenic | | | | | | | | | |
| | ND | 2.00 | 1.99 | mg/L | 99 | | SW846 6010B | 11/21/06 | JJR0R1E4 |
| | ND | 2.00 | 1.97 | mg/L | 99 | 0.60 | SW846 6010B | 11/21/06 | JJR0R1E5 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Antimony | | | | | | | | | |
| | ND | 0.500 | 0.504 | mg/L | 101 | | SW846 6010B | 11/21/06 | JJR0R1F0 |
| | ND | 0.500 | 0.504 | mg/L | 101 | 0.0 | SW846 6010B | 11/21/06 | JJR0R1F1 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Barium | | | | | | | | | |
| | 0.049 | 2.00 | 2.04 | mg/L | 100 | | SW846 6010B | 11/21/06 | JJR0R1E6 |
| | 0.049 | 2.00 | 2.04 | mg/L | 100 | 0.01 | SW846 6010B | 11/21/06 | JJR0R1E7 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Cadmium | | | | | | | | | |
| | ND | 0.0500 | 0.0464 | mg/L | 93 | | SW846 6010B | 11/21/06 | JJR0R1FA |
| | ND | 0.0500 | 0.0466 | mg/L | 93 | 0.58 | SW846 6010B | 11/21/06 | JJR0R1FC |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Chromium | | | | | | | | | |
| | 0.0023 | 0.200 | 0.188 | mg/L | 93 | | SW846 6010B | 11/21/06 | JJR0R1FD |
| | 0.0023 | 0.200 | 0.188 | mg/L | 93 | 0.21 | SW846 6010B | 11/21/06 | JJR0R1FE |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |

(Continued on next page)



BOE-C6-0187000

## MATRIX SPIKE SAMPLE DATA REPORT

### DISSOLVED Metals

**Client Lot #...:** E6K150191 **Matrix.....:** WATER
**Date Sampled...:** 11/15/06 09:43 **Date Received..:** 11/15/06 14:40

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|---|---|
| Beryllium | | | | | | | | | |
| | ND | 0.0500 | 0.0471 | mg/L | 94 | | SW846 6010B | 11/21/06 | JJR0R1F3 |
| | ND | 0.0500 | 0.0470 | mg/L | 94 | 0.25 | SW846 6010B | 11/21/06 | JJR0R1F4 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Lead | | | | | | | | | |
| | ND | 0.500 | 0.484 | mg/L | 97 | | SW846 6010B | 11/21/06 | JJR0R1FM |
| | ND | 0.500 | 0.485 | mg/L | 97 | 0.14 | SW846 6010B | 11/21/06 | JJR0R1FN |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Selenium | | | | | | | | | |
| | ND | 2.00 | 1.92 | mg/L | 96 | | SW846 6010B | 11/21/06 | JJR0R1FP |
| | ND | 2.00 | 1.92 | mg/L | 96 | 0.01 | SW846 6010B | 11/21/06 | JJR0R1FQ |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Silver | | | | | | | | | |
| | ND | 0.0500 | 0.0491 | mg/L | 98 | | SW846 6010B | 11/21/06 | JJR0R1F6 |
| | ND | 0.0500 | 0.0494 | mg/L | 99 | 0.60 | SW846 6010B | 11/21/06 | JJR0R1F7 |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Cobalt | | | | | | | | | |
| | ND | 0.500 | 0.460 | mg/L | 92 | | SW846 6010B | 11/21/06 | JJR0R1F9 |
| | ND | 0.500 | 0.459 | mg/L | 92 | 0.21 | SW846 6010B | 11/21/06 | JJR0R1GA |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Copper | | | | | | | | | |
| | ND | 0.250 | 0.272 | mg/L | 109 | | SW846 6010B | 11/21/06 | JJR0R1FF |
| | ND | 0.250 | 0.272 | mg/L | 109 | 0.11 | SW846 6010B | 11/21/06 | JJR0R1FG |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | | Instrument ID..: M01 | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |

(Continued on next page)

## MATRIX SPIKE SAMPLE DATA REPORT

### DISSOLVED Metals

**Client Lot #...:** E6K150191 **Matrix.....:** WATER
**Date Sampled...:** 11/15/06 09:43 **Date Received..:** 11/15/06 14:40

| PARAMETER | SAMPLE AMOUNT | SPIKE AMT | MEASRD AMOUNT | UNITS | PERCNT RECVRY | RPD | METHOD | PREPARATION-ANALYSIS DATE | WORK ORDER # |
|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | | | | | | | | | |
| | 0.0032 | 1.00 | 0.950 | mg/L | 95 | | SW846 6010B | 11/21/06 | JJR0R1GD |
| | 0.0032 | 1.00 | 0.949 | mg/L | 95 | 0.11 | SW846 6010B | 11/21/06 | JJR0R1GE |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Nickel | | | | | | | | | |
| | 0.022 | 0.500 | 0.486 | mg/L | 93 | | SW846 6010B | 11/21/06 | JJR0R1GG |
| | 0.022 | 0.500 | 0.487 | mg/L | 93 | 0.25 | SW846 6010B | 11/21/06 | JJR0R1GH |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Thallium | | | | | | | | | |
| | ND | 2.00 | 1.95 | mg/L | 97 | | SW846 6010B | 11/21/06 | JJR0R1GK |
| | ND | 2.00 | 1.96 | mg/L | 98 | 0.31 | SW846 6010B | 11/21/06 | JJR0R1GL |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Vanadium | | | | | | | | | |
| | 0.032 | 0.500 | 0.516 | mg/L | 97 | | SW846 6010B | 11/21/06 | JJR0R1GN |
| | 0.032 | 0.500 | 0.515 | mg/L | 97 | 0.25 | SW846 6010B | 11/21/06 | JJR0R1GP |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |
| Zinc | | | | | | | | | |
| | 0.015 | 0.500 | 0.534 | mg/L | 104 | | SW846 6010B | 11/21/06 | JJR0R1FR |
| | 0.015 | 0.500 | 0.523 | mg/L | 102 | 2.0 | SW846 6010B | 11/21/06 | JJR0R1FT |
| | | | Dilution Factor: 1 | | | | | | |
| | | | Analysis Time..: 18:57 | | Instrument ID..: M01 | | | Analyst ID.....: 021088 | |
| | | | MS Run #.....: 6326303 | | | | | | |

**NOTE(S):**

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

# Attachment E

# Waste Manifests

CDM

# TPST Soil Recyclers of CA

**ADE** 25219

12328 Hibiscus Ave. Adelanto, CA 92301

WEIGHMASTER CERTIFICATE

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

Manifest Number: AD-6066 Load # 1 11/22/2006

Generator Site Information:
BOEING COMPANY
1452 KNOX ST

TORRANCE, CA

Weighmaster Weighed At:
TPST SOIL RECYCLERS OF CALIFORNIA
12328 HIBISCUS AVE
ADELANTO, CA 92301

| | | | Lbs | Tons | |
|---|---|---|---|---|---|
| D Jeffrey | Time In: 7:46:39 AM | Gross Weight: | 62100 | 31.05 | Manual Wt |
| D Jeffrey | Time out: 7:48:40 AM | Tare Weight: | 44020 | 22.01 | Manual Wt |
| | | Net Weight: | 18080 | 9.04 | |

Truck Number: 508

Trailer Number: 508

Commodity: Non Haz - Solids

Driver on Gross and Tare Transporter: AIS - FRED

TOTAL - 3 BINS
24.14 tons

# Manifest

## TPST Soil Recyclers of CA
Non-Hazardous Soils

↓ Manifest # ↓

| Date of Shipment: | Responsible for Payment: | Transporter Truck #: | Facility #: | Given by TPST: | Load # |
|---|---|---|---|---|---|
| | Transporter | 508 | A07 | 280106 | 1001 |

**Generator and/or Consultant**

| | | |
|---|---|---|
| Generator's Name and Billing Address: Boeing Realty Corporation<br>4501 E. Conant Street<br>Long Beach, CA 90808 | Generator's Phone #: | Generator's US EPA ID No. |
| | Person to Contact: | |
| | FAX#: | Customer Account Number with TPST: |
| Consultant's Name and Billing Address: | Consultant's Phone #: | |
| | Person to Contact: | |
| | FAX#: | Customer Account Number with TPST: |
| Generation Site (Transport from): *(name & address)* Boeing Company<br>1452 Knox Street<br>Torrance, CA | Site Phone #: | BTEX Levels |
| | Person to Contact: | TPH Levels |
| | FAX#: | AVG. Levels |
| Designated Facility (Transport to): *(name & address)* TPS Technologies<br>12328 Hibiscus Rd.<br>Adelanto, CA 92301-1700 | Facility Phone #: (800) 862-8001 | Facility Permit Numbers |
| | Person to Contact: Delena Jeffrey | |
| | FAX#: (760) 246-8004 | |
| Transporter Name and Mailing Address: American Integrated Services, Inc.<br>P.O. Box 92316<br>Long Beach, CA 90809-2316 | Transporter's Phone #: (310) 522-1168 | Transporter's US EPA ID No.: CAR000148338 |
| | Person to Contact: Melynda Borrego | Transporter's DOT No.: |
| | FAX#: (310) 522-0474 | Customer Account Number with TPST: 7704908 |

| Description of Soil | Moisture Content | Contaminated by: | Approx. Qty: | Description of Delivery | Gross Weight | Tare Weight | Net Weight |
|---|---|---|---|---|---|---|---|
| Sand ☐ Organic ☐ Clay ☐ Other ☐ | 0 - 10% ☐ 10 - 20% ☐ 20% - over ☐ | Gas ☐ Diesel ☐ Other ☐ | 20YD | Soil | 62100 | 44020 | 18080 |
| Sand ☐ Organic ☐ Clay ☐ Other ☐ | 0 - 10% ☐ 10 - 20% ☐ 20% - over ☐ | Gas ☐ Diesel ☐ Other ☐ | | | | | 9.04 |

List any exception to items listed above: AIS Project # 26002-75 B16025 Scale Ticket# 25219

*Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.*

Print or Type Name: Scott Lattimore Generator ☑ Consultant ☐ Signature and date: [signature] Month 11 Day 21 Year 06

**Transporter**

*Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.*

Print or Type Name: Ben Burgos Signature and date: [signature] Month 11 Day 21 Year 06

**Recycling Facility**

Discrepancies:

*Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:*

Print or Type Name: Signature and date: [signature] 11/22/06

Please print or type.

TRANSPORTER COPY

# TPST Soil Recyclers of CA

**ADE** 25220

12328 Hibiscus Ave. Adelanto, CA 92301

WEIGHMASTER CERTIFICATE

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

Manifest Number: A2 8049 Load #: 2 11/22/2005

Generator Site Information:
BOEING COMPANY
1452 KNOX ST

TORRANCE, CA

Weighmaster Weighed at:
TPST SOIL RECYCLERS OF CALIFORNIA
12328 HIBISCUS AVE
ADELANTO, CA 92301

| | | | Lbs | Tons | |
|---|---|---|---|---|---|
| D Jeffrey | Time In: 7:47:13 AM | Gross Weight: | 62060 | 31.03 | Manual Wt |
| D Jeffrey | Time out: 7:47:15 AM | Tare Weight: | 44020 | 22.01 | Manual Wt |
| | | Net Weight: | 18040 | 9.02 | |

Truck Number: 508

Trailer Number: 508

Commodity: Non Haz - Solids

Driver on Gross and Tare Transporter: AIS - FRED

# Manifest

## TPST Soil Recyclers of CA
Non-Hazardous Soils

↓ Manifest # ↓

| Date of Shipment: | Responsible for Payment: | Transporter Truck #: | Facility #: | Given by TPST: | Load # |
|---|---|---|---|---|---|
| | Transporter | 508 | A07 | 28066 | 0107 |

**Generator and/or Consultant**

| | | |
|---|---|---|
| Generator's Name and Billing Address: Boeing Realty Corporation, 4501 E. Conant Street, Long Beach, CA 90808 | Generator's Phone #: | Generator's US EPA ID No. |
| | Person to Contact: | |
| | FAX#: | Customer Account Number with TPST: |
| Consultant's Name and Billing Address: | Consultant's Phone #: | |
| | Person to Contact: | |
| | FAX#: | Customer Account Number with TPST: |
| Generation Site (Transport from): *(name & address)* Boeing Company, 1452 Knox Street, Torrance, CA | Site Phone #: | BTEX Levels |
| | Person to Contact: | TPH Levels |
| | FAX#: | AVG. Levels |
| Designated Facility (Transport to): *(name & address)* TPS Technologies, 12326 Hibiscus Rd., Adelanto, CA 92301-1700 | Facility Phone #: (800) 882-8001 | Facility Permit Numbers |
| | Person to Contact: Dellena Jeffrey | |
| | FAX#: (760) 246-8004 | |
| Transporter Name and Mailing Address: American Integrated Services, Inc., P.O. Box 92316, Long Beach, CA 90809-2316 | Transporter's Phone #: (310) 522-1168 | Transporter's US EPA ID No.: CAR000148338 |
| | Person to Contact: Melynda Borrego | Transporter's DOT No.: |
| | FAX#: (310) 522-0474 | Customer Account Number with TPST: 7704908 |

| Description of Soil | Moisture Content | Contaminated by: | Approx. Qty: | Description of Delivery | Gross Weight | Tare Weight | Net Weight |
|---|---|---|---|---|---|---|---|
| Sand ☐ Organic ☐ Clay ☐ Other ☐ | 0 - 10% ☐ 10 - 20% ☐ 20% - over ☐ | Gas ☐ Diesel ☐ Other ☐ | 20YD | soil | 62060 | 44020 | 18040 |
| Sand ☐ Organic ☐ Clay ☐ Other ☐ | 0 - 10% ☐ 10 - 20% ☐ 20% - over ☐ | Gas ☐ Diesel ☐ Other ☐ | | | | | 9.02 |

List any exception to items listed above: AIS Project # 26002-75 B16012 Scale Ticket# 25220

*Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.*

Print or Type Name: Scott Latimore Generator ☑ Consultant ☐ Signature and date: [signature] Month 11 Day 21 Year 06

**Transporter**

*Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.*

Print or Type Name: Ben Burgos Signature and date: [signature] Month 11 Day 21 Year 06

**Recycling Facility**

Discrepancies:

*Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:*

Print or Type Name: Signature and date: [signature] 11/22/06

Please print or type.

TRANSPORTER COPY

# TPST Soil Recyclers of CA

12328 Hibiscus Ave. Adelanto, CA 92301

**ADE** 25222

WEIGHMASTER CERTIFICATE

**THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.**

Manifest Number: A2 5059 Load # 1 11/22/2006

Generator Site Information:
BOEING COMPANY
1491 KNOX ST
TORRANCE, CA

Weighmaster Weighed at:
TPST SOIL RECYCLERS OF CALIFORNIA
12328 HIBISCUS AVE
ADELANTO, CA 92301

| | | | Lbs | Tons |
|---|---|---|---|---|
| D Jeffrey | Time In: 7:48:04 AM | Gross Weight: | 50340 | 25.17 Manual Wt |
| D Jeffrey | Time out: 8:05:34 AM | Tare Weight: | 38180 | 19.09 Manual Wt |
| | | Net Weight: | 12160 | 6.08 |

Truck Number: 614

Trailer Number: 210

Commodity: Non Haz - Solids

Driver on Gross and Tare Transporter: AIS - GEORGE

# Manifest

## TPST Soil Recyclers of CA
Non-Hazardous Soils

↓ Manifest # ↓

| Date of Shipment: | Responsible for Payment: | Transporter Truck #: | Facility #: | Given by TPST: | Load # |
|---|---|---|---|---|---|
| | Transporter | 514/210 | [illegible] | 28069 | 9011 |

**Generator and/or Consultant**

| | | |
|---|---|---|
| Generator's Name and Billing Address: Boeing Realty Corporation, 4501 E. Conant Street, Long Beach, CA 90808 | Generator's Phone #: | Generator's US EPA ID No. |
| | Person to Contact: | |
| | FAX#: | Customer Account Number with TPST: |
| Consultant's Name and Billing Address: | Consultant's Phone #: | |
| | Person to Contact: | |
| | FAX#: | Customer Account Number with TPST: |
| Generation Site (Transport from): *(name & address)* Boeing Company, 1451 Knox Street, Torrance, CA | Site Phone #: | BTEX Levels |
| | Person to Contact: | TPH Levels |
| | FAX#: | AVG. Levels |
| Designated Facility (Transport to): *(name & address)* TPS Technologies, 12328 Hibiscus Rd., Adelanto, CA 92301-1700 | Facility Phone #: (800) 862-8001 | Facility Permit Numbers |
| | Person to Contact: Dellena Jeffrey | |
| | FAX#: (760) 246-8004 | |
| Transporter Name and Mailing Address: American Integrated Services, Inc., P.O. Box 92316, Long Beach, CA 90809-2316 | Transporter's Phone #: (310) 522-1168 | Transporter's US EPA ID No.: CAR000148338 |
| | Person to Contact: Melynda Borrego | Transporter's DOT No.: |
| | FAX#: (310) 522-0474 | Customer Account Number with TPST: 7704908 |

| Description of Soil | Moisture Content | Contaminated by: | Approx. Qty: | Description of Delivery | Gross Weight | Tare Weight | Net Weight |
|---|---|---|---|---|---|---|---|
| Sand ☐ Organic ☐ Clay ☐ Other ☐ | 0 - 10% ☐ 10 - 20% ☐ 20% - over ☐ | Gas ☐ Diesel ☐ Other ☐ | 20YD | Soil | 50340 | 38180 | 12160 |
| Sand ☐ Organic ☐ Clay ☐ Other ☐ | 0 - 10% ☐ 10 - 20% ☐ 20% - over ☐ | Gas ☐ Diesel ☐ Other ☐ | | | | | 6.08 |

List any exception to items listed above: AIS Project # 26002-75 B16016 Scale Ticket# 25222

*Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.*

| Print or Type Name: | Generator ☑ Consultant ☐ | Signature and date: | Month | Day | Year |
|---|---|---|---|---|---|
| SCOTT LATTIMORE | | [signature] | 11 | 21 | 06 |

**Transporter**

*Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.*

| Print or Type Name: | Signature and date: | Month | Day | Year |
|---|---|---|---|---|
| Ben Burgos | [signature] | 11 | 21 | 06 |

**Recycling Facility**

Discrepancies:

*Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:*

| Print or Type Name: | Signature and date: |
|---|---|
| | [signature] 11/21/06 |

Please print or type.

TRANSPORTER COPY

BOE-C6-0187009

Siemens Water Technologies Corp.
5375 S. Boyle Ave.
Los Angeles, CA 90058
(213) 277-1500

WEIGHMASTER CERTIFICATE: This is to certify that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is recognized authority of accuracy, as prescribed by chapter 7 (commencing with section 12700) of Division 5 of the California Business and Professions Code, administered by the Division of Measurement Standards of the California Department of Food and Agriculture.
* = STORED TARE WEIGHT ** = MANUAL WEIGHT

Transaction No. 00026796 Time In 11:52 Time Out 15:43 Date 12/04/06

MANIFEST NO. 000285767JJK
Generator Name BOEING REALTY

Transporter ANCON MARINE
Driver Name ESTBAN BECERRA
Vehicle I.D. 9D55519/4AS2302

Gross 66700 lb
Tare 38080 lb
Net 28620 lb

Waste Code D029
Description
Sp. Gravity/gal 1.00

Volume in GALLONS 3431.7

Weighmaster Marisela Flores
MARISELA FLORES

3039068

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 20

**UNIFORM HAZARDOUS WASTE MANIFEST**

1. Generator ID Number: CAL000255083
2. Page 1 of
3. Emergency Response Phone: 888-423-8080
4. Manifest Tracking Number: 000285767 JJK

5. Generator's Name and Mailing Address
Brenntag Pacific Corporation
~~16400 Lake Canyon Drive Suite 2~~
~~Irvine, CA 92648~~
Generator's Phone: ~~949-[illegible]~~
4501 E. Conant St. Long Beach CA 90808
Generator's Site Address (if different than mailing address)
1451 Knox Street
Torrance, CA 90501 USA

6. Transporter 1 Company Name: ~~American Integrated Services, Inc.~~ 562-499-6200 ANCHOR MARINE
U.S. EPA ID Number: CAD 980737 ~~CAR000149990~~

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Siemens Water Technologies
5375 South Boyle Avenue
Los Angeles, CA 90058
Facility's Phone: 323-277-1500
U.S. EPA ID Number: CAD097090999

| 9a. HM | 9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any)) | 10. Containers No. | 10. Containers Type | 11. Total Quantity | 12. Unit Wt./Vol. | 13. Waste Codes | | |
|---|---|---|---|---|---|---|---|---|
| | 1. Hazardous Waste Liquid, Nos, 9, NA3082, PG II | 1 | TT | 4600 | G | 134 | D040 | D027 |
| | 2. | | | | | | | |
| | 3. | | | | | | | |
| | 4. | | | | | | | |

14. Special Handling Instructions and Additional Information
Wear appropriate PPE while handling. Weights or Volumes are approximate.
Water contaminated with 1,1-Dichloroethene & Trichloroethene
Job #28002-75 Profile # 3039068

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: S.M. Stone
Signature: SM Stone
Month 12 Day 4 Year 06

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: ESTEBAN BECERRA
Signature: Esteban Becerra
Month 12 Day 4 Year 06
Transporter 2 Printed/Typed Name
Signature
Month Day Year

18. Discrepancy
18a. Discrepancy Indication Space ☑ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
manifested 4/1 drums Received 3 4/31.7 drums
Manifest Reference Number:
18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator)
Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name
Signature
Month 12 Day 04 Year 06

GENERATOR / INT'L / TRANSPORTER / DESIGNATED FACILITY

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

TRANSPORTER'S COPY

# Attachment F

# Survey Reports

CDM

# KDM MERIDIAN

*CIVIL ENGINEERING AND LAND SURVEYING*

**December 4, 2006** **KDMM #06-AVO-01**

Mr. Michael A. Rendina, P.G.
**Avocet Environmental, Inc.**
16 Technology Drive, Suite 154
Irvine, CA 92618-2327

**Re:** **BRC Former C-6 Facility, Torrance - CA**
**Survey Report**

Dear Mr. Rendina:

**KDM Meridian** is pleased to provide **Avocet Environmental** with this report of survey work performed on the subject site November 21, 2006 at your request. The scope of work included the survey of seven (7) newly installed wells and checking several of the existing wells that had been surveyed by Tait & Assoc.

The bench mark formerly used (Y-3030) has been destroyed by construction of a new railroad crossing. The nearest existing bench mark in the Los Angeles County Surveyor's system was used: Y-3031 / Elv: 48.878 feet, NAVD-88.

Two (2) on-site Survey Control Points were set and coordinates established thereon in CCS-83, Zone V, 2002.00 Epoch and NAVD-88.

A closed differential level loop was run with a digital level from the bench mark through the SCPs. Closed level loops were then run through each surveyed well from TBMs set during the main level loop. The SCPs were surveyed through post-process static sessions of more than two (2 hours) each from NGS sanctioned CORS stations. The wells were then surveyed through post-process-kinematic methods against the SCPs.

Elevations were consistent with the former surveys provided; however a difference of approximately 7.2 feet North and 4.1 feet West is noted with the four (4) wells surveyed from the existing data. Contact was established with Tait & Assoc. but the difference was not resolved. Additional checks were performed and we are confident our survey is correct and unable to rectify the difference.

**Attachments:**

| | | |
|---|---|---|
| **Exhibit 1** | **Summary Table (Boeing EDD)** | |
| **Exhibit 2** | **GeoTracker Files (GeoTracker EDD)** | (Global Site ID not provided) |
| **Exhibit 3** | **Recovery Form (SCPs)** | |
| **Exhibit 4** | **Site Figure** | |

Thank you for allowing **KDM Meridian, Inc.** to provide surveying services to **Avocet Environmental**. Should you have questions concerning anything contained in this report, please contact me.

Sincerely,

Richard C. Maher, CA PLS #7564
President
**KDM Meridian, Inc.**

PROFESSIONAL LAND SURVEYOR ★ RICHARD C. MAHER ★ No. 7564 ★ Exp: 12/31/07 ★ STATE OF CALIFORNIA

22722 Lambert Street, Suite 1710, Lake Forest, California 92630
Telephone: 949-768-0731 Facsimile: 949-768-3731
KDMMeridian.com

| SITE | OBJECT TYPE | OBJ. NAME | X-COORD | Y-COORD | XY UNITS | XY DATUM | XY DATE | LONGITUDE | LATITUDE | OBJ. ELEV. | GROUND ELEV. | ELEV. UNIT | ELEV. DATUM | ELEV. DATE | LOCATION DESCRIPTION | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SRC FORMER C-6 | MONITORING WELL | EWB001 | 6470380.97 | 1769603.92 | FEET | CCS-83, ZONE V, 2002.00 EPOCH | 11/21/2006 | -118.3006505 | 33.8545989 | 53.01 | 53.56 | FEET | NAVD-88 | 11/21/2006 | | +/- 0.06 FEET, 95% |
| SRC FORMER C-6 | MONITORING WELL | EWC001 | 6470389.28 | 1768705.98 | FEET | CCS-83, ZONE V, 2002.00 EPOCH | 11/21/2006 | -118.3007229 | 33.8546792 | 52.59 | 53.12 | FEET | NAVD-88 | 11/21/2006 | | +/- 0.06 FEET, 95% |
| SRC FORMER C-6 | MONITORING WELL | EWC002 | 6470286.89 | 1768367.86 | FEET | CCS-83, ZONE V, 2002.00 EPOCH | 11/21/2006 | -118.3010147 | 33.8512010 | 51.76 | 52.05 | FEET | NAVD-88 | 11/21/2006 | | +/- 0.06 FEET, 95% |
| SRC FORMER C-6 | MONITORING WELL | IWC001 | 6470121.09 | 1768462.84 | FEET | CCS-83, ZONE V, 2002.00 EPOCH | 11/21/2006 | -118.3014950 | 33.8514339 | 53.60 | 54.20 | FEET | NAVD-88 | 11/21/2006 | | +/- 0.06 FEET, 95% |
| SRC FORMER C-6 | MONITORING WELL | IWC002 | 6470239.20 | 1768669.11 | FEET | CCS-83, ZONE V, 2002.00 EPOCH | 11/21/2006 | -118.3011082 | 33.8520291 | 51.56 | 52.30 | FEET | NAVD-88 | 11/21/2006 | | +/- 0.06 FEET, 95% |
| SRC FORMER C-6 | MONITORING WELL | MWC024 | 6470265.96 | 1768408.81 | FEET | CCS-83, ZONE V, 2002.00 EPOCH | 11/21/2006 | -118.3010174 | 33.8513141 | 51.84 | 52.05 | FEET | NAVD-88 | 11/21/2006 | | +/- 0.06 FEET, 95% |
| SRC FORMER C-6 | MONITORING WELL | WCC 005 | 6470683.55 | 1769409.29 | FEET | CCS-83, ZONE V, 2002.00 EPOCH | 11/21/2006 | -118.2998520 | 33.8540665 | 54.96 | 55.29 | FEET | NAVD-88 | 11/21/2006 | | +/- 0.06 FEET, 95% |
| SRC FORMER C-6 | SURVEY CONTROL POINT | SCP-1 | 6470143.30 | 1768145.24 | FEET | CCS-83, ZONE V, 2002.00 EPOCH | 11/21/2006 | -118.3014267 | 33.8533366 | 53.89 | 53.86 | FEET | NAVD-88 | 11/21/2006 | | +/- 0.06 FEET, 95% |
| SRC FORMER C-6 | SURVEY CONTROL POINT | SCP-2 | 6470141.76 | 1768313.20 | FEET | CCS-83, ZONE V, 2002.00 EPOCH | 11/21/2006 | -118.3014256 | 33.8510503 | 53.92 | 53.92 | FEET | NAVD-88 | 11/21/2006 | | +/- 0.06 FEET, 95% |

# Exhibit 1

| GLOBAL_ID | FIELD_PT_NAME | FIELD_PT_CLASS | XY_SURVEY_DATE | LATITUDE | LONGTITUDE | XY_METHOD | XY_DATUM | XY_ACC_VAL | XY_SURVEY_ORG | GPS_EQUIP_TYPE | XY_SURVEY_DESC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ? | EWB001 | MW | 11/21/2006 | 33.8545989 | -118.3006505 | STAT | NAD83 | 2 | KDM MERIDIAN (949) 768-0731 | T57 | NAD_83(CORS96) 2002.00 |
| ? | EWC001 | MW | 11/21/2006 | 33.8548792 | -118.3007229 | STAT | NAD83 | 2 | KDM MERIDIAN (949) 768-0731 | T57 | NAD_83(CORS96) 2002.00 |
| ? | EWC002 | MW | 11/21/2006 | 33.8512010 | -118.3010147 | STAT | NAD83 | 2 | KDM MERIDIAN (949) 768-0731 | T57 | NAD_83(CORS96) 2002.00 |
| ? | IWC001 | MW | 11/21/2006 | 33.8514339 | -118.3014950 | STAT | NAD83 | 2 | KDM MERIDIAN (949) 768-0731 | T57 | NAD_83(CORS96) 2002.00 |
| ? | IWC002 | MW | 11/21/2006 | 33.8520291 | -118.3011082 | STAT | NAD83 | 2 | KDM MERIDIAN (949) 768-0731 | T57 | NAD_83(CORS96) 2002.00 |
| ? | MWC024 | MW | 11/21/2006 | 33.8513141 | -118.3010174 | STAT | NAD83 | 2 | KDM MERIDIAN (949) 768-0731 | T57 | NAD_83(CORS96) 2002.00 |
| ? | WCC_09S | MW | 11/21/2006 | 33.8540666 | -118.2996520 | STAT | NAD83 | 2 | KDM MERIDIAN (949) 768-0731 | T57 | NAD_83(CORS96) 2002.00 |

# Exhibit 2

| GLOBAL_ID | FIELD_PT_NAME | ELEV_SURVEY_DATE | ELEVATION | ELEV_METHOD | ELEV_DATUM | ELEV_ACC_VAL | ELEV_SURVEY_ORG | RISER_HT | ELEV_DESC | EFF_DATE |
|---|---|---|---|---|---|---|---|---|---|---|
| ? | EWB001 | 11/21/2006 | 53.01 | DIG | 88 | 0.5 | KDM MERIDIAN (949) 768-0731 | -0.55 | COUNTY OF LOS ANGELES BM Y 3031 (48.878') | |
| ? | EWC001 | 11/21/2006 | 52.59 | DIG | 88 | 0.5 | KDM MERIDIAN (949) 768-0731 | -0.53 | COUNTY OF LOS ANGELES BM Y 3031 (48.878') | |
| ? | EWC002 | 11/21/2006 | 51.76 | DIG | 88 | 0.5 | KDM MERIDIAN (949) 768-0731 | -0.29 | COUNTY OF LOS ANGELES BM Y 3031 (48.878') | |
| ? | IWC001 | 11/21/2006 | 53.60 | DIG | 88 | 0.5 | KDM MERIDIAN (949) 768-0731 | -0.60 | COUNTY OF LOS ANGELES BM Y 3031 (48.878') | |
| ? | IWC002 | 11/21/2006 | 51.56 | DIG | 88 | 0.5 | KDM MERIDIAN (949) 768-0731 | -0.74 | COUNTY OF LOS ANGELES BM Y 3031 (48.878') | |
| ? | MWC024 | 11/21/2006 | 51.64 | DIG | 88 | 0.5 | KDM MERIDIAN (949) 768-0731 | -0.42 | COUNTY OF LOS ANGELES BM Y 3031 (48.878') | |
| ? | WCC_09S | 11/21/2006 | 54.96 | DIG | 88 | 0.5 | KDM MERIDIAN (949) 768-0731 | -0.33 | COUNTY OF LOS ANGELES BM Y 3031 (48.878') | |

# Exhibit 2

Exhibit 3

KDM MERIDIAN

22541 Aspan St., Ste. C - Lake Forest, CA 92630
Tel# (949) 768-0731 Fax# (949) 768-3731

## GPS STATION RECOVERY / SATELLITE VISIBILITY DIAGRAM

**STATION NAME:** SCP-1 **GPS STATION NO:** 1

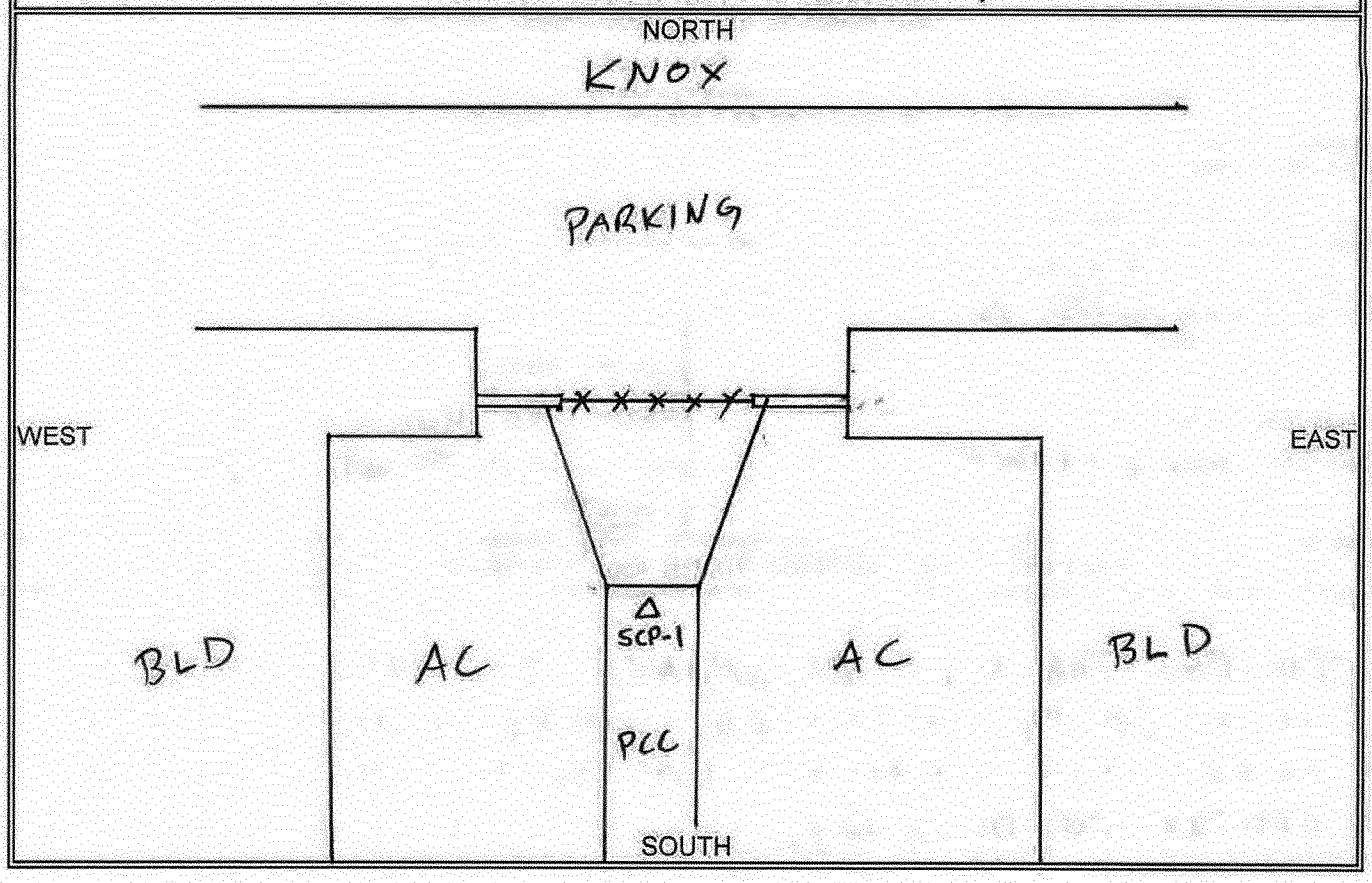
Recovered By: R. MAHER Target: NO Date: 11/21/06

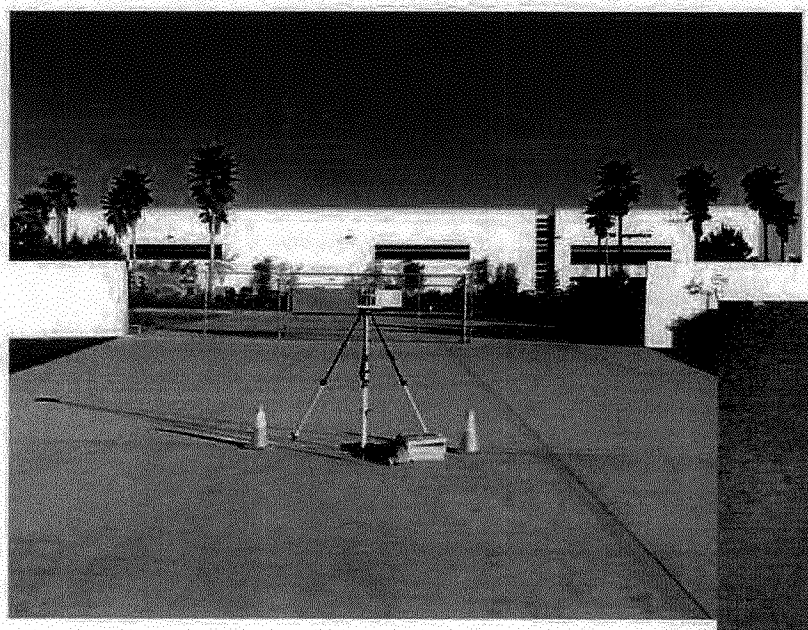
| MONUMENT DATA | STATION ACCESS DATA |
|---|---|
| Stamping: KDM CONTROL PNT SCP-1 | Permit Required: |
| | Gate (Key/Combo): |
| Center Mark: PUNCH | Agency / Owner: BOEING |
| Description: MAG & WASHER | Restricted Access: PRIVATE PROP. |
| | (2WD) 4WD Heli Hike To |

**STATION ACCESS INSTRUCTIONS AND "TO REACH" DESCRIPTION**

INSIDE THE N'LY ENTERANCE TO 1452 KNOX. 75'± SOUTH OF GATES, WHERE CONC. DRIVEWAY TAPERS TO STRAIGHT, 1.0' SOUTH OF JOINT IN CENTER OF DRIVEWAY.

## STATION AREA DETAIL - STATION NO: 1



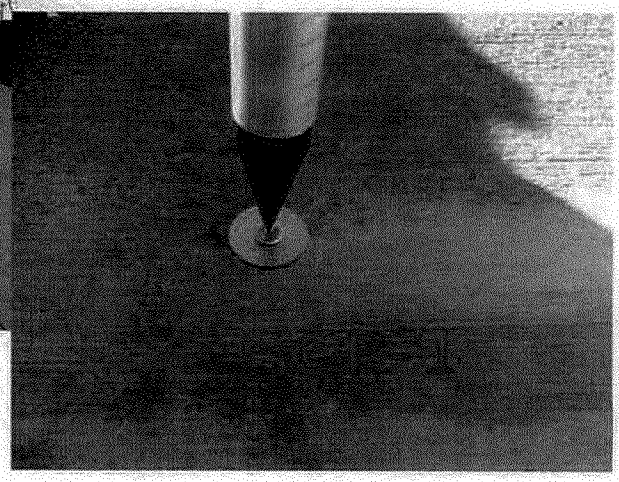


Exhibit 3

KDM MERIDIAN

22541 Aspan St., Ste. C - Lake Forest, CA 92630
Tel# (949) 768-0731 Fax# (949) 768-3731

## GPS STATION RECOVERY / SATELLITE VISIBILITY DIAGRAM

STATION NAME: SCP-2 GPS STATION NO: 2

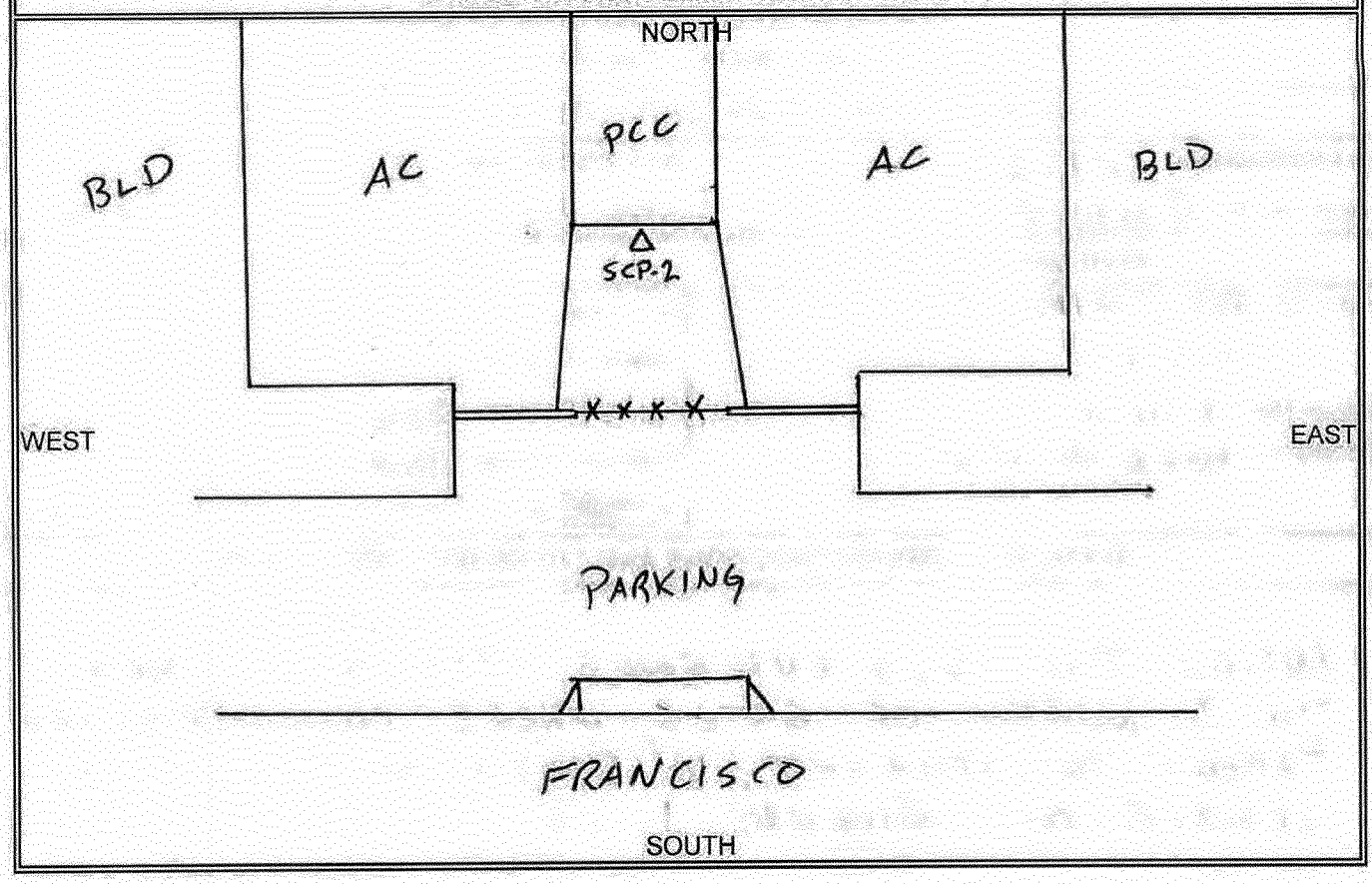
Recovered By: R.MAHER Target: NO Date: 11/21/06

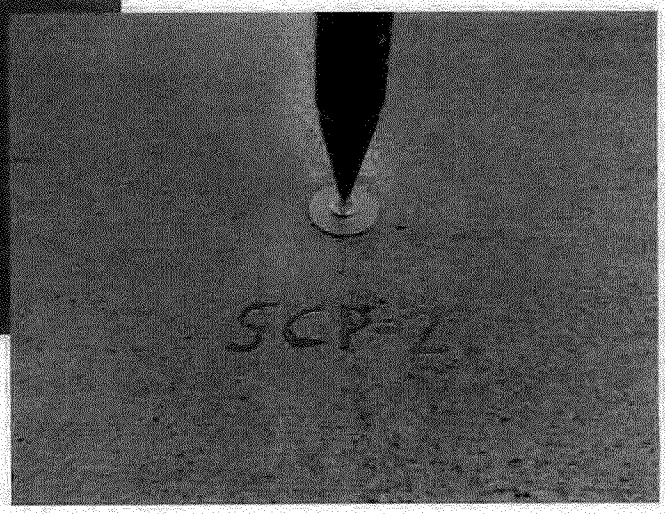
| MONUMENT DATA | STATION ACCESS DATA |
|---|---|
| Stamping: KDM CONTROL PNT SCP-1 | Permit Required: |
| | Gate (Key/Combo): |
| Center Mark: PUNCH | Agency / Owner: BOEING |
| Description: MAG & WASHER | Restricted Access: PRIVATE PROP. |
| | 2WD 4WD Heli Hike To |

### STATION ACCESS INSTRUCTIONS AND "TO REACH" DESCRIPTION

INSIDE THE S'LY ENTERANCE TO 1452 KNOX. 75' ± NORTH OF GATES, WHERE CONC. DRIVEWAY TAPERS TO STRAIGHT, 1.6 SOUTH OF JOINT IN CENTER OF DRIVEWAY.

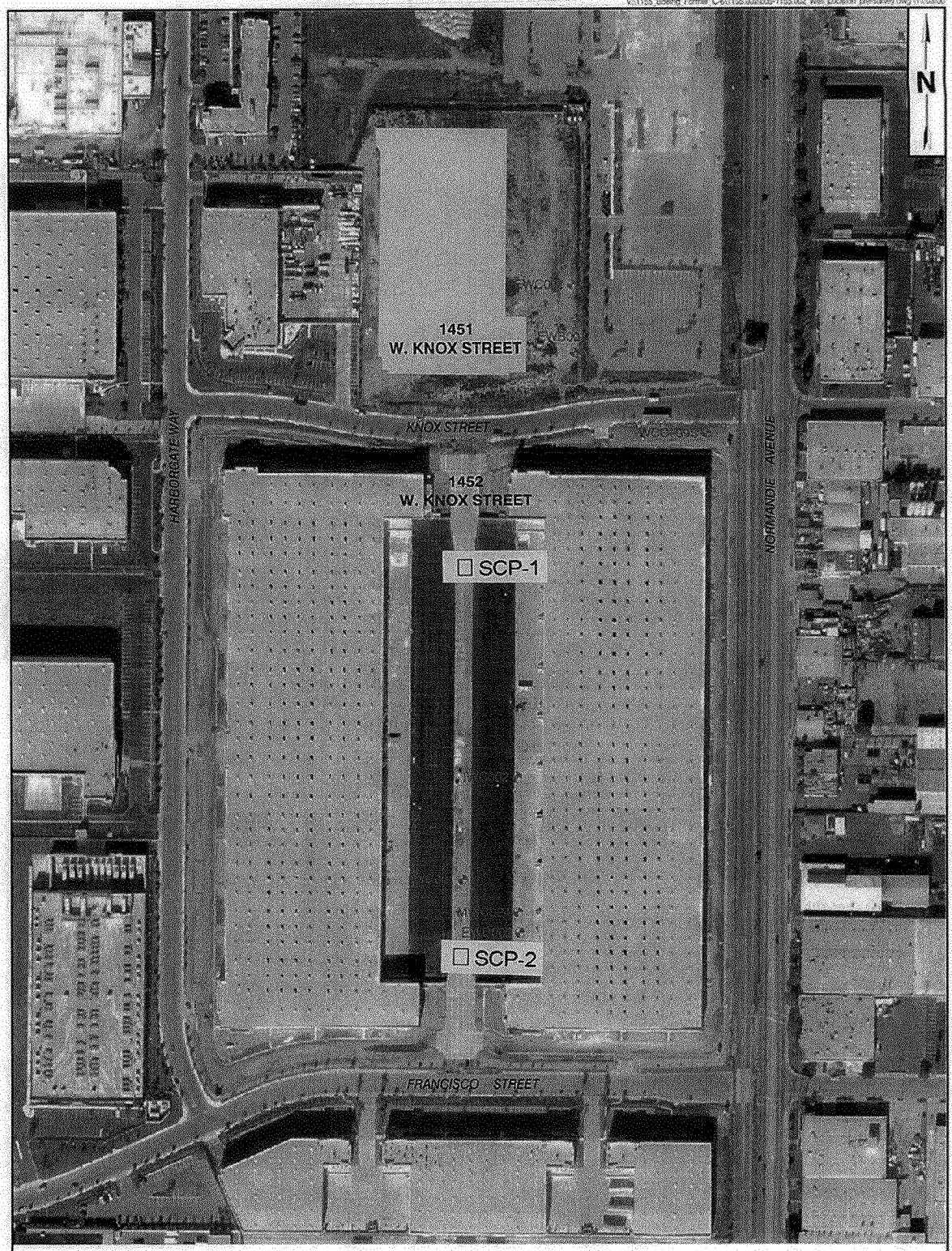
## STATION AREA DETAIL - STATION NO: 2





# Exhibit 4

V:\1155_Boeing_Former_C-6\1155.002\005-1155.002_Well_Location_pre-survey.dwg 11/13/2006




0 200 400 FEET
SCALE

**LEGEND**

EWC001 APPROXIMATE WELL LOCATION

FIGURE 1

**APPROXIMATE WELL LOCATIONS**

HARBOR GATEWAY PROJECT
LOS ANGELES, CALIFORNIA

AVOCET ENVIRONMENTAL, INC

# B

# Appendix B

# Appendix B

# ELECTRON DONOR EVALUATION (PAPER STUDY)

CDM

CDM

# Appendix B

# Electron Donor Evaluation (Paper Study) Remediation of Volatile Organic Compounds Former C-6 Facility, Los Angeles, California

An evaluation of electron donors was performed by Camp Dresser & McKee Inc (CDM) for the former C-6 Facility (Site) in order to identify the most suitable electron donor compound(s) for use in the proposed bioremediation remedy at the site. In order to consider the factors that affect electron donor selection appropriately, the evaluation was conducted in two phases - a background "paper" evaluation and a laboratory treatability study. This document presents the results of the paper evaluation and provides recommendations for donors which were further evaluated in the electron donor laboratory treatability study phase of the evaluation.

## 1.0 Electron Donor Background

A number of organic substrates have been used to stimulate biological reduction at various sites across the U.S. In general, electron donors can be divided into two categories - aqueous (fast release) and slow release.

### 1.1 Aqueous Electron Donors

Aqueous electron donors generally have high solubility and low viscosity, and are easily distributed in the subsurface. This implies that fewer injection locations can be used to deliver donor to a given area. As aqueous electron donors can facilitate the rapid onset of strongly reducing conditions to quickly poise the subsurface for efficient dechlorination, they can be considered "fast release". These donors are rapidly fermented to molecular hydrogen, which drives the dechlorination process. In addition, they generally have low unit costs (i.e. per pound or per gallon) compared to slow release electron donors. Also, some aqueous donors can cause significant enhanced dissolution from residual sources via a cosolvency effect when injected directly into a source area (Macbeth et al, 2006; ITRC, 2005; French et al. 2003; Song et al. 2002; Sorenson 2002). That is, certain aqueous donors can cause contaminants to be released from the non-aqueous phase source (DNAPL or sorbed phase) faster than under ambient conditions. This can result in more rapid degradation of a source term as contaminant mass is driven into the aqueous phase and then degraded.

However, as the term implies, fast release electron donors are utilized rapidly in the subsurface and therefore have a short to medium longevity in the field (approximately 4 to 12 weeks depending on the site). This implies that relatively frequent injections could be required in order to ensure adequate electron donor is available in the subsurface. Examples

of fast release electron donors include lactate, volatile fatty acids, alcohols, carbohydrates, sugars, and products from the dairy industry.

## 1.2 Slow Release Electron Donors

Slow release electron donors are those that are slowly fermented to molecular hydrogen. In general, these donors can have very high viscosities (up to and including being a solid) and relatively low solubilities, which can limit the ability to distribute them over large areas. This implies that numerous closely spaced injection points or trenches might be required in order to achieve adequate distribution. In addition, the relatively slow utilization can result in longer timeframes for establishment of appropriate redox conditions. Also, slow release donors generally do not enhance mass transfer from residual source areas to the extent that fast release donors do. In fact, some slow release donors (e.g. vegetable oil) can actually sequester contaminants because the hydrophobic chlorinated solvents can actually partition into the donor itself). Another consideration is that in general, slow release donors are more expensive than fast release donors on a unit cost basis.

However, the slower utilization of these donors also implies that slow release electron donors have much higher longevities in the subsurface, on the order of one to several years. This high longevity can result in a single application being sufficient to provide treatment at a site for several years. In addition, at sites with variable saturation, slow release donors can be especially long lived. Examples of slow release electron donors include edible oils (either as pure phase or as emulsified oils), Hydrogen Release Compound (HRC), and polymeric organic materials such as bark, mulch, and chitin.

## 1.3 Electron Donors Considered for the Site

The preferred approach for remediation at the Site involves in situ enhanced bioremediation (ISEB) consisting of continuous groundwater recirculation with pulsed donor addition and bioagumentation. Aqueous electron donors are best suited to this application because of the ability to achieve large-scale distribution, the more rapid establishment of reducing conditions, and the ability to achieve greater enhanced dissolution from the residual source area. In addition, most bioaugmentation applications to date have been performed using aqueous electron donors because of the need to stimulate rapid growth of the injected organisms. However, as a part of a phased remediation approach at the Site, slug injections may be performed at some time in the future. As a result, it was appeared appropriate to also consider a slow release electron donor.

Based on these factors, CDM included both aqueous and slow release donors in the donor evaluation process, with the intent of including 5 aqueous donors and 1 slow release donor in the laboratory treatability study. The following aqueous electron donors/donor groups were evaluated in this paper study phase of the donor evaluation:

- Ethanol and isopropanol
- Citric acid and sodium citrate
- Whey and lactose
- Lactate (as sodium lactate and lactic acid)
- Complex sugars (corn syrup and high fructose corn syrup)
- Molasses
- Glycerin/other polyols*
- Proprietary fermentation mother liquor*

*These are proprietary products preliminarily identified by JRW Bioremediation, LLC of Lenexa, Kansas (JRW) and are subject to a non-disclosure agreement between JRW and CDM.

It should be noted that the donors listed together in the same bullets are considered to be similar enough that in most cases, only one donor from each group would be evaluated in a laboratory study.

Given that injection wells are the only means available for emplacement (as opposed to hydraulic fracturing or trenching), only injectable slow release electron donors (i.e. emulsified oils) are considered for this application. The following slow release donors are considered in this paper study phase of the donor evaluation:

- Emulsified Oil Substrate (EOS)
- Newman Zone
- HRC-Advanced

## 2.0 Evaluation Criteria

The factors considered for the donor evaluation were grouped into the following four categories of criteria:

- Dechlorination Performance
- Administrative Requirements
- Handling and Storage Requirements

- Cost

These criteria are described further in the following subsections.

## 2.1 Dechlorination Performance

This category covers the aspects of the effectiveness of the various electron donors in stimulating complete dechlorination to ethene. Evaluation of these factors is based primarily on CDM and BRC experience, and to a lesser extent literature review and experience of others in the remediation industry. Factors considered in this criterion include:

- Success at other sites in stimulating complete dechlorination to ethene, particularly with bioaugmentation cultures
- Electron donor longevities, expressed as half lives for aqueous donors or advertised/known longevities in field applications for slow release donors
- Electron donor degradation products (if known)
- Biofouling/bioclogging potential

## 2.2 Administrative Requirements

This category covers site-specific administrative issues that would need to be addressed if a given electron donor was selected for use at the Site. Factors considered in this criterion include:

- Permits needed (along with estimated lead time)
- Licensing/patent issues
- Donor availability and supply
- Other miscellaneous issues

## 2.3 Handling and Storage Requirements

This category covers issues related to the handling, storage, and pre-treatment requirements for the various electron donors. For example, some donors may be able to be injected in the same form as they are delivered, while others may require dilution, mixing, or other pre-treatment steps. Factors considered in this criterion include:

- Donor characteristics (including solubility and solids content)
- Donor stability/shelf-life

- Mixing/filtration needs
- Onsite storage needs

## 2.4 Cost

This category covers the cost elements that would be incurred if a given electron donor was selected for use at the Site. Factors considered in this criterion include:

- Unit cost
- Cost per donor equivalent
- Unique capital costs (i.e. for special pre-treatment, handling, or storage needs)

While transportation costs are also an important consideration for overall project costs, these are expected to be similar for all donors being evaluated. Because of this, it was not a discriminating factor between the various donors at the paper evaluation stage.

# 3.0 Paper Evaluation Results

The electron donor paper study results are presented in the attached Tables 1 through 4. Each table contains the results of the donor evaluation for each of the four categories described in Section 2. Electron donors that were eliminated based on the evaluation in a given category are shaded in blue, and are not carried forward into the other categories. For example, corn syrup and high fructose corn syrup were eliminated based on dechlorination performance in Table 1, and are "grayed out" in the tables showing the other evaluation criteria. Overall, of the 17 donors considered in the paper study evaluation, the following five donors were recommended for the laboratory treatability study.

1. Citric acid or sodium citrate; the actual electron donor for both of these compounds is citrate. Pre-treatability study testing will be performed to determine mixing requirements, pH of resultant aqueous solutions, and potential for metals mobilization; one will be selected for the lab study.

2. Whey powder; whey will be evaluated for mixing requirements and solids content prior to the lab study.

3. Lactate (either as sodium lactate or lactic acid); as with citrate, the actual electron donor for both compounds is the same, so there is no need to test both donors.

4. JRW proprietary fermentation mother liquor; this will be evaluated for product stability and solids content prior to the lab study

5. Newman Zone – for its potential use during slug injections into existing wells at some point in the future (selected over EOS based on successful BRC experience at other sites and potentially slightly lower cost).

In addition to these five individual donors, CDM recommended that one electron donor be tested along with a proprietary JRW nutrient that has been shown to improve dechlorination efficiency by up to a factor of three. This nutrient would likely be added to whey powder, thus making the 6th donor condition to be studied.

# 4.0 Bioaugmentation Cultures

CDM performed a preliminary evaluation of potential bioaugmentation cultures for testing in the treatability study. Initially, it was planned to conduct testing of the six donor conditions with each of three bioaugmentation cultures. CDM discussed Site conditions with three vendors of bioaugmentation cultures – Bioremediation Consulting Inc, Shaw, and SiRem. Of these vendors, all indicated that they either currently have or could develop cultures that would perform well given the conditions at the Site. For example, Shaw's SDC-9™ culture has been shown to degrade chloroethenes, chloroethanes, and chloromethanes in Shaw internal testing. Also, SiREM was willing to provide KB-1 for testing at the Site. BCI was also willing to develop a culture specifically for the Site. However, BCI did not have production capacity or schedule to meet the needs of this large-scale project, and therefore was not a cost effective option for bioaugmentation at the Site. Because of this, the set of six donor conditions that were to be tested with a BCI bioaugmentation culture was run as unaugmented conditions.

Therefore, each of the six donor conditions will be tested with follows cultures:

- Shaw's SDC-9™ culture
- SiREM's KB-1™ culture
- Unaugmented donors

# 5.0 Conclusions and Recommendations

Based on the screening evaluation presented herein, CDM recommended that the laboratory treatability study be initiated to evaluate the following electron donors:

- Citrate
- Whey powder
- Lactate

- JRW proprietary fermentation mother liquor
- Whey powder plus JRW nutrient
- Newman Zone

Each of these donors was proposed to be tested with no bioaugmentation culture, with a culture from SiRem, and with a culture from Shaw. In addition, the microcosm would be spiked with 1,1,1-trichloroethane (1,1,1-TCA) and chloroform as appropriate to allow an assessment of the degradative capabilities of the cultures toward these compounds, as well as the extent to which these compounds inhibit chloroethene degradation. The spike concentrations would be selected to be representative of the site groundwater based on the most recent groundwater sampling data available at the time (which was March 2006). The laboratory treatability study would be conducted in accordance with the LARWQCB-approved testing plan provided in the Pre-Remediation Workplan (CDM, 2006) and modified as appropriate to the information provided in this document.

## 5.0 References

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**Attachments:**

Table 1 - Evaluation Results for Dechlorination Performance Criterion
Table 2 - Evaluation Results for Administrative Requirements Criterion
Table 3 - Evaluation Results for Handling and Storage Requirements Criterion
Table 4 - Evaluation Results for Donor Cost Criterion

# Table 1
## Former C-6 Facility
## Results of Electron Donor Evaluation (Paper Study) - Groundwater Remediation
## Evaluation Results for Dechlorination Performance Criterion

| Donor | Degradation to Ethene | Donor Longevity | Primary Donor Degradation Products | Biofouling/Bioclogging Potential | Retained based on Dechlorination Criteria |
|---|---|---|---|---|---|
| **Ethanol** | Well documented at other sites | half life 15-30 days | VFAs (propionate, acetate) | has been observed at other sites, but can likely be mitigated by higher concentration pulse injections | **Yes** |
| **Isopropanol** | Less common than ethanol | expected half life 15-30 days | VFAs (propionate, acetate) | expected to be similar to ethanol | **Yes** |
| **Citric acid** | Increasing number of successful applications [1] | expected half life 15-30 days | unknown; likely VFAs | less likely than most other donors | **Yes** |
| **Sodium Citrate** | Increasing number of successful applications | expected half life 15-30 days | unknown; likely VFAs | less likely than most other donors | **Yes** |
| **Whey** | Increasing number of applications; CDM experience highly successful; good enhanced dissolution properties | half life 30-45 days | VFAs (propionate, acetate, butyrate) | some components of whey are rapidly utilized, which could cause fouling; however CDM has been successful in avoiding this in the past | **Yes** |
| **Lactose** | few field applications, although dechlorination would likely be similar to whey; little enhanced dissolution effects | expected half life 15-30 days | VFAs (propionate, acetate, butyrate) | similar to whey | No - degradation using whey would be similar; enhanced dissolution from source is better with whey |
| **Sodium Lactate** | widely used successfully; considered to be "universal donor" | half life 15-30 days | VFAs (propionate, acetate, butyrate) | many successful applications in the past without biofouling, including CDM experience | **Yes** |
| **Lactic acid** | less common than lactate, but very similar; pH drop may occur following injection | half life 15-30 days | VFAs (propionate, acetate, butyrate) | less likely than most other donors | **Yes** |
| **Corn Syrup** | few known applications | expected half life 10-20 days | unknown; likely VFAs | rapid utilization could lead to biofouling | No - unproven donor for chlorinated solvents; has rapid utilization and may cause biofouling |
| **High Fructose Corn Syrup** | few known applications | expected half life 10-20 days | unknown; likely VFAs | rapid utilization could lead to biofouling | No - unproven donor for chlorinated solvents; has rapid utilization and may cause biofouling |
| **Molasses** | widely used with mixed results; unsuccessful in previous applications at Site | half life 10-20 days | VFAs, alcohols, ketones | high potential - was a problem previously at C-6 | No - previously failed at the Site |
| **Glycerin** | few known applications; initial testing by vendor shows poor dechlorination | expected half life 30-60 days | unknown; likely VFAs | unknown | No |



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# Table 1
## Former C-6 Facility
## Results of Electron Donor Evaluation (Paper Study) - Groundwater Remediation
## Evaluation Results for Dechlorination Performance Criterion

| Donor | Degradation to Ethene | Donor Longevity | Primary Donor Degradation Products | Biofouling/Bioclogging Potential | Retained based on Dechlorination Criteria |
|---|---|---|---|---|---|
| **Other polyols** | few known applications; initial testing by vendor shows poor dechlorination | expected half life 30-60 days | unknown; likely VFAs | unknown | No |
| **Proprietary fermentation mother liquor*** | no field testing to date; initial testing by vendor showed significantly better performance than lactate | expected half life 15-30 days | unknown; likely VFAs | unknown | **Yes** |
| **EOS** | CDM experience successful | documented longevities of 1-2 years | VFAs (propionate, acetate, butyrate) | low potential given slow utilization | **Yes** |
| **Newman Zone** | increasing number of applications; several successful BRC applications | documented longevity of 1-2 years | VFAs (propionate, acetate, butyrate) | low potential given slow utilization | **Yes** |
| **HRC-Advanced** | new product; largely untested | advertised longevity of 2 years | lactic acid, VFAs (propionate, acetate, butyrate) | low potential given slow utilization | No - other products are similar and have been demonstrated at other sites |

**Notes:**

VFAs - Volatile fatty acids

[1] - Evans,P.J. 2006. Personal Communication with Paul Hatzinger, Shaw. September 15



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# Table 2
## Former C-6 Facility
## Results of Electron Donor Evaluation (Paper Study) - Groundwater Remediation
## Evaluation Results for Administrative Requirements Criterion

| Donor | Permits | Licensing/Patents | Donor Availability and Supply | Other | Retained based on Administrative Criteria |
|---|---|---|---|---|---|
| Ethanol | Covered under general WDR (Order No. R4-2005-0030: Series 007); would also require L.A. City Fire Department permit, additional permit requirements from SCAQMD, and specially denatured alcohol (SDA) permit from the U.S. Bureau of Alcohol, Tobacco, and Firearms (ATF) | No issues | Widely available | Flammable substances viewed as highly unfavorable by BRC and tenants. Would require use of explosion proof equipment and construction | No - cost and performance of donor do not outweigh the permitting issues and concerns about tenant perception |
| Isopropanol | Covered under general WDR (Order No. R4-2005-0030: Series 007); would also require L.A. City Fire Department permit and additional permit requirements from SCAQMD | No issues | Widely available | Flammable substances viewed as highly unfavorable by BRC and tenants. Would require use of explosion proof equipment and construction | No - cost and performance of donor do not outweigh the permitting issues and concerns about tenant perception |
| Citric acid | Site-Specific WDR would be required | No issues | Widely available | Because citrate is a chelating agent, the potential for metals mobilization needs to be investigated; metals analysis can be included in the lab study if needed | Yes |
| Sodium Citrate | Site-Specific WDR would be required | No issues | Widely available | Because citrate is a chelating agent, the potential for metals mobilization needs to be investigated; metals analysis can be included in the lab study if needed | Yes |
| Whey | Covered under general WDR (Order No. R4-2005-0030: Series 007) | North Wind, Inc. has a patent pending for applications in source areas at injection concentrations greater than or equal to 1%. Procurement through JRW would include applicable license fees | JRW for patented application; other suppliers will be considered as appropirate | | Yes |
| Lactose | | | | | No - Based on Table 1 |
| Sodium Lactate | Covered under general WDR (Order No. R4-2005-0030: Series 007) | The Idaho National Laboratory has a patent on applications in source areas at injection concentrations at greater than or equal to 3%. Procurement through JRW would include applicable license fees. | JRW for patented application; other suppliers will be considered as appropirate | | Yes |
| Lactic acid | Covered under general WDR (Order No. R4-2005-0030: Series 007) | No issues | several suppliers | | Yes |



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## Table 2
## Former C-6 Facility
## Results of Electron Donor Evaluation (Paper Study) - Groundwater Remediation
## Evaluation Results for Administrative Requirements Criterion

| Donor | Permits | Licensing/Patents | Donor Availability and Supply | Other | Retained based on Administrative Criteria |
|---|---|---|---|---|---|
| Corn Syrup | | | | | No - Based on Table 1 |
| High Fructose Corn Syrup | | | | | No - Based on Table 1 |
| Molasses | | | | | No - Based on Table 1 |
| Glycerin | | | | | No - Based on Table 1 |
| Other polyols | | | | | No - Based on Table 1 |
| **Proprietary fermentation mother liquor** | Site-Specific WDR would be required; ; degradation products and metals content would need to be determined for permit | Proprietary product subject to NDA between JRW and CDM; further action would be required by JRW and BRC | JRW only | | TBD pending NDA issues |
| **EOS** | Site-Specific WDR would be required | proprietary product available from one supplier | EOS remediation only | | **Yes** |
| **Newman Zone** | Site-Specific WDR would be required | proprietary product available from one supplier | RNAS only - orders greater than 10,000 lbs may need 1 month lead time | | **Yes** |
| HRC-Advanced | | | | | No - Based on Table 1 |

**Notes:**

NDA - Non-disclosure agreement

TBD - To be determined



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# Table 3
# Former C-6 Facility
# Results of Electron Donor Evaluation (Paper Study) - Groundwater Remediation
# Evaluation Results for Handling and Storage Requirements Criterion

| Donor | Donor characteristics | Donor Stability/Shelf life | Mixing/Filtration Needs | Onsite Storage Needs | Retained based on Handling and Storage Criteria |
|---|---|---|---|---|---|
| Ethanol | | | | | No - Based on Table 2 |
| Isopropanol | | | | | No - Based on Table 2 |
| Citric acid | solid phase; ~100% organic; delivered in drums or totes | shelf life of months | mixing may be needed; pre-treatability study evaluation required | depending on concentration, aqueous solution may have pH<2, and may require equipment capable of handling corrosives; also, given that citrate is a chelating agent, compatible containers need to be investigated | **Yes**; pH and mixing requirements will be tested prior to lab treatability study |
| Sodium Citrate | solid phase ~76% organic; delivered in drums or totes | shelf life of months | mixing may be needed; pre-treatability study evaluation required | aqueous solution pH ~2.5 to 4, so specialized equipment shouldn't be needed; also, given that citrate is a chelating agent, compatible containers need to be investigated | **Yes**; pH and mixing requirements will be tested prior to lab treatability study |
| Whey | solid phase ~87% organic; delivered in 1000 lb totes | shelf life of 1-2 years in solid form | can be mixed inline with a Venturi mixer capable of handling totes; does contain solids, so filtration might be needed | dry covered storage needed for totes | **Yes** - solids issue will be investigated during lab study |
| Lactose | | | | | No - Based on Table 1 |
| Sodium Lactate | liquid phase 60% solution; delivered in drums, 275 gal totes, or ~40,000 lb tanker trucks | very stable; shelf life of months to years | completely soluble; can be mixed inline | dry covered storage needed for drums or totes; large tanks needed if tanker delivery is selected | **Yes** |
| Lactic acid | liquid phase 88% organic; delivered in drums, 275 gal totes, or ~40,000 lb tanker trucks | reactive; with proper storage, shelf life of months | completely soluble; can be mixed inline | pH <2 for stock solution; requires equipment capable of handling corrosives (i.e. pumps, tanks, etc). | **Yes** |
| Corn Syrup | | | | | No - Based on Table 1 |
| High Fructose Corn Syrup | | | | | No - Based on Table 1 |
| Molasses | | | | | No - Based on Table 1 |
| Glycerin | | | | | No - Based on Table 1 |
| Other polyols | | | | | No - Based on Table 1 |



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# Table 3
# Former C-6 Facility
# Results of Electron Donor Evaluation (Paper Study) - Groundwater Remediation
# Evaluation Results for Handling and Storage Requirements Criterion

| Donor | Donor characteristics | Donor Stability/Shelf life | Mixing/Filtration Needs | Onsite Storage Needs | Retained based on Handling and Storage Criteria |
|---|---|---|---|---|---|
| **Proprietary fermentation mother liquor*** | liquid phase ~40% organic (remainder is water); delivered in drums, totes, or tankers | stable; expected shelf life of weeks to months | completely soluble; can be mixed inline | dry covered storage needed for drums or totes; large tanks needed if tanker delivery is selected | **Yes**; solids content and product stability will be investigated during the lab study |
| **EOS** | liquid phase, delivered as ~50% emulsified oil; available as drums or 275 gal totes | stable emulsion; shelf life weeks to months | no field mixing or emulsification needed; can be mixed inline much like lactate | dry covered storage needed for totes | **Yes** |
| **Newman Zone** | liquid phase, delivered as ~50% emulsified oil; available as ~2000 lb totes | very stable emulsion; shelf life of 2 months if not refrigerated; shelf life is 1 yr if refrigerated | no field mixing or emulsification needed; can be mixed inline much like lactate | dry covered storage needed for totes | **Yes** |
| **HRC-Advanced** | | | | | No - Based on Table 1 |



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# Table 4
## Former C-6 Facility
## Results of Electron Donor Evaluation (Paper Study) - Groundwater Remediation
## Evaluation Results for Donor Cost Criterion

| Donor | Unit Cost for Materials | Budgetary Cost per Organic content | Unique capital costs | Retained based on Cost Criteria |
|---|---|---|---|---|
| Ethanol | | | | No - Based on Table 2 |
| Isopropanol | | | | No - Based on Table 2 |
| Citric acid | $.73/lb | $.73/lb | bulk solids handling equipment | Yes |
| Sodium Citrate | $.70/lb | $.92/lb | bulk solids handling equipment | Yes |
| Whey | $.39/lb | $.45/lb | bulk solids handling equipment | Yes |
| Lactose | | | | No - Based on Table 1 |
| Sodium Lactate | $.69/lb | $1.44/lb | based on donor content, will require larger storage capacity compared to other donors | Yes |
| Lactic acid | $.85/lb | $.97/lb | requires acid tanks and pumps | Yes |
| Corn Syrup | | | | No - Based on Table 1 |
| High Fructose Corn Syrup | | | | No - Based on Table 1 |
| Molasses | | | | No - Based on Table 1 |
| Glycerin | | | | No - Based on Table 1 |
| Other polyols | | | | No - Based on Table 1 |
| Proprietary fermentation mother liquor* | $.21/lb | $.55/lb | based on donor content, will require larger storage capacity compared to other donors | Yes |
| EOS | $1.13 - $1.60/lb | $2.26 - $3.20/lb | none | Yes |
| Newman Zone | $1.05 - $1.75/lb | $2.10- $3.50/lb | none | Yes |
| HRC-A | | | | No - Based on Table 1 |

**Notes:**
Costs in this table do not include transportation costs (which are expected to be similar for all donors) or taxes.
Because whey is considered a commodity, unit costs can vary from approximately $.22/lb to $.45/lb



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# Appendix C

# Appendix C

# ELECTRON DONOR LABORATORY TREATABILITY STUDY

CDM

CDM

# Appendix C

# Electron Donor Laboratory Treatability Study Remediation of Volatile Organic Compounds Former C-6 Facility, Los Angeles, California

## 1.0 Introduction

Camp Dresser & McKee Inc (CDM) has prepared this report summarizing the laboratory treatability study conducted to evaluate electron donors and bioaugmentation cultures for remediation of volatile organic compound (VOC)-impacted groundwater at the Former C-6 Facility (Site). The primary contaminant of concern at this Site is trichloroethene (TCE) with 1,1-dichloroethene (1,1-DCE) as a secondary contaminant of concern. The study was conducted in general accordance with the CDM document titled "Pre-Remediation Workplan (CDM, 2006) which was approved by the Los Angeles Regional Water Quality Control Board (RWQCB) on February 23, 2006

The objectives of this study were as follows:

- Determine the efficiency of select electron donors and bioaugmentation cultures in achieving complete reductive dechlorination of TCE to ethene;
- Determine the potentially toxic effects of chloroform and 1,1,1-trichloroethane on reductive dechlorination of TCE; and
- Evaluate the life-time and shelf life of each of the electron donors.
- Evaluate factors affecting the selection including any mixing, filtration, or other pretreatment requirements.
- Evaluate donor stability and potential for precipitation or fermentation under ambient storage conditions.

Electron donors for this treatability study were selected based on the results of a background "paper" evaluation conducted by CDM (Appendix B of the main document) and included sodium citrate, whey, sodium lactate, proprietary JRW mother liquor, Newman Zone, and whey plus proprietary JRW nutrient. Except for Newman Zone, all the electron donors are fast-release electron donors. Newman Zone is a slow release electron donor and slowly ferments to molecular hydrogen. JRW mother liquor is a fermentation product and JRW nutrient is a proprietary nutrient; they were provided by JRW Bioremediation LLC of Lenexa, Kansas.

Two bioaugmentation cultures were also selected for this treatability study based on the CDM background "paper" evaluation. The Sirem KB-1™ culture was obtained from SiREM laboratory. The KB-1™ culture is a natural dechlorinating microbial consortium that contains phylogenetic relatives of *Dehalococcoides* ethenogenes (Major *et al.*, 2002). The Shaw SDC-9™ is also a natural dechlorinating culture, and was obtained from Shaw Environmental, Inc. This culture was enriched by Shaw from a Navy site to treat chlorinated solvent-contaminated aquifers. The SDC-9™ culture contains *Dehalococcoides* spp. (DHC) bacteria that degrade chlorinated solvents to ethene (www.shawgrp.com/bioaugmentation/technologybioaugmentation.aspx).

The following sections provide: a description of the treatability study methods; the results of the study along with a detailed discussion of the data; conclusions developed from the study; recommendations for donor and bioaugmentation culture selection and further action, as appropriate; and an economic analysis of capital and electron donor usage costs specific to the recommended donors.

# 2.0 Treatability Study Methodologies

## 2.1 Setup

The treatability study was conducted in CDM's environmental treatability laboratory in Bellevue, Washington. Groundwater samples for microcosm setup were collected by Avocet Environmental, Inc. (Avocet) on October 23rd, 2006 from the on-Site C-Sand monitoring well IRZCMW003 located at the Former Building 2 area of the Site. Two soils samples were also collected by Avocet on October 24th and 25th from the B-sand and C-sand aquifers, respectively, for microcosm setup during installation of well MWC024 at the Former Building 2 area of the Site. Two 12-inch-long samples were collected from each of three intervals, two in the B-Sand (64.5 to 66.5 feet below ground surface [bgs] and 68 to 70 feet bgs) and one in the C-Sand (114.5 to 116.5 feet bgs). Detailed information regarding sample collection and handling procedures are included in Appendix A of the main document.

Table 1 presents the microcosm set-up. These microcosms were set up between October 25 and 30, 2006. Microcosms were constructed in duplicate in serum bottles in an anaerobic chamber with a nitrogen atmosphere. Each microcosm contained 50 grams (g) of soil sample (homogenized mixture of B-Sand and C-Sand soil) and 150 milliliters (mL) of groundwater sample. Microcosms were sealed with thick butyl rubber stoppers and aluminum crimp tops. Electron donors were added to microcosms as described in Table 1. The bottles were then removed from the anaerobic chamber. Any residual oxygen in the microcosms was allowed to be depleted by aerobes in the soil prior to the addition of bioaugmentation cultures as described in Table 1. Microcosms were then pressurized with ultra high purity nitrogen to 5 pounds per square inch (psi). Each microcosm was spiked with approximately 6,000 micrograms per liter (µg/L) of TCE, 450 µg/L of chloroform (CF), and 100 µg/L of 1,1,1-trichloroethane (TCA). Following baseline sampling and analysis, microcosms were re-spiked with 4,300 µg/L of TCE, 190 µg/L of CF, and 66 µg/L of TCA because observed

concentrations were less than intended. Microcosms were stored upside down in the dark at room temperature (16°C to 22°C).

## 2.2 Laboratory Sampling and Analysis

A total of seven sampling events were conducted between November 1, 2006 and March 13, 2007. Sampling frequency was on a biweekly basis for the first four sampling events, and decreased to a monthly basis for the last three sampling events. For each sampling event, the following analyses were performed:

- pH – measured with conventional pH meter.
- Sulfate ($SO_4$) – measured with Hach DR/2010 Spectrophotometer (Method 8051)
- Chemical Oxygen Demand (COD) – measured with Hach DR/2010 Spectrophotometer (Method 8000)
- VOCs – Purge and trap sampling and analysis by gas chromatography with flame ionization detection.
- Methane, Ethane, and Ethene – Headspace sampling and analysis by gas chromatography with flame ionization detection.

The initial VOC analysis was conducted by OnSite Environmental of Redmond, Washington because of equipment failure associated with the CDM GC. Carbon dioxide ($CO_2$) and volatile fatty acids (VFAs) analyses were also performed at the end of the study. $CO_2$ was sampled in the headspace and measured with gas chromatography with thermal conductivity detection. Liquid samples were sent to Microseeps, Inc. for VFA analysis.

# 3.0 Treatability Study Results and Discussion

## 3.1 TCE Biodegradation

Figures 1 to 4 show TCE biodegradation in the microcosms over time. Figure 1 shows the sterile and non-sterile control microcosms with no added electron donor or bioaugmentation culture. Figures 2, 3, and 4 show microcosms with various electron donors with no bioaugmentation, with Sirem KB-1™ culture, and with Shaw SDC-9™ culture, respectively. The control microcosms confirm that significant TCE degradation was not observed without electron donor addition. The increase in TCE concentration on Day 16 was due to the second addition of VOCs. The gradual decline in TCE concentrations was attributable to abiotic losses and/or analytical variability. Table 2 summarizes all findings.

## 3.2 Electron Donor Effects

Table 2 shows that 10 microcosms transformed TCE to vinyl chloride (VC) in 31-49 days, which is the fastest of all microcosms. Nine of these microcosms contained whey or lactate. It

is therefore concluded that whey and lactate had the fastest response times with respect to transformation to VC. Microcosms with whey, lactate, and Newman Zone were the most effective with respect to complete reductive dechlorination of TCE to ethene – eight out of the nine microcosms demonstrating complete reductive dechlorination contained whey, lactate, or Newman Zone. Sodium lactate promoted the fastest TCE to ethene conversion in 49-65 (bottle 17A) and 65-93 (bottle 17B) days. Sodium lactate appears to be the fastest electron donor in driving complete TCE to ethene dechlorination, although two Newman Zone and three whey microcosms also achieved dechlorination to ethene in 65-93 days.

## 3.3 Bioaugmentation Culture Effects

Eight out of 12 microcosms inoculated with Shaw SDC-9™ demonstrated complete TCE dechlorination to ethene in less than 134 days. Seven out of the eight Shaw SDC-9™ microcosms containing whey, lactate, or Newman Zone demonstrated complete reductive dechlorination to ethene. On the other hand, only one out of twelve microcosms inoculated with Sirem KB-1™ bioaugmentation culture demonstrated complete reduction of TCE to ethene in the same amount of time.

None of the microcosms without bioaugmentation achieved complete TCE to ethene conversion. Conversion to VC was observed in 11 out of 12 of these microcosms. This result is consistent with groundwater data for previously biostimulated locations at the Site, which showed that dechlorination of TCE may have stalled at VC. This suggests that bioaugmentation is a requirement for complete reduction of TCE to ethene within a reasonable time.

## 3.4 Gas Production

Headspace analysis was used to estimate gas production in the microcosms (Figures 9 to12). Additional $CO_2$ and methane analyses were performed on selected microcosms (Table 3) on day 144, subsequent to the last sampling event. Results show minimal (i.e., less than 0.5% methane in the headspace) methane production in most microcosms (i.e., both unbioaugmented and bioaugmented) and minimal $CO_2$ production in all microcosms. In Shaw culture microcosms amended with whey, sodium lactate, or Newman Zone, relatively greater methane production was observed (i.e., 2 to 5% methane in the headspace). In one Sirem culture microcosm amended with whey plus nutrient, relatively greater methane production was observed (i.e., 3 to 4% methane in the headspace. Thus gas production with the Shaw culture and lactate or whey does not appear to be significant. Gas production with the Shaw culture and Newman Zone may be significant.

## 3.5 CF and TCA Toxicity Effects

Previous unpublished data provided by Shaw have shown that the SDC-9™ culture is capable of chloroform and TCA degradation. In this study, chloroform was degraded to below detection limit in microcosms bioaugmented with Shaw SDC-9™ culture and amended with sodium lactate and Newman Zone (Table 2). TCE was also degraded completely to ethene in

these microcosms. During the final sampling event, chloroform was present in microcosms containing Shaw culture and whey plus nutrient. These microcosms also achieved complete TCE to ethene conversion. This demonstrates that in addition to Shaw's finding that the SDC-9™ culture is capable of chloroform degradation, it is also capable of achieving complete TCE degradation in the presence of chloroform. In contrast, during the final sampling event in microcosms with Sirem KB-1 ™ culture, chloroform was present in all but one bottle. Notably, this lone microcosm with no chloroform was also the only microcosm that was able to achieve complete reductive dechlorination of TCE to ethene. Based on these observations, it is apparent that the Shaw SDC-9 ™ culture was relatively more resistant than the Sirem KB-1 ™ culture to the toxicity or other form of inhibition associated with the added chloroform, either through its ability to transform CF, or its ability to reductively dechlorinate TCE to ethene in its presence.

## 3.6 Electron Donor Longevity

COD levels remained relatively constant throughout the study, even as TCE was being completely reduced (Figures 5 to 8). Microcosm gas production (Figures 9 to 12) showed insignificant methane production except in a few microcosms as noted in Section 3.4. Based on these observations, CDM's hypothesis for the lingering high levels of COD was that the carbon sources added to the microcosms were not being converted completely into methane and carbon dioxide ($CO_2$); rather, they were being partially fermented to VFAs. This partial degradation could provide sufficient electrons to promote reductive dechlorination but may not lead to significant COD reduction. To evaluate this hypothesis, 10 microcosm bottles were selected for $CO_2$ and VFA analysis subsequent to the last sampling round on day 144. These results are presented in Table 3. Table 3 demonstrates that the electron donors were partially fermented to various VFAs, and that by taking VFAs and $CO_2$ into account, the COD recovery is close to 100% for all microcosms except those with Newman Zone. Newman Zone is known to be adsorbed to soil, so low COD recovery was expected. Total organic carbon (TOC) recovery of close to 100% for all microcosms except Newman Zone further validated the hypothesis. The following paragraphs discuss the longevity of sodium lactate, Newman Zone, and whey:

### Sodium lactate

Based on the VFA analysis (Table 3), five out of six lactate-amended microcosms contained significant amount of propionic acid five months after the donors were injected. In the remaining microcosm (17A), acetic acid was the major VFA instead of propionic acid. Combined with the fact that microcosm 17A achieved complete TCE to ethene dechlorination in 49 to 65 days, it was estimated that sodium lactate could potentially have a longevity in the aquifer of at least two months and possibly longer than five months, which is longer than what is typically observed for lactate. These longevity estimates are believed to be due to the persistence of the propionate and acetate that are derived from the lactate. That being said, it is possible that propionate and acetate would be degraded more quickly in the field than was

seen in the lab study. Because of this, the longevity of lactate would have to be validated during the pilot study.

### Newman Zone

Since Newman Zone is an emulsified oil and it is adsorbed in the soil, a carbon balance could not be accurately performed. However, based on its usage at other sites, the life span of Newman Zone in soil is typically estimated to be one to two years.

### Whey

Analyses for VFAs were not performed for microcosms amended with whey because whey is not a pure compound and electron balance calculations using whey would have been overly complicated for the scope of this study. However, since the COD changes over time of whey were similar to those of sodium lactate, it is assumed that the life span of whey is similar to that of sodium lactate. However, previous CDM experience suggests that whey may have a longer life span than sodium lactate.

## 3.7 Electron Donor Solubility and Shelf Life

The longevities and shelf life of sodium lactate, whey, and Newman Zone were evaluated by placing solutions containing these materials in bottles exposed to air and allowing them to stand at room temperature during the treatability study. Shelf life and other properties of each electron donors are presented in Table 4. These data indicate that sodium citrate, sodium lactate, and Newman Zone were stable and the other electron donors were perishable (i.e. biofilms growing in solution). However, it should be noted that the whey used in this study (and the whey that would be used in the field) is delivered to the site in powdered form rather than as a solution. The powdered form of whey has a shelf life of up to 2 years based on CDM experience.

All electron donors were completely soluble except whey and JRW nutrient. Previous studies indicated that a 10% whey solution contained about 23,000 mg/L total suspended solids (MacBeth et al., 2006). While this concentration is relatively high, CDM experience has been that injection of such whey solutions containing suspended solids has not resulted in well or aquifer plugging. Additionally, the solids may promote longevity of the whey. JRW nutrient at 1 grams per liter (g/L) did not go into solution even with vigorous mixing and heating, indicating limited solubility compared to other electron donors.

## 3.8 Supplemental Data

Supplemental data is provided in Attachment A (Figures 1A through 8A) and consist of pH and sulfate data for the various microcosms.

# 4.0 Economic Analysis

Based on the lab study results, both lactate and whey are expected to perform well in the field. While injection of whey does involve more manual labor and more equipment (e.g., handling and mixing equipment) than lactate, it offers the potential for significant cost savings over lactate. This cost savings is due to the lower material costs and more electron donor content for whey compared to lactate. As an example, for a 50 gallon per minute (gpm) biorecirculation system with an injection frequency of 10% (approximately 17 hours a week), using whey would cost approximately 50% less than using lactate even considering the additional labor costs to manually operate the whey mixing equipment. These costs includes material costs and labor costs specific only to donor handling and do not include the capital costs for whey handling and mixing equipment. However, even if capital costs for whey mixing and handling equipment are included, the costs are estimated to be still 33% less than lactate for this scenario. These savings would increase substantially as the scale of the application increases. One thing to note is that the cost of whey ($0.87/lb) is highly volatile and will affect the total costs; however, the volatility is unlikely to change the conclusion that whey is more cost-effective than lactate.

In addition to the above economic advantages, it has been shown at other sites that whey is able to enhance the dissolution of contaminants from the residual source at a faster rate than lactate (MacBeth et al., 2006). This can result in a shorter remediation timeframes.

# 5.0 Conclusions

The following conclusions were developed based on the results of this study:

- Whey, sodium lactate, and Newman Zone show the most promise as potential electron donors for use at the Site. Complete reductive dechlorination of TCE to ethene was observed in SDC-9™-bioaugmented microcosms with these donors.

- Sodium lactate was the fastest in achieving complete reductive dechlorination of TCE to ethene. It potentially has a life span in the Site aquifer of at least two months and possibly greater than five months, based on its fermentation to acetate and propionate. It had a shelf life of greater than five months.

- Whey exhibited the fastest response time in terms of TCE to VC conversion. It was capable of driving complete TCE to ethene dechlorination, although not as fast as lactate. It is expected to have an aquifer life span similar to that of sodium lactate. Whey was not completely soluble and filtration may be required. However previous CDM experience with whey indicated that filtration is not required. Therefore CDM recommends that whey be injected unfiltered and the potential effects of plugging being monitored during the pilot test. If plugging becomes an issue, filtration of whey or use of lactate can be implemented across the site. Once in solution, whey is perishable and had a shelf life of less than two

months based on CDM experience. Powdered whey, however, has a shelf-life of two years based on CDM experience, as previously indicated in Section 3.7.

- Newman Zone performed consistently. It was capable of driving complete TCE to ethene dechlorination and typically has a long aquifer life span of one to two years and possibly longer. It had a shelf life of greater than five months.

- The addition of JRW nutrient may have slightly improved the performance of microcosms with whey as electron donor. It is, however, poorly soluble.

- The indigenous microbial community (i.e., microcosms without bioaugmentation) drove dechlorination of TCE to VC, but not to ethene. This is consistent with field observations in biostimulated areas at the Site and provides further evidence that bioaugmentation will be required to achieve complete dechlorination to ethene in a reasonable timeframe.

- Shaw SDC-9™ culture had the ability to utilize a wide range of electron donors and achieve complete reductive dechlorination of TCE to ethene. Based on the data collected during this study, it was relatively resistant to chloroform and even appears to be capable of chloroform transformation. This is consistent with data provided by Shaw from their own studies (Unpublished data provided to CDM by Dr. Robert Steffan of Shaw).

- Sirem KB-1™ culture appeared to be sensitive to chloroform. It could potentially achieve complete reductive dechlorination of TCE to ethene with no chloroform present.

- Partial fermentation of electron donors was observed in all microcosms selected for VFA analysis. It can therefore be concluded that, although COD analyses showed almost constant values throughout the study, electron donor utilization was in fact occurring. VFA analysis provided good COD and TOC recoveries and was an adequate tool for electron donor concentration assessment.

  As indicated in Section 3.6, whey was not selected for VFA analysis because of impurities in whey that would have overly complicated electron balance calculations.

- Gas production in most of the microcosms was less than expected. This suggests that gas blockage during electron donor injection in the field is not likely to be a significant issue with these electron donors. It should be noted, however, that Newman Zone produced the greatest amount of methane compared to other electron donors.

# 6.0 Recommendations

The following recommendations were developed based on the results of this study:

- Based on the lab study results and the economic analysis presented here, it is recommended that whey be used initially for the pilot study, and lactate be used if

logistical issues (i.e. mixing, storage, handling, etc) or technical performance issues (e.g., solids plugging of injection wells) are encountered with whey.

- Newman Zone is recommended for slug injections if planned at the Site. Methane production should be taken into account and at the minimum monitored in the field when using Newman Zone.
- Sodium citrate and JRW mother liquor were inconsistent performers and are not recommended.
- Shaw SDC-9™ culture is the recommended choice for bioaugmentation.
- Sirem KB-1™ culture is not recommended for bioaugmentation at this site.
- JRW nutrient should not be used unless it can be modified by the manufacturer to increase its solubility.

# 7.0 References

CDM. 2006. "Pre-Remediation Workplan, Boeing Realty Corporation , Former C-6 Facility, 19503 South Normandie Avenue, Los Angeles, California.". February 14.

Major DW *et al.* 2002. Field Demonstration of Successful Bioaugmentation To Achieve Dechlorination of Tetrachloroethene To Ethene. *Environ Sci Technol.* **36**(23):5106-5116.

Macbeth, T.W., L. Nelson, J.S. Rothermel, R.A. Wymore, and K.S. Sorenson Jr. 2006. Evaluation of Whey for Bioremediation of Trichloroethene Source Zones. *Bioremediation J.* **10**(3) :115-128.

# 8.0 Limitations

It should be noted that many of the conclusions from this study (especially comparisons of electron donors and cultures) are site-specific because they depend on the indigenous microbial community, groundwater geochemistry, soil chemistry, and contaminant mixture. Therefore some of the findings of this treatability study will not be transferable to other sites.

# 9.0 Attachments

## Tables

Table 1 - Treatability Study Design
Table 2 - Summary of Results
Table 3 - COD and TOC Summary
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## Figures

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## Attachment A - Supplemental Data

Figure 1A - pH- Control Microcosms
Figure 2A - pH- Microcosms with no Bioaugmentation
Figure 3A - pH- Microcosms with Sirem KB-1 Bioaugmentation Culture
Figure 4A - pH- Microcosms with Shaw SDC-9 Bioaugmentation Culture
Figure 5A - SO4- Control Microcosms
Figure 6A - SO4- Microcosms with no Bioaugmentation
Figure 7A - SO4- Microcosms with Sirem KB-1 Bioaugmentation Culture
Figure 8A - SO4- Microcosms with Shaw SDC-9 Bioaugmentation Culture

**Table 1 - Treatability Study Design**

| Bottle[a,b] | Culture[c] | Sterile[d] | Donor | Donor Concentration (g/L) | Initial Target Concentrations | | |
|---|---|---|---|---|---|---|---|
| | | | | | TCE (µg/L) | CF (µg/L) | TCA (µg/L) |
| 1 | None | Yes | None | NA | 6000 | 450 | 100 |
| 2 | None | No | None | NA | 6000 | 450 | 100 |
| 3 | None | No | Sodium citrate | 1 | 6000 | 450 | 100 |
| 4 | None | No | Whey powder | 1 | 6000 | 450 | 100 |
| 5 | None | No | Sodium lactate | 1 | 6000 | 450 | 100 |
| 6 | None | No | JRW mother liquor[e] | 1 | 6000 | 450 | 100 |
| 7 | None | No | Newman Zone | 1 | 6000 | 450 | 100 |
| 8 | None | No | Whey + JRW nutrient[f] | 1 + 0.1 | 6000 | 450 | 100 |
| 9 | Sirem KB-1 | No | Sodium citrate | 1 | 6000 | 450 | 100 |
| 10 | Sirem KB-1 | No | Whey powder | 1 | 6000 | 450 | 100 |
| 11 | Sirem KB-1 | No | Sodium lactate | 1 | 6000 | 450 | 100 |
| 12 | Sirem KB-1 | No | JRW mother liquor[e] | 1 | 6000 | 450 | 100 |
| 13 | Sirem KB-1 | No | Newman Zone | 1 | 6000 | 450 | 100 |
| 14 | Sirem KB-1 | No | Whey + JRW nutrient[f] | 1 + 0.1 | 6000 | 450 | 100 |
| 15 | Shaw SDC-9 | No | Sodium citrate | 1 | 6000 | 450 | 100 |
| 16 | Shaw SDC-9 | No | Whey powder | 1 | 6000 | 450 | 100 |
| 17 | Shaw SDC-9 | No | Sodium lactate | 1 | 6000 | 450 | 100 |
| 18 | Shaw SDC-9 | No | JRW mother liquor[e] | 1 | 6000 | 450 | 100 |
| 19 | Shaw SDC-9 | No | Newman Zone | 1 | 6000 | 450 | 100 |
| 20 | Shaw SDC-9 | No | Whey + JRW nutrient[f] | 1 + 0.1 | 6000 | 450 | 100 |

**footnotes:**

[a]Each bottle was setup in duplicate and labelled A and B

[b]Each bottle contains 50 grams of soil and 150 ml of groundwater from the C-6 Facility.

[c]Microcosms were inoculated with 1.5ml of Bioaugmentation culture estimated to contain $10^8$ cells / ml.

[d]Sterilization was conducted by autoclaving at 20 psig for 20 minutes two days in succession.

[e]JRW mother liquor is a fermentation product provided by JRW.

[f]JRW nutrient is a proprietary nutrient provided by JRW.

**Abbreviations:**

NA = Not applicable

TCE = Trichloroethene

CF = Chloroform

TCA = 1,1,1-Trichloroethane

g/L = grams per liter

µg/L = micrograms per liter

ml = milliliter

**Table 2 - Summary of Results**

| Bottle[a] | Culture | Donor | Duplicate | Observed time for reductive dechlorination of TCE (Days): | | | Final Concentrations | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | to cis-1,2-DCE | to Vinyl Chloride | to Ethene | TCE (µg/L) | CF (µg/L) | TCA (µg/L) |
| 1 | None | None | A | >134 | >134 | >134 | 6155 | 363 | <80 |
| | | | B | >134 | >134 | >134 | 5687 | 253 | <80 |
| 2 | None | None | A | >134 | >134 | >134 | 582 | 279 | <80 |
| | | | B | >134 | >134 | >134 | 2808 | 652 | <80 |
| 3 | None | Sodium citrate | A | 31 | 134 | >134 | <50 | 315 | <80 |
| | | | B | 31 | >134 | >134 | <50 | 916 | <80 |
| 4 | None | Whey powder | A | 16 | 49 | >134 | <50 | 239 | <80 |
| | | | B | 16 | 65 | >134 | <50 | 254 | <80 |
| 5 | None | Sodium lactate | A | 31 | 93 | >134 | <50 | 275 | <80 |
| | | | B | 31 | 93 | >134 | <50 | 283 | <80 |
| 6 | None | JRW mother liquor | A | 31 | 93 | >134 | <50 | 286 | <80 |
| | | | B | 31 | 93 | >134 | <50 | 306 | <80 |
| 7 | None | Newman Zone | A | 31 | 134 | >134 | <50 | 195 | <80 |
| | | | B | 31 | 93 | >134 | <50 | 171 | <80 |
| 8 | None | Whey + JRW nutrient | A | 16 | 49 | >134 | <50 | 308 | <80 |
| | | | B | 16 | 49 | >134 | <50 | 299 | <80 |
| 9 | Sirem KB-1 | Sodium citrate | A | 31 | 134 | >134 | <50 | 359 | <80 |
| | | | B | 31 | 134 | >134 | <50 | 340 | <80 |
| 10 | Sirem KB-1 | Whey powder | A | 31 | 49 | >134 | <50 | 265 | <80 |
| | | | B | 16 | 49 | >134 | <50 | 283 | <80 |
| 11 | Sirem KB-1 | Sodium lactate | A | 16 | 65 | >134 | <50 | 300 | <80 |
| | | | B | 16 | 65 | >134 | <50 | 292 | <80 |
| 12 | Sirem KB-1 | JRW mother liquor | A | 31 | 65 | >134 | <50 | 310 | <80 |
| | | | B | 16 | 65 | >134 | <50 | 84 | <80 |
| 13 | Sirem KB-1 | Newman Zone | A | 16 | 93 | >134 | <50 | 209 | <80 |
| | | | B | 16 | 93 | >134 | <50 | 180 | <80 |
| 14 | Sirem KB-1 | Whey + JRW nutrient | A | 31 | 49 | 93 | <50 | <50 | <80 |
| | | | B | 31 | 49 | >134 | <50 | 278 | <80 |
| 15 | Shaw SDC-9 | Sodium citrate | A | 16 | 93 | >134 | <50 | 317 | <80 |
| | | | B | 16 | 93 | >134 | <50 | 400 | <80 |
| 16 | Shaw SDC-9 | Whey powder | A | 16 | 65 | >134 | <50 | 329 | <80 |
| | | | B | 16 | 65 | 93 | <50 | <50 | <80 |
| 17 | Shaw SDC-9 | Sodium lactate | A | 16 | 49 | 65 | <50 | <50 | <80 |
| | | | B | 16 | 49 | 93 | <50 | <50 | <80 |
| 18 | Shaw SDC-9 | JRW mother liquor | A | 31 | 49 | 134 | <50 | 292 | <80 |
| | | | B | 31 | >134 | >134 | <50 | 940 | <80 |
| 19 | Shaw SDC-9 | Newman Zone | A | 16 | 93 | 93 | <50 | <50 | <80 |
| | | | B | 16 | 93 | 93 | <50 | <50 | <80 |
| 20 | Shaw SDC-9 | Whey + JRW nutrient | A | 16 | 65 | 93 | <50 | 210 | <80 |
| | | | B | 16 | 65 | 134 | <50 | 250 | <80 |

**footnotes:**

[a]Each bottle was setup in duplicate and labelled A and B

**Abbreviations:**

TCE = Trichloroethene

cis-1,2-DCE = cis-1,2-dichloroethene

CF = Chloroform

TCA = Trichloroethane

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**Table 3 - COD and TOC Summary**

| | | | | | Methane Production | $CO_2$ Production[b] | | | Volatile Fatty Acids Production[c] | | | | | COD | | | | | | TOC | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bottle | Donor | Culture | Rep | Initial Donor | Methane | $CO_{2,aq}$ | $CO_{2,g}$ | Total $CO_2$ | Acetic | Butyric | Lactic | Propionic | Pyruvic | Initial Observed COD | Final Observed COD | Observed COD % Recovery | Intial Calculated COD[d] | Final Calculated COD[e] | Calculated COD % Recovery | Initial Calculated TOC[f] | Final Calculated TOC[g] | TOC % Recovery |
| | | | | mmol[a] | mmol[a] | mmol[a] | | | mmol[a] | | | | | mmol[a] | mmol[a] | % | mmol[a] | mmol[a] | % | mmol[a] | mmol[a] | % |
| *5* | Sodium lactate | None | *A* | 1.339 | 0.0036 | 0.2649 | 0.0517 | 0.317 | 0.699 | 0.003 | 0 | 0.729 | 0 | 4.69 | 4.34 | 92% | 4.02 | 3.97 | 99% | 4.02 | 3.92 | 98% |
| *5* | Sodium lactate | None | *B* | 1.339 | 0.0064 | 0.4861 | 0.0917 | 0.578 | 0.724 | 0.005 | 0 | 0.729 | 0 | 4.73 | 4.44 | 94% | 4.02 | 4.02 | 100% | 4.02 | 4.24 | 106% |
| *11* | Sodium lactate | Sirem KB-1 | *A* | 1.339 | 0.0064 | 0.3683 | 0.0771 | 0.445 | 0.624 | 0.004 | 0 | 0.709 | 0 | 4.45 | 4.45 | 100% | 4.02 | 3.75 | 93% | 4.02 | 3.84 | 96% |
| *11* | Sodium lactate | Sirem KB-1 | *B* | 1.339 | 0.0067 | 0.3883 | 0.0758 | 0.464 | 0.624 | 0.004 | 0 | 0.709 | 0 | 4.41 | 4.39 | 99% | 4.02 | 3.75 | 93% | 4.02 | 3.86 | 96% |
| *17* | Sodium lactate | Shaw SDC-9 | *A* | 1.339 | 0.1988 | 0.3750 | 0.0897 | 0.465 | 1.524 | 0.007 | 0 | 0.172 | 0 | 5.02 | 4.66 | 93% | 4.02 | 3.69 | 92% | 4.02 | 4.26 | 106% |
| *17* | Sodium lactate | Shaw SDC-9 | *B* | 1.339 | 0.0131 | 0.3906 | 0.0860 | 0.477 | 0.949 | 0.008 | 0 | 0.729 | 0 | 4.95 | 5.20 | 105% | 4.02 | 4.49 | 112% | 4.02 | 4.61 | 115% |
| *15* | Sodium citrate | Shaw SDC-9 | *A* | 0.510 | 0.0067 | 0.4810 | 0.0729 | 0.554 | 0.999 | 0.016 | 0 | 0.004 | 0 | 2.40 | 2.63 | 110% | 2.30 | 2.10 | 91% | 3.06 | 2.64 | 86% |
| *15* | Sodium citrate | Shaw SDC-9 | *B* | 0.510 | 0.0068 | 0.4190 | 0.0623 | 0.481 | 1.049 | 0.005 | 0 | 0.002 | 0 | 2.45 | 2.48 | 101% | 2.30 | 2.13 | 93% | 3.06 | 2.61 | 85% |
| *19* | Newman Zone | Shaw SDC-9 | *A* | 0.170 | 0.5035 | 0.5686 | 0.0894 | 0.658 | 0.092 | 0.073 | 0 | 0.006 | 0 | 1.02 | 1.58 | 155% | 6.28 | 0.57 | 9% | 9.67 | 1.66 | 17% |
| *19* | Newman Zone | Shaw SDC-9 | *B* | 0.170 | 0.4977 | 0.4264 | 0.0722 | 0.499 | 0.072 | 0 | 0.233 | 0.007 | 0 | 0.94 | 2.34 | 250% | 6.28 | 0.87 | 14% | 9.67 | 1.86 | 19% |

**footnote:**

[a]All concentrations are presented in mmol / microcosm bottle

[b]CO2 concentrations are calculated based on Headspace CO2 concentrations

[c]Odor and visual observations were performed on the stock solutions that have been stored on shelf for the indicated length of time.

[d]Initial calculated COD was calculated based on initial donor COD concentrations

[e]Final calculated COD was calculated based on CH4, CO2, and volatile fatty acids COD calculations

[f]Initial calculated TOC was calculated based on initial donor TOC concentration

[g]Final calculated TOC was calculated based on CH4, CO2, and volatile fatty acids TOC calculations

**Abbreviations:**

$CO_{2,aq}$ = Carbon Dioxide in the aqueous phase (including bicarbonate and carbonic acid)

$CO_{2,g}$ = Carbon Dioxide in the gas phase

COD = Chemical Oxygen Demand

TOC = Total Organic Carbon

mmol = milimoles (per microcosm bottle)

**Table 4 - Shelf Life of Electron Donors**

| Donor / Nutrient | Stock Solution Concentration (g/L) | Solubility[a] | Time on Shelf | Observed Odor Changes[b] | Observed Visual Changes[b] |
|---|---|---|---|---|---|
| Sodium Citrate | 100 | 5 | 5 months | None | None |
| Whey | 100 | 3 | 1.5 months | None | Contains floating film (fungus) |
| Sodium Lactate | 100 | 5 | 5 months | None | None |
| JRW Mother Liquor | 400 | 5 | 5 months | None | Contains floating film, sediments |
| Newman Zone | 500 | 5 | 5 months | None | None |
| JRW Nutrient | 1 | 1 | 5 months | Stronger, sweeter, and more acidic odor | Contains floating film |

**footnote:**

[a]Solubility observation at stock solution concentration:
1 - Insoluble
2 - Slightly Soluble
3 - Soluble with solids settling
4 - Soluble
5 - Soluble with little mixing

[b]Odor and visual observations were performed on the stock solutions that have been stored on shelf for the indicated length of time and compared to initial observations when the stock solutions were freshly made

**Abbreviations:**
g/L = grams per liter

Figure 1A - pH - Control Microcosms

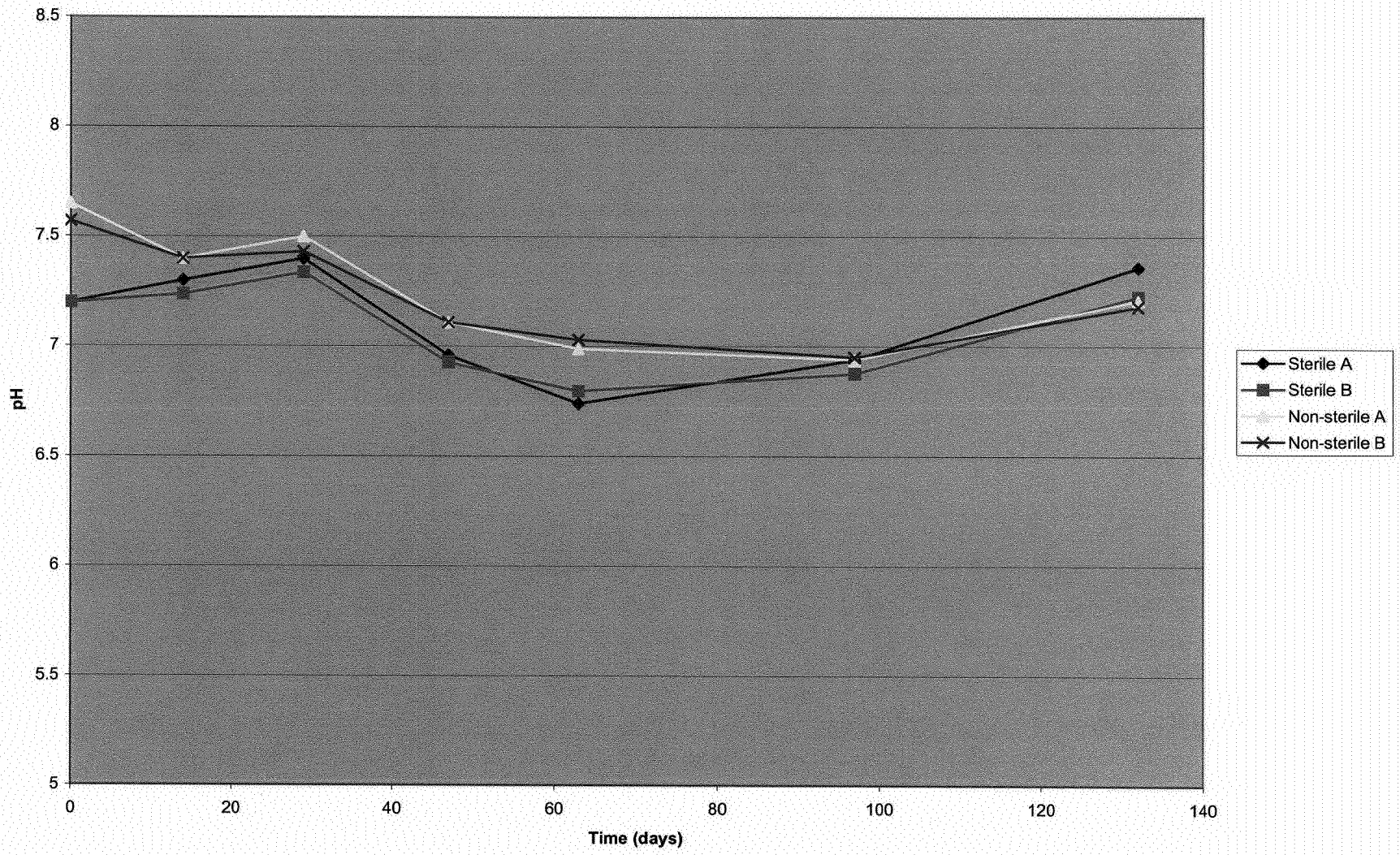


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Figure 2A - pH - Microcosms with no Bioaugmentation

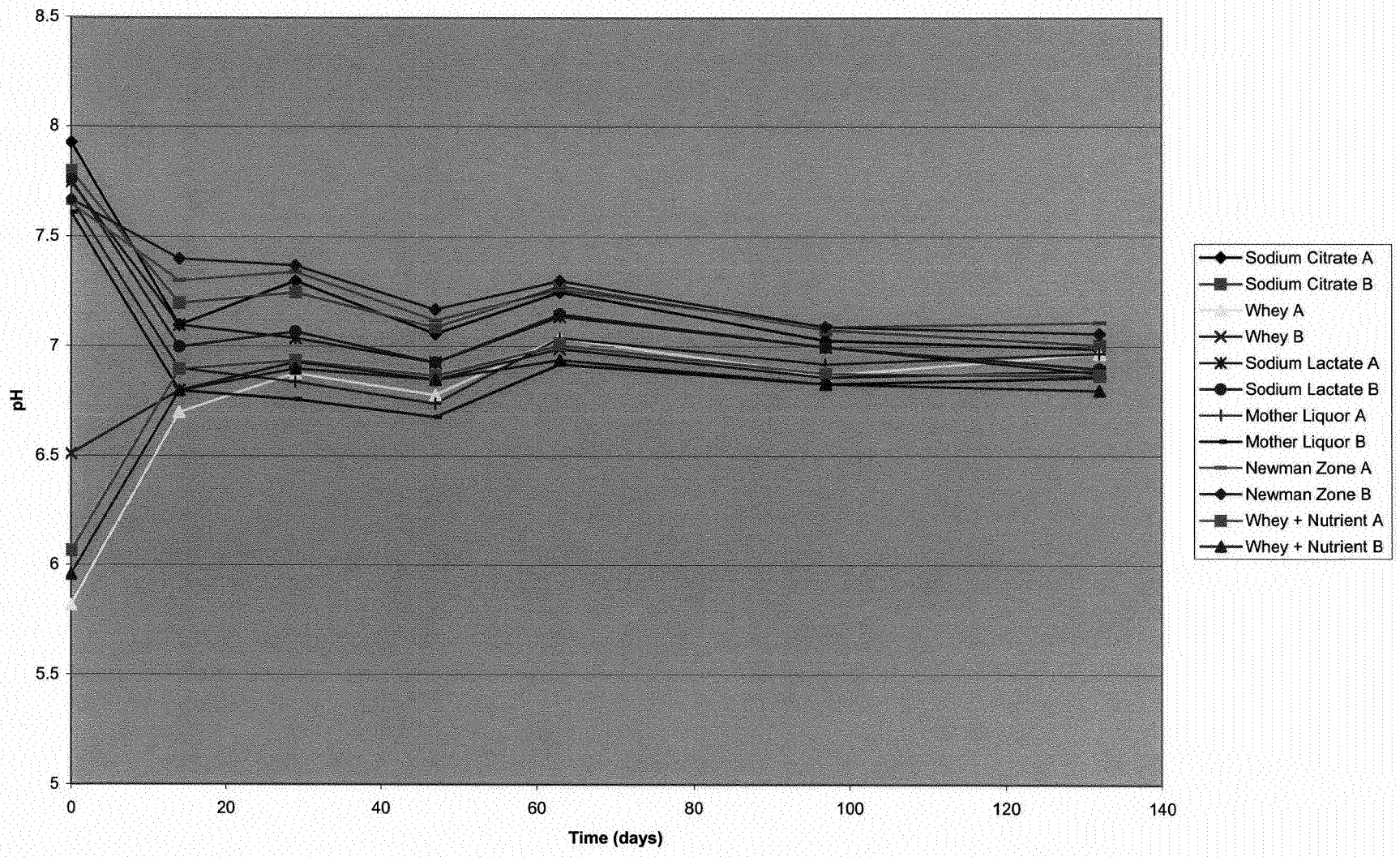

Figure 3A - pH - Microcosms with Sirem KB-1 Bioaugmentation Culture

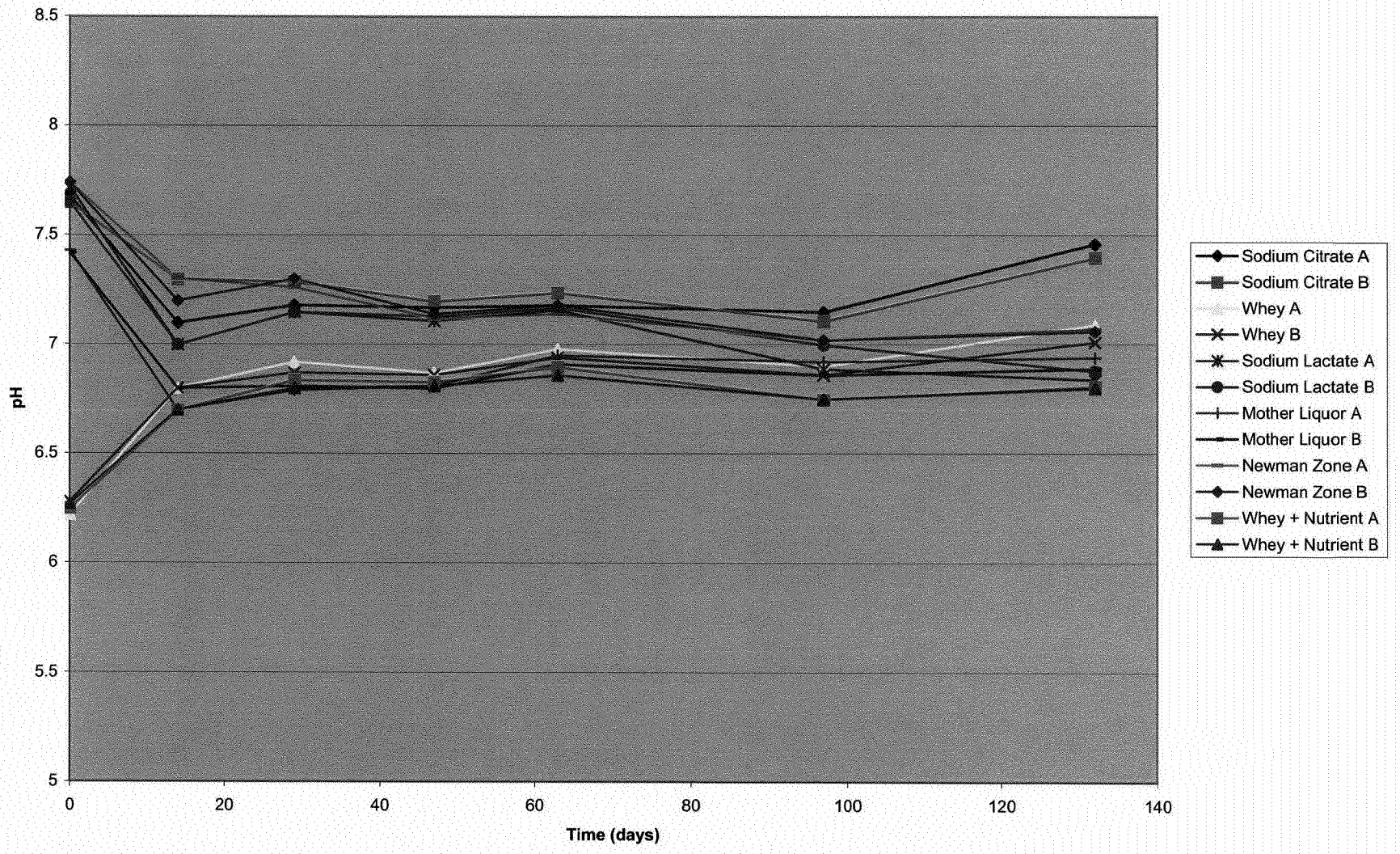


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Figure 4A - pH - Microcosms with Shaw SDC-9 Bioaugmentation Culture

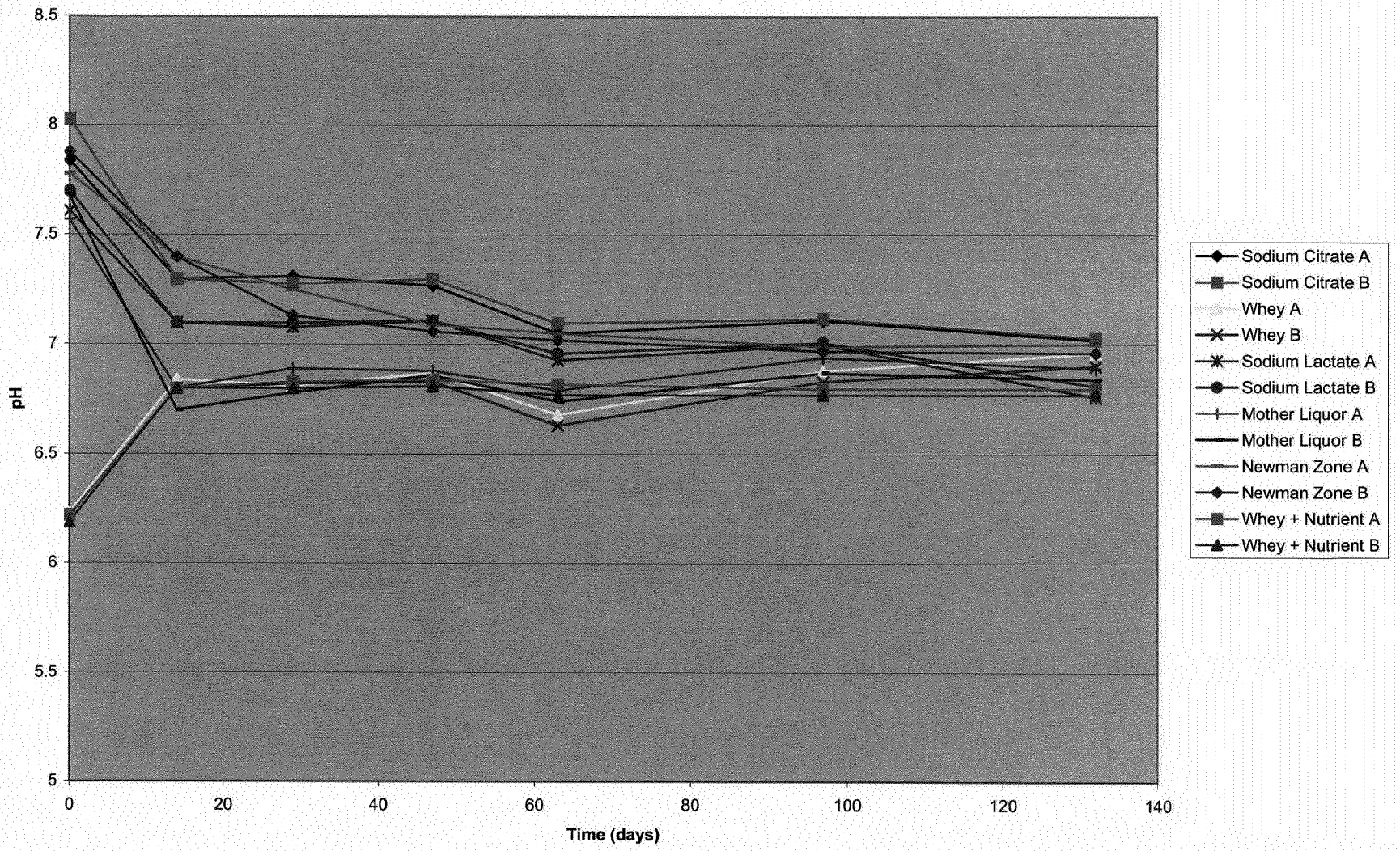

Figure 5A - SO4 - Control Microcosms

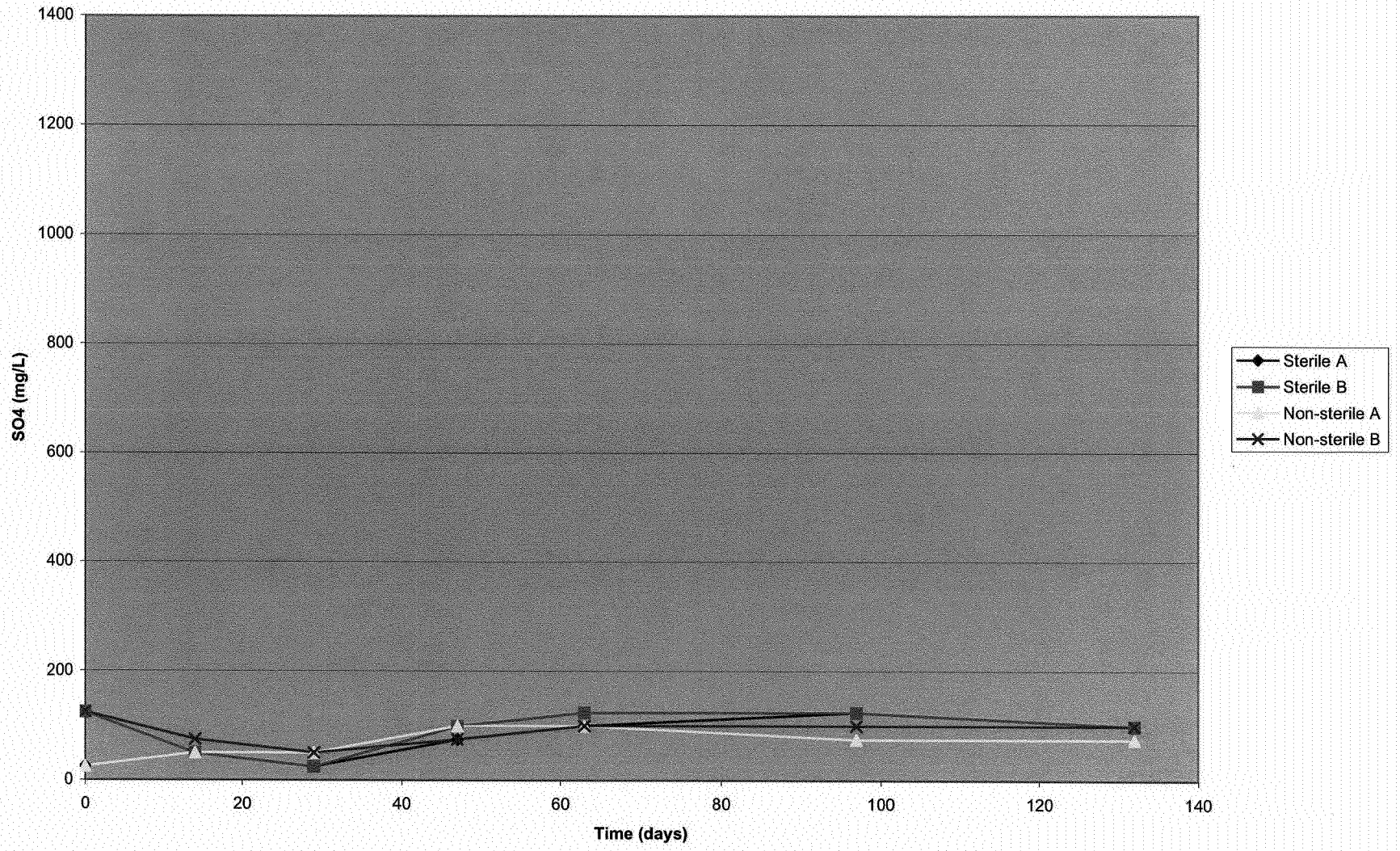


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Figure 6A - SO4 - Microcosms with no Bioaugmentation

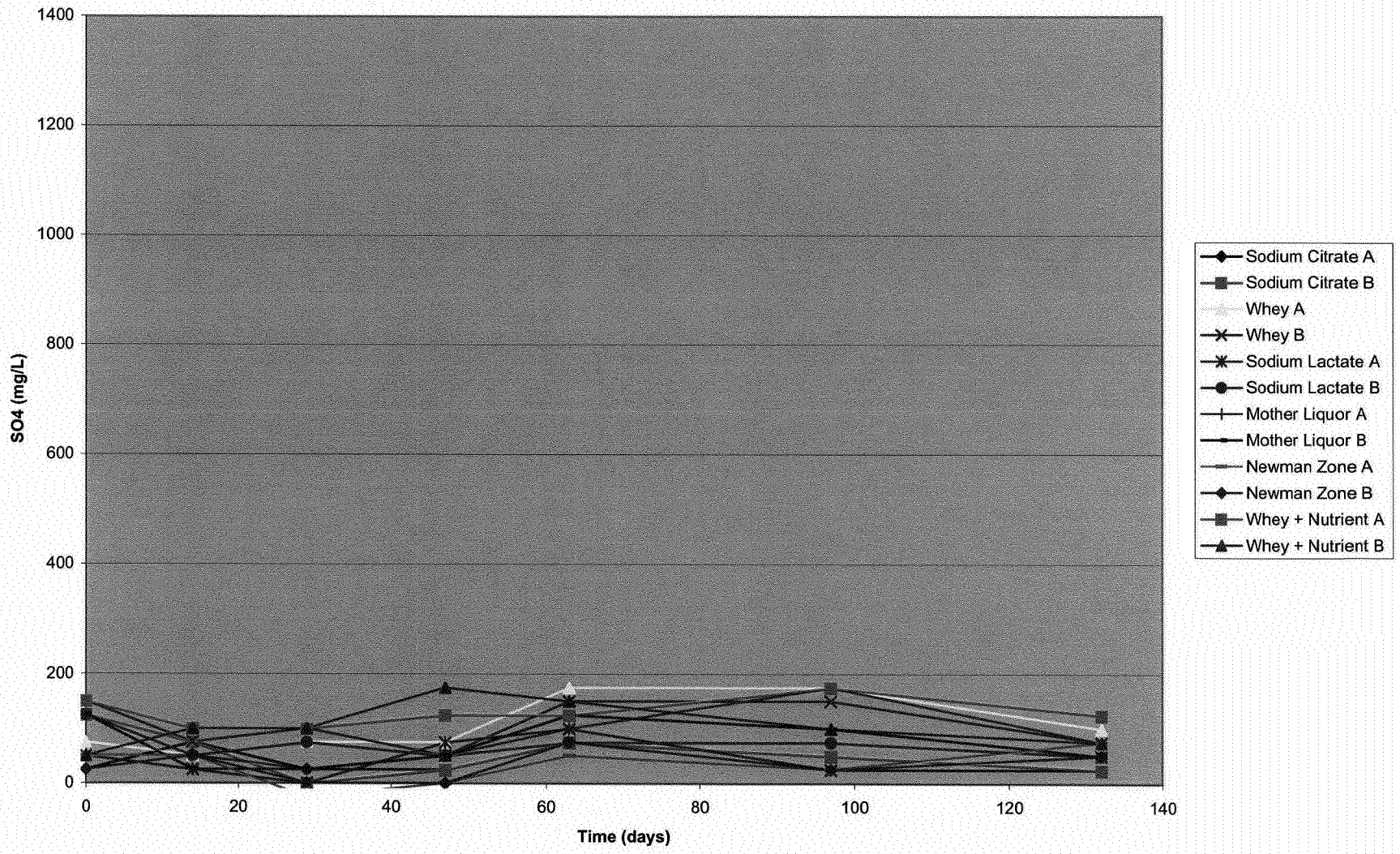


Figure 7A - SO4 - Microcosms with Sirem KB-1 Bioaugmentation Culture

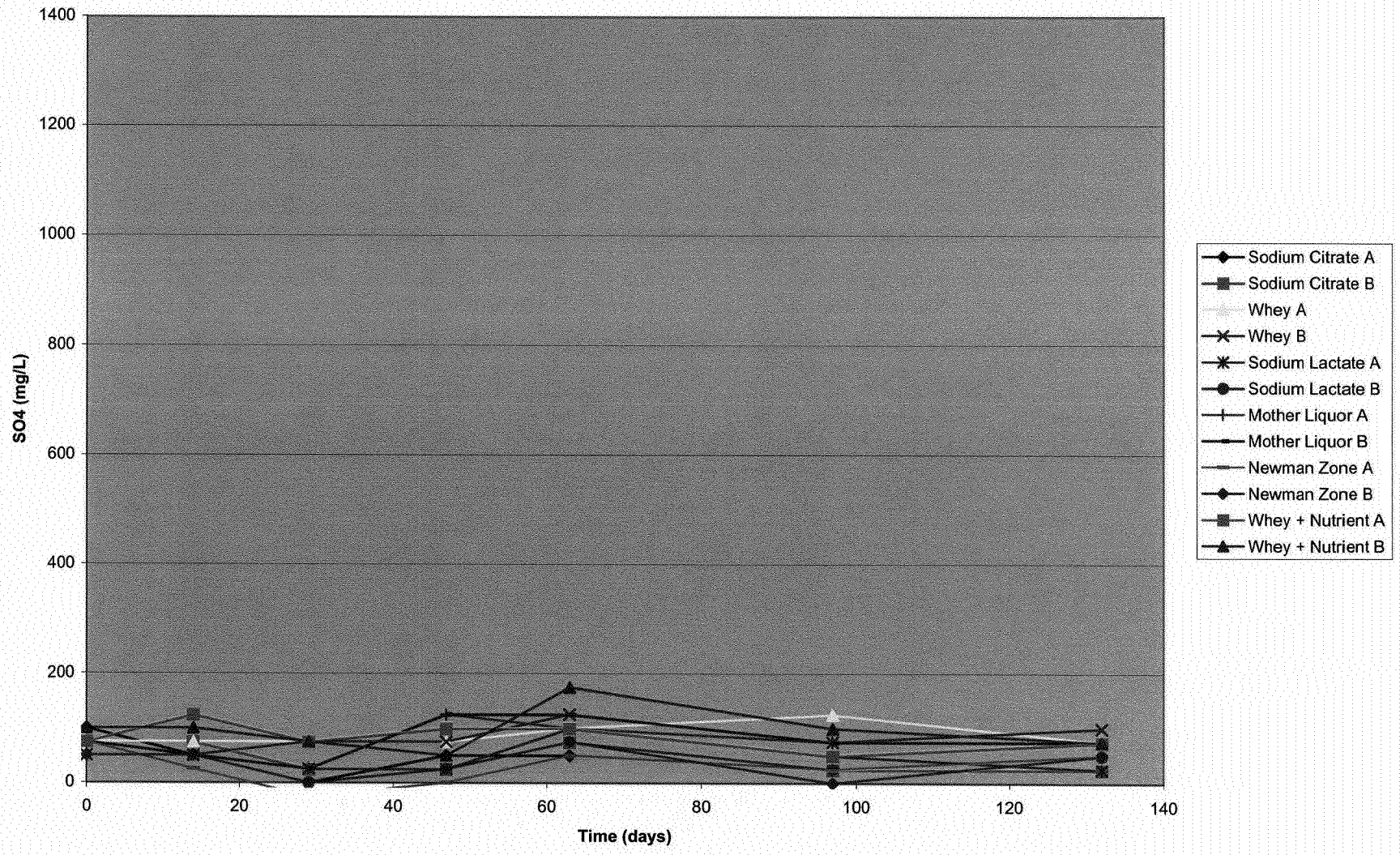
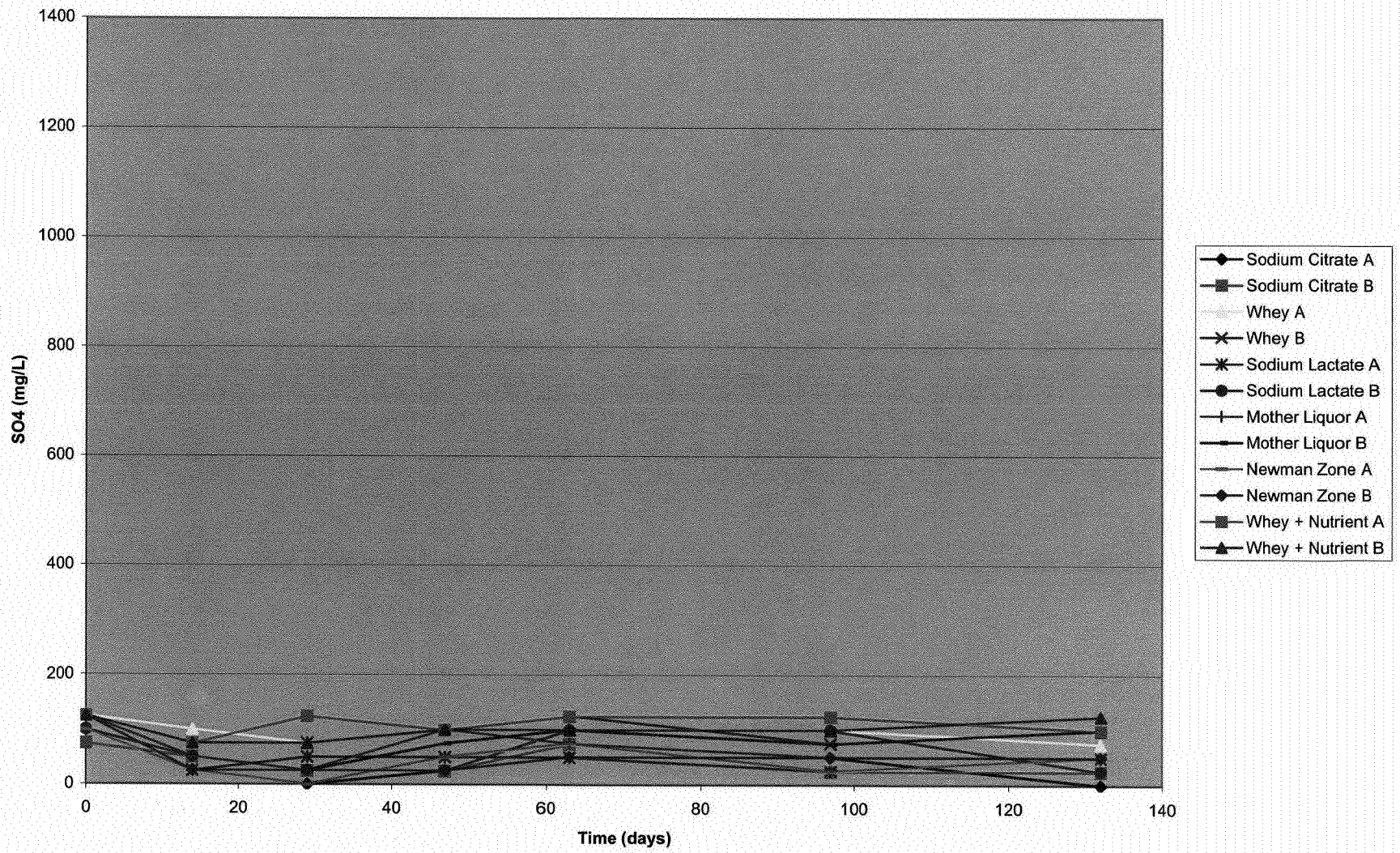
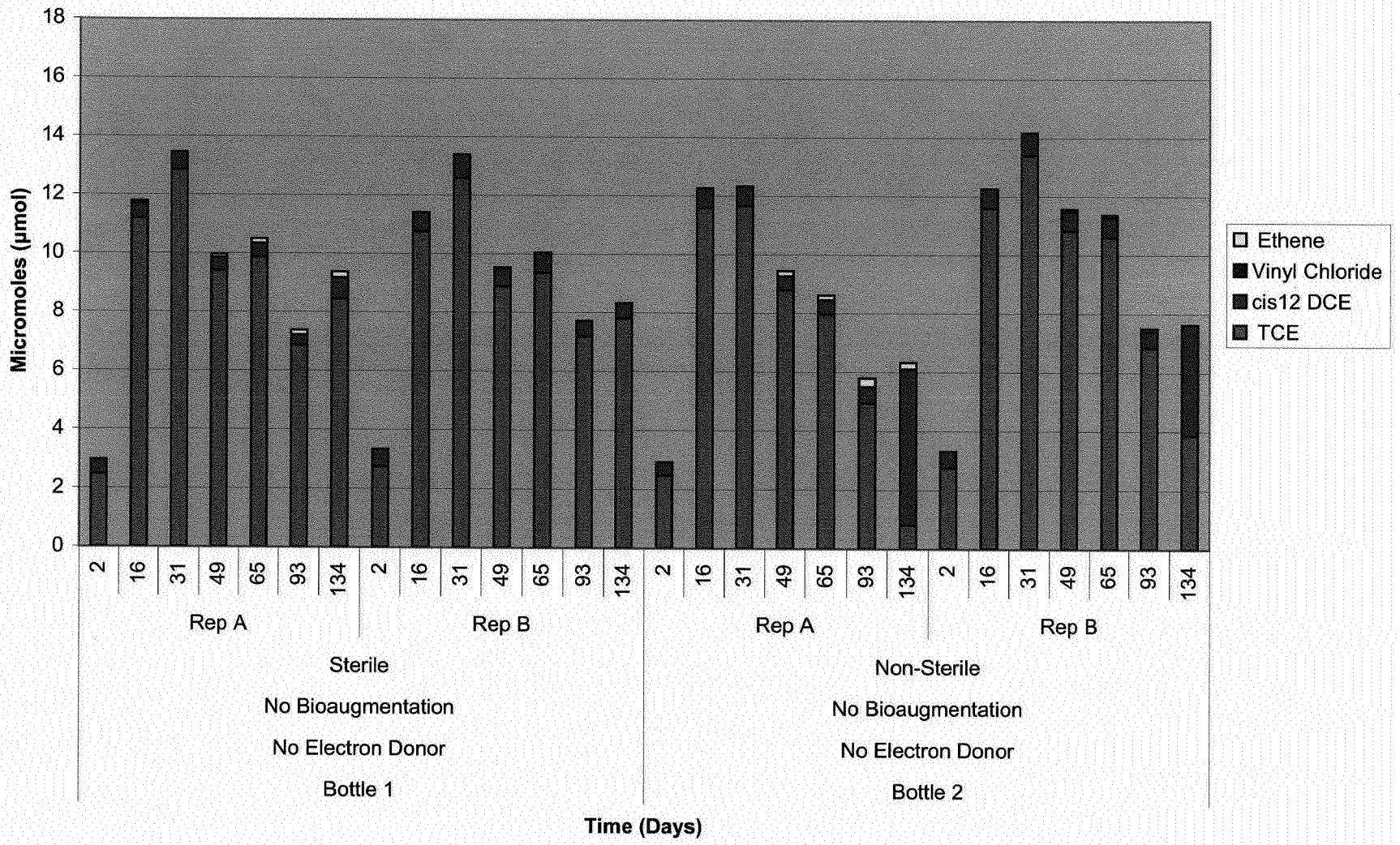


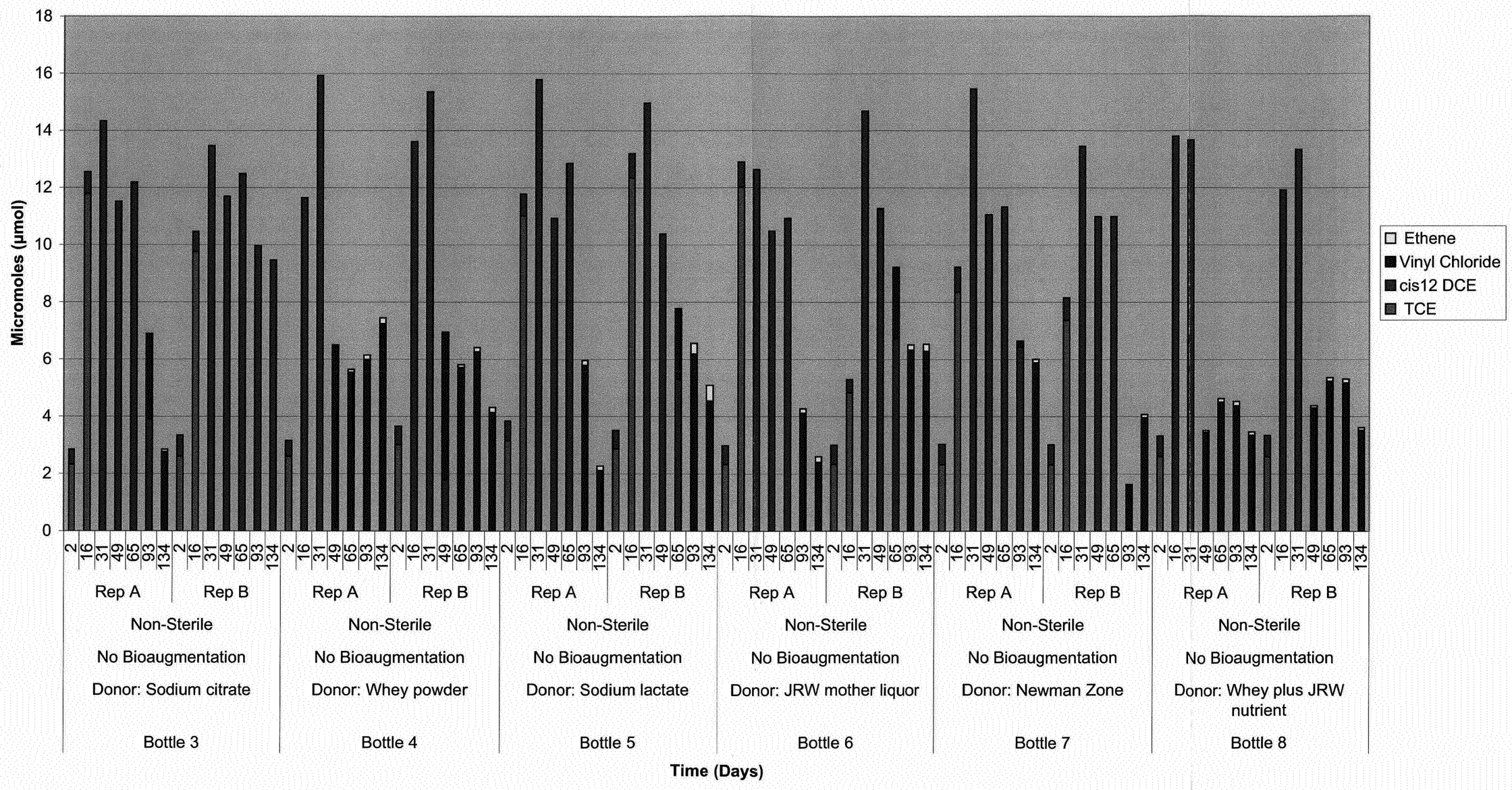
Figure 8A - SO4 - Microcosms with Shaw SDC-9 Bioaugmentation Culture



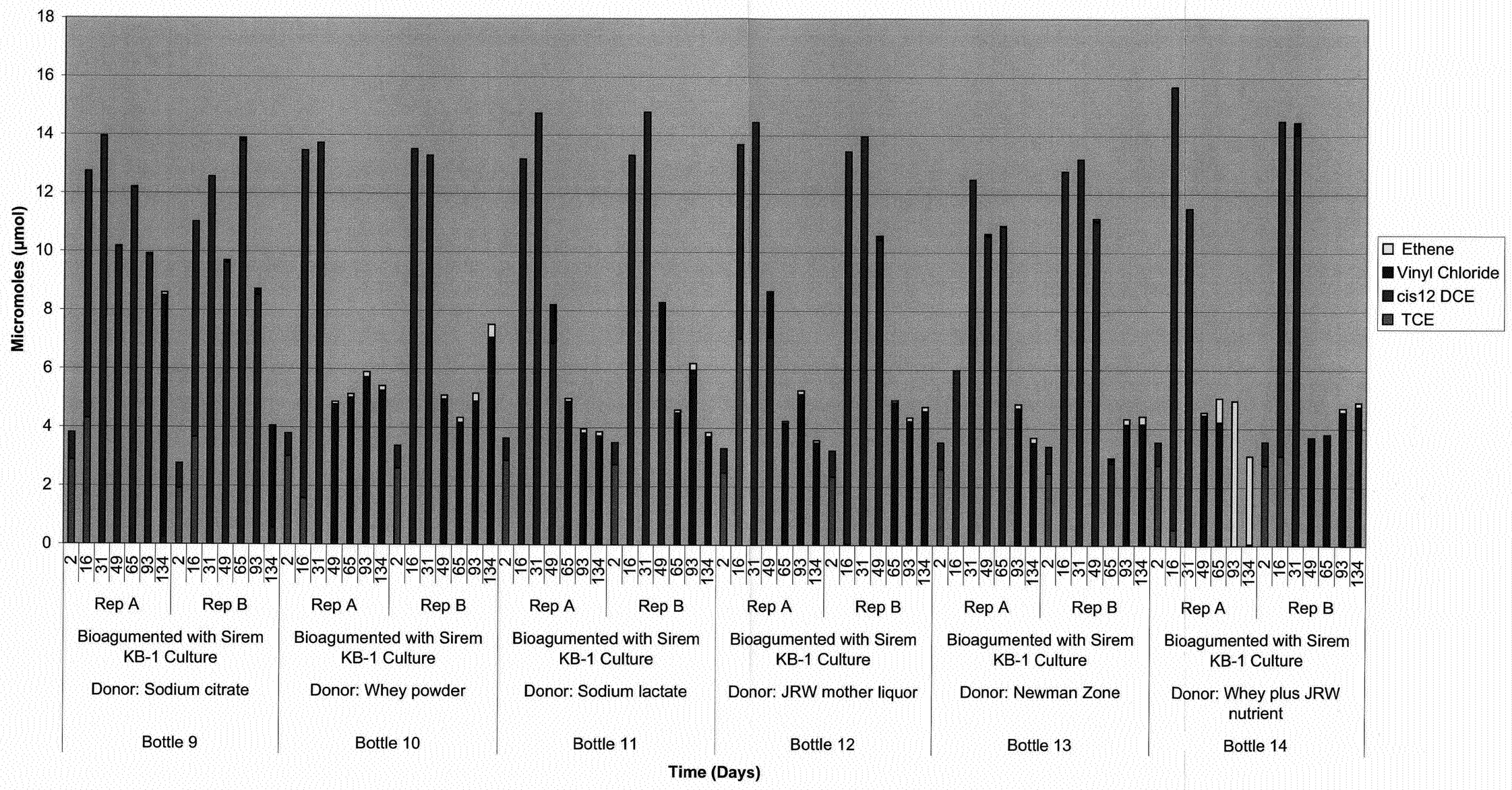
## Figure 1 - TCE Degradation in Control Microcosms



## Figure 2 - TCE Degradation in Microcosms with No Bioaugmentation



## Figure 3 - TCE Degradation in Microcosms with Sirem KB-1 Bioaugmentation Culture



## Figure 4 - TCE Degradation in Microcosms with Shaw SDC-9 Bioaugmentation Culture

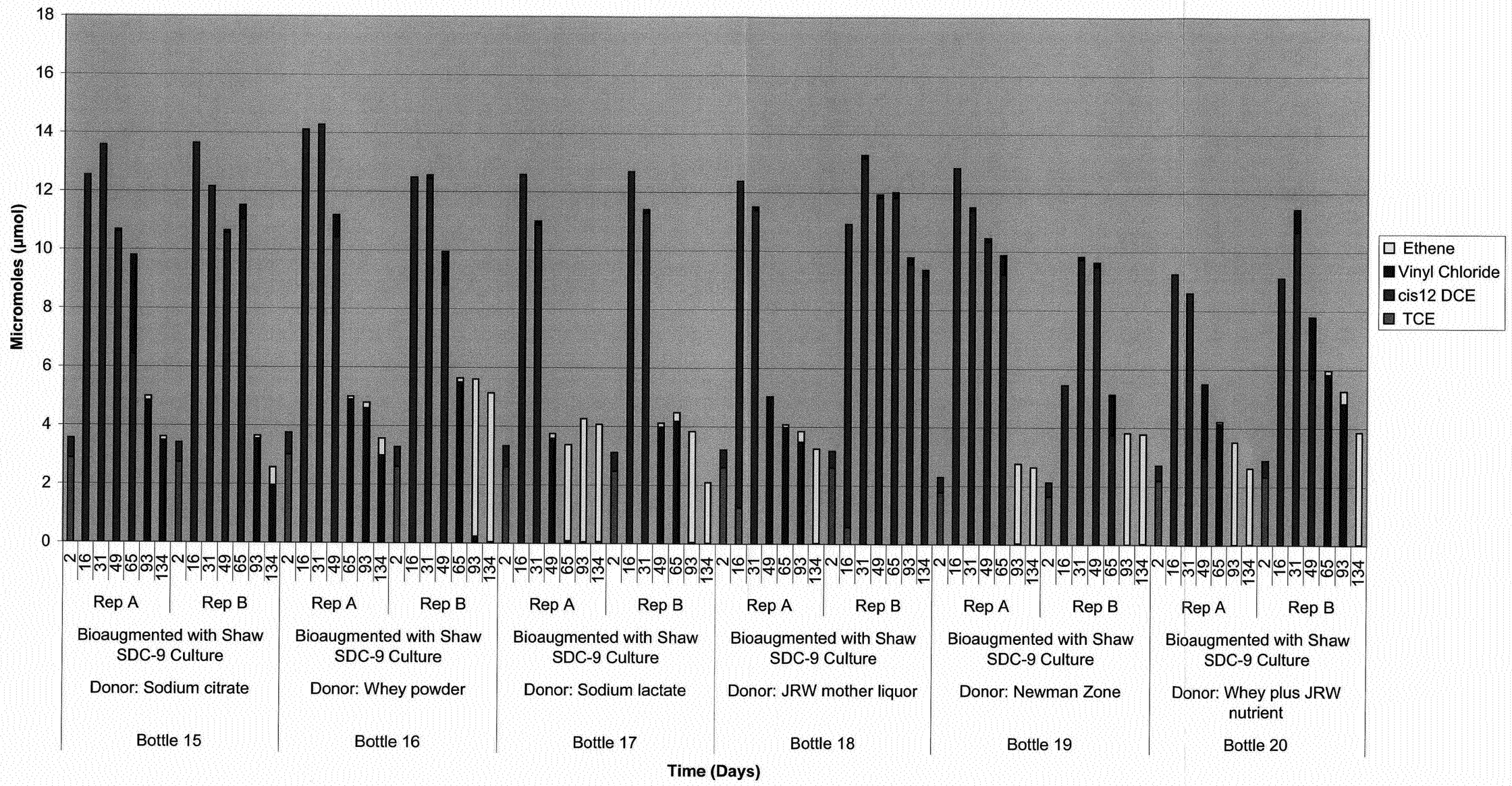


**Figure 5 - COD - Control Microcosms**

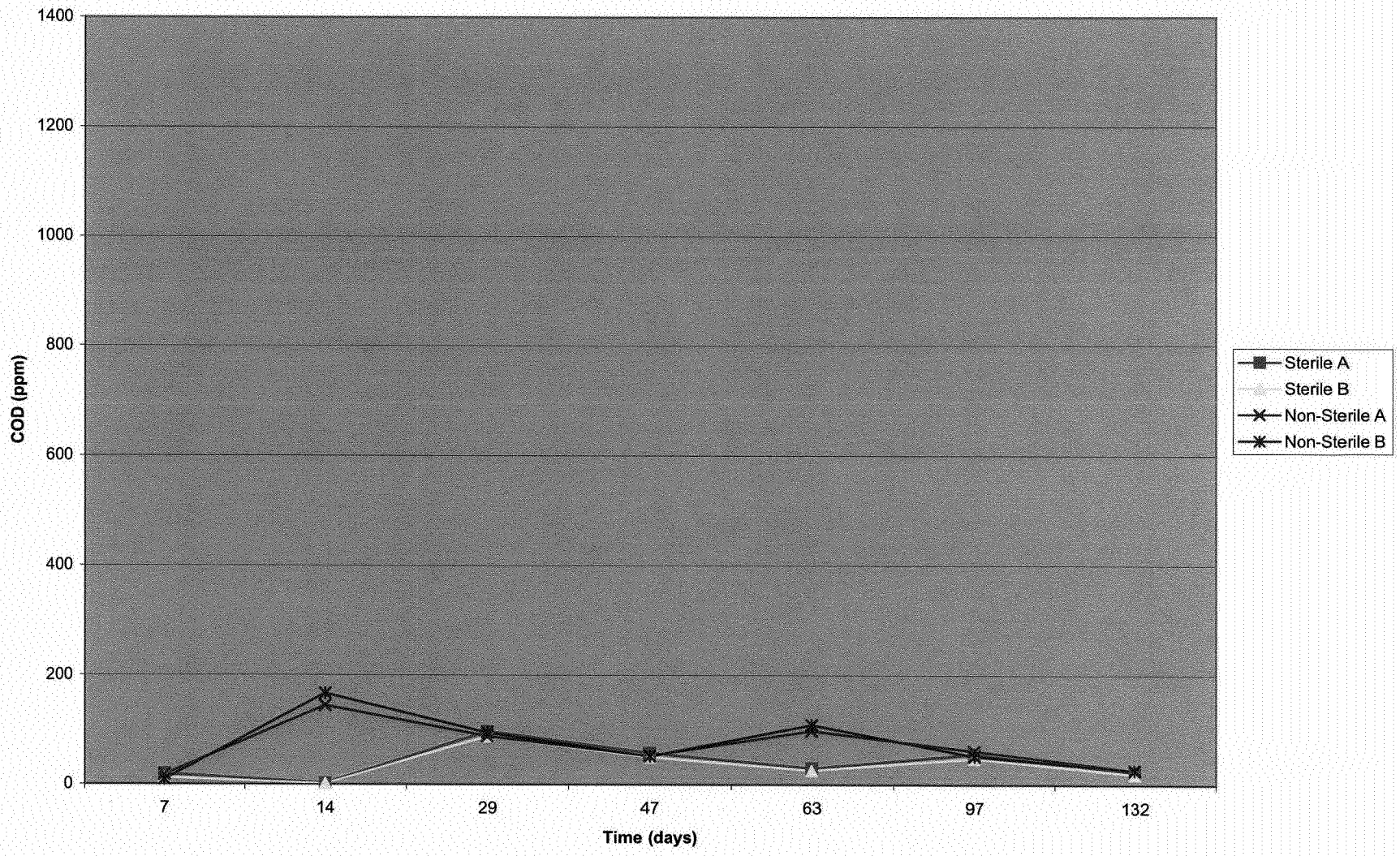



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**Figure 6 - COD - Microcosms with no Bioaugmentation**

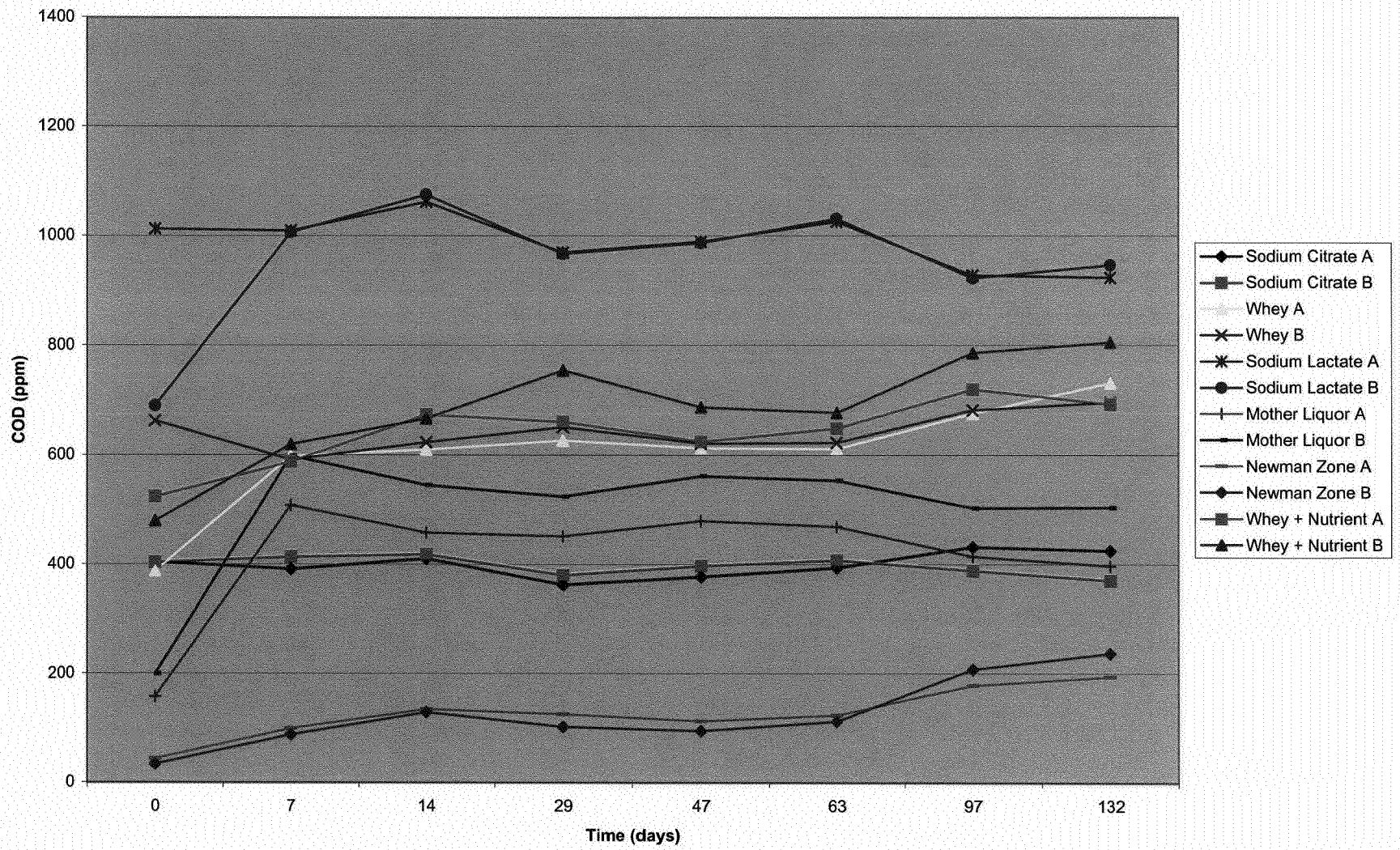


**Figure 7 - COD - Microcosms with Sirem KB-1 Bioaugmentation Culture**

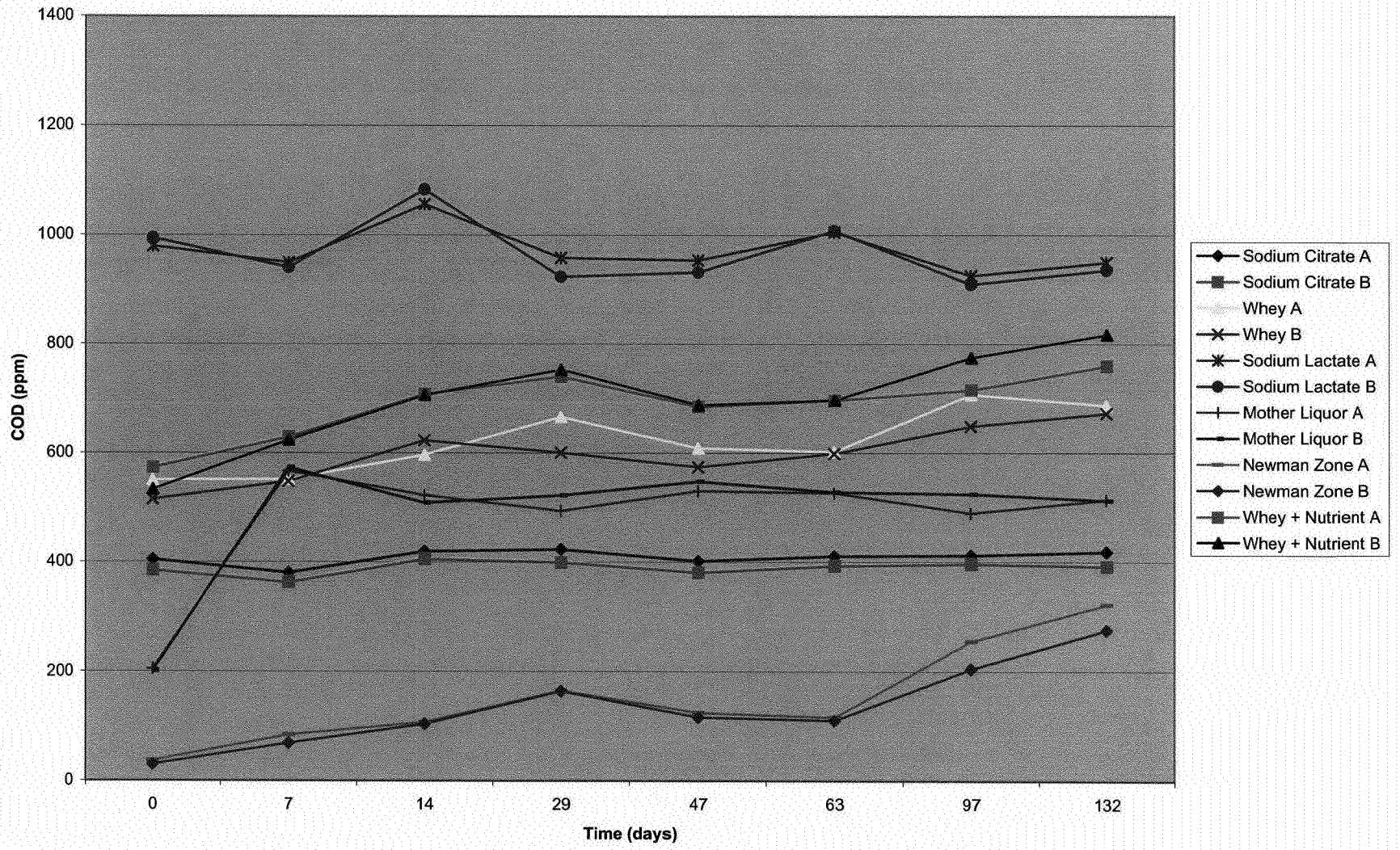
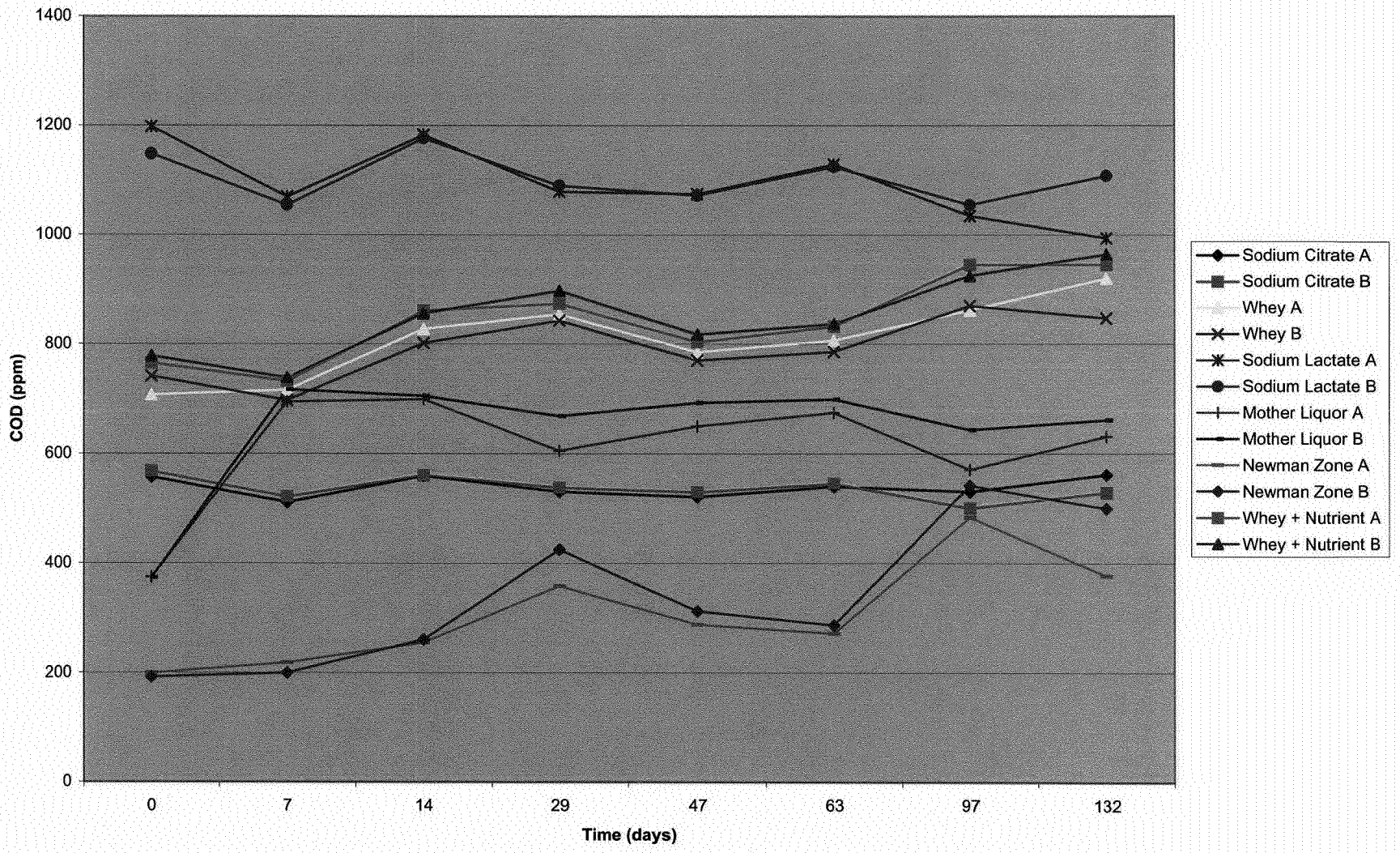
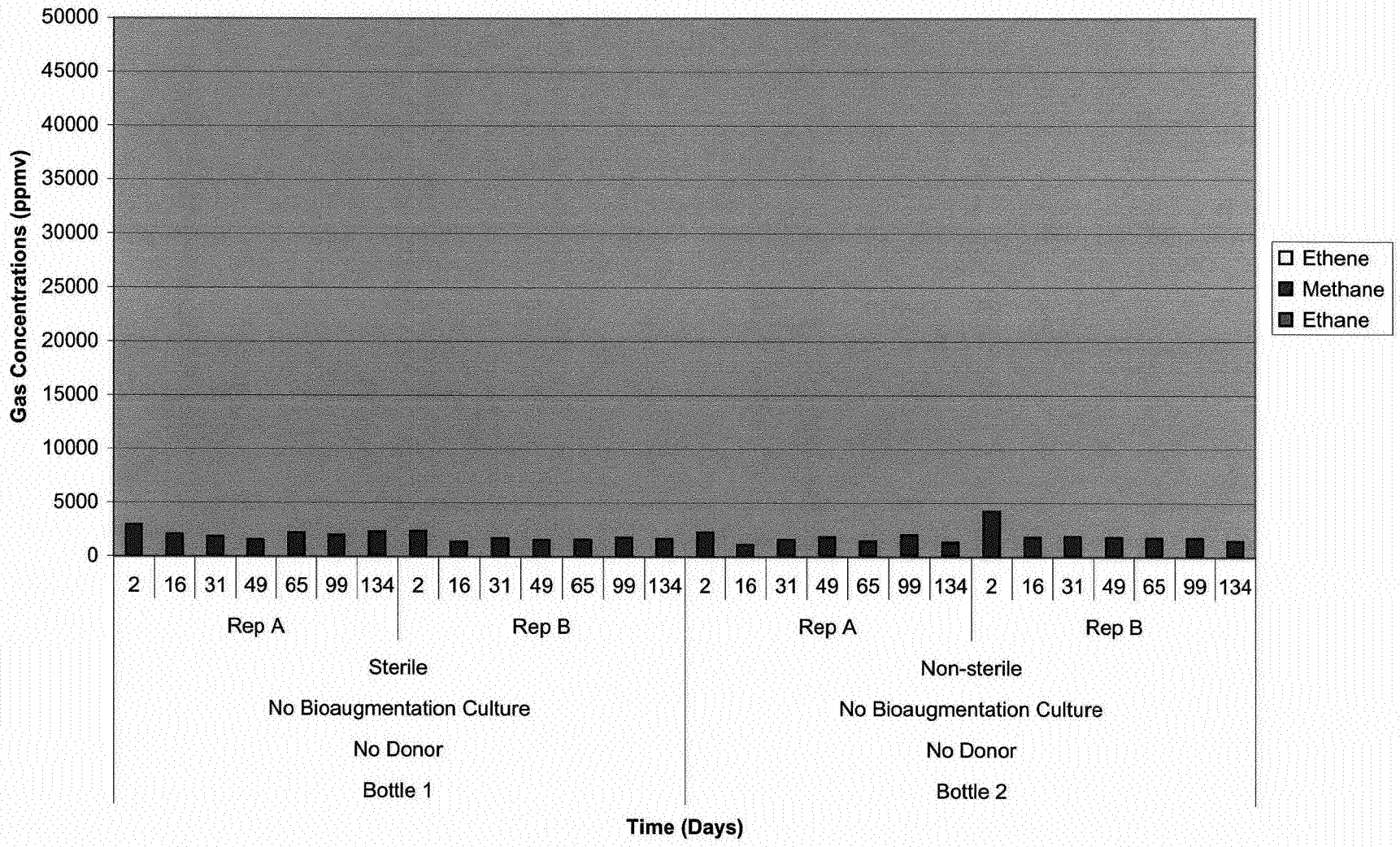


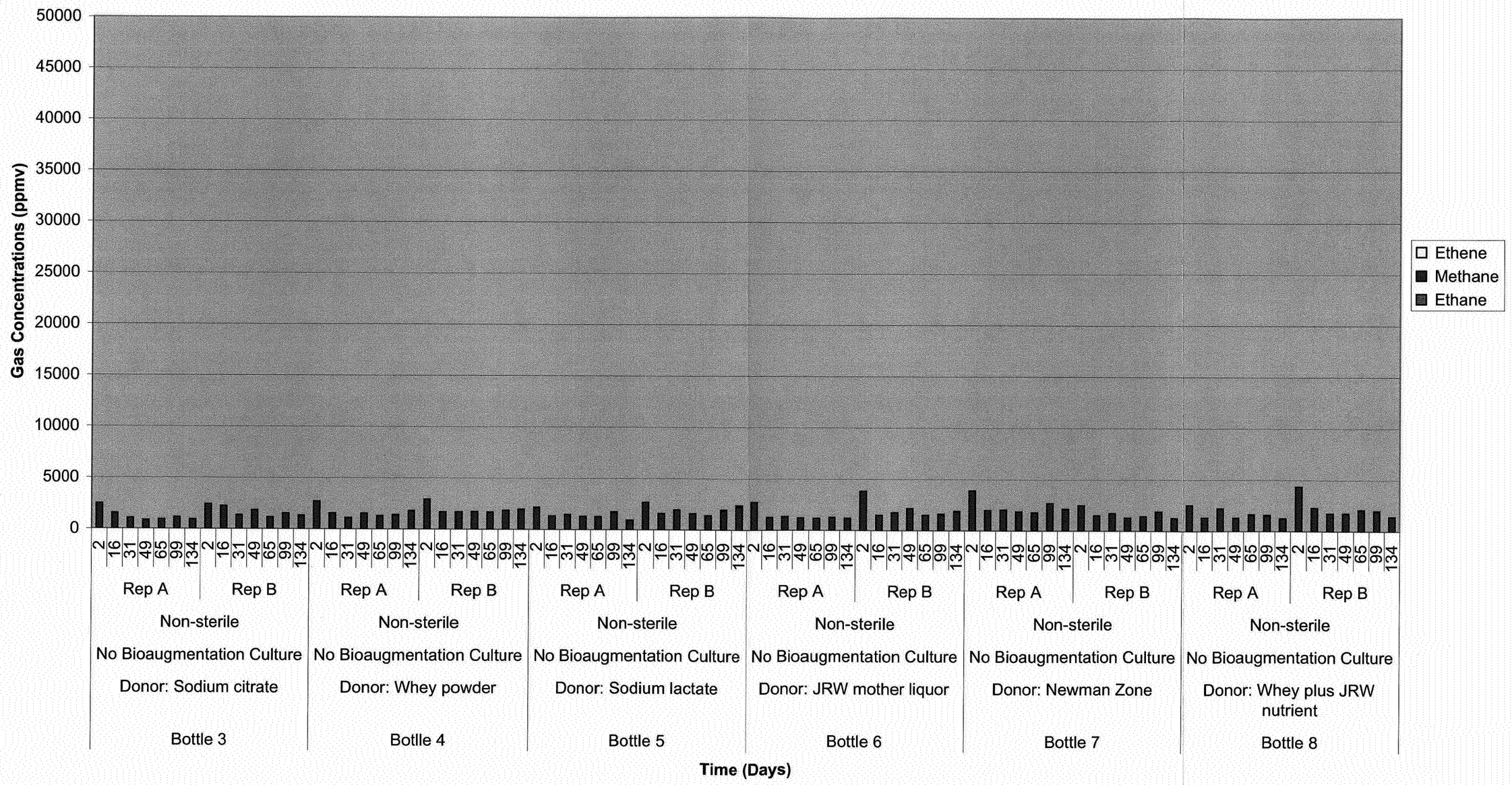
**Figure 8 - COD - Microcosms with Shaw SDC-9 Bioaugmentation Culture**



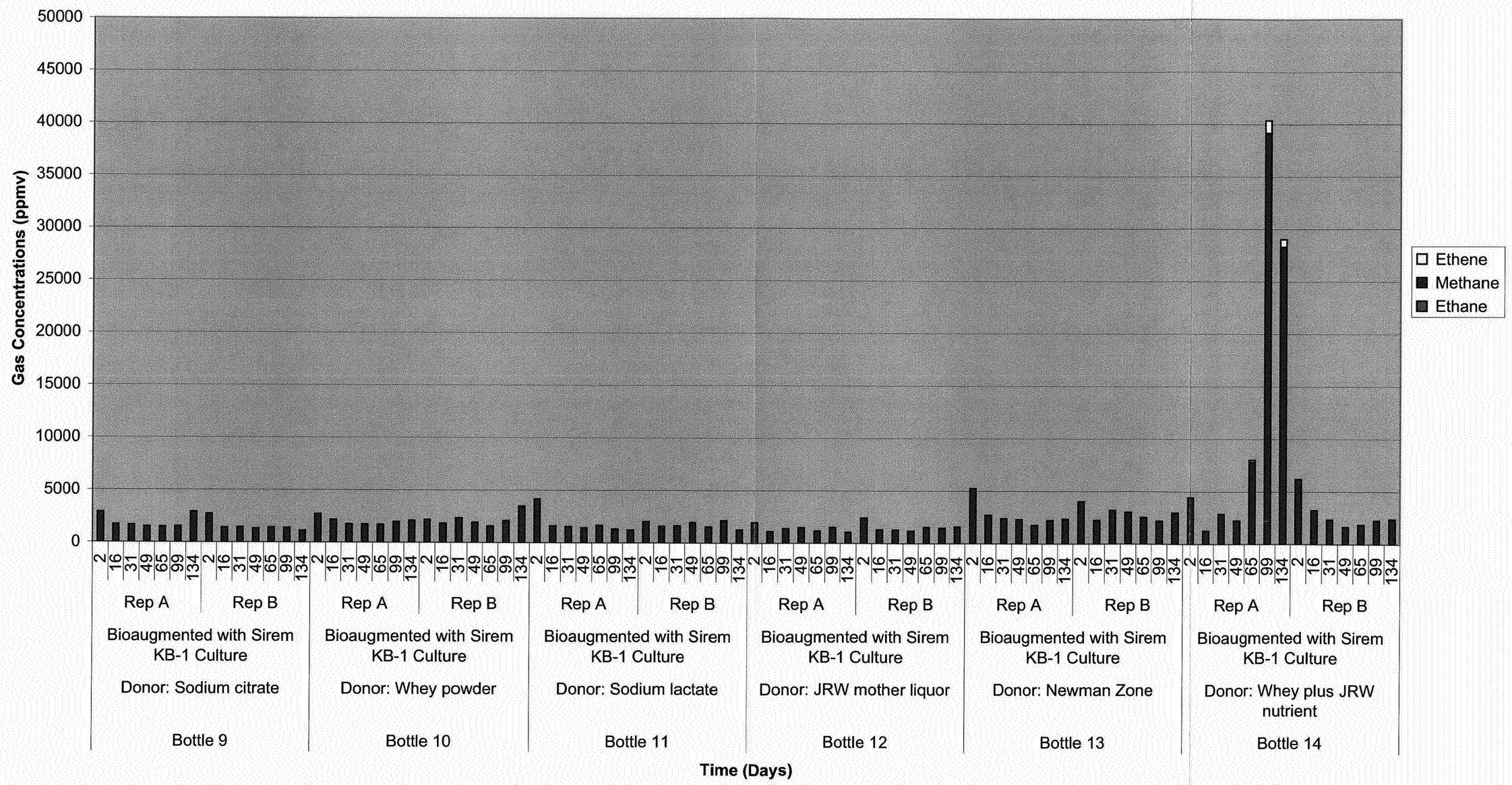
## Figure 9 - Headspace Gas Production in Control Micorocosms



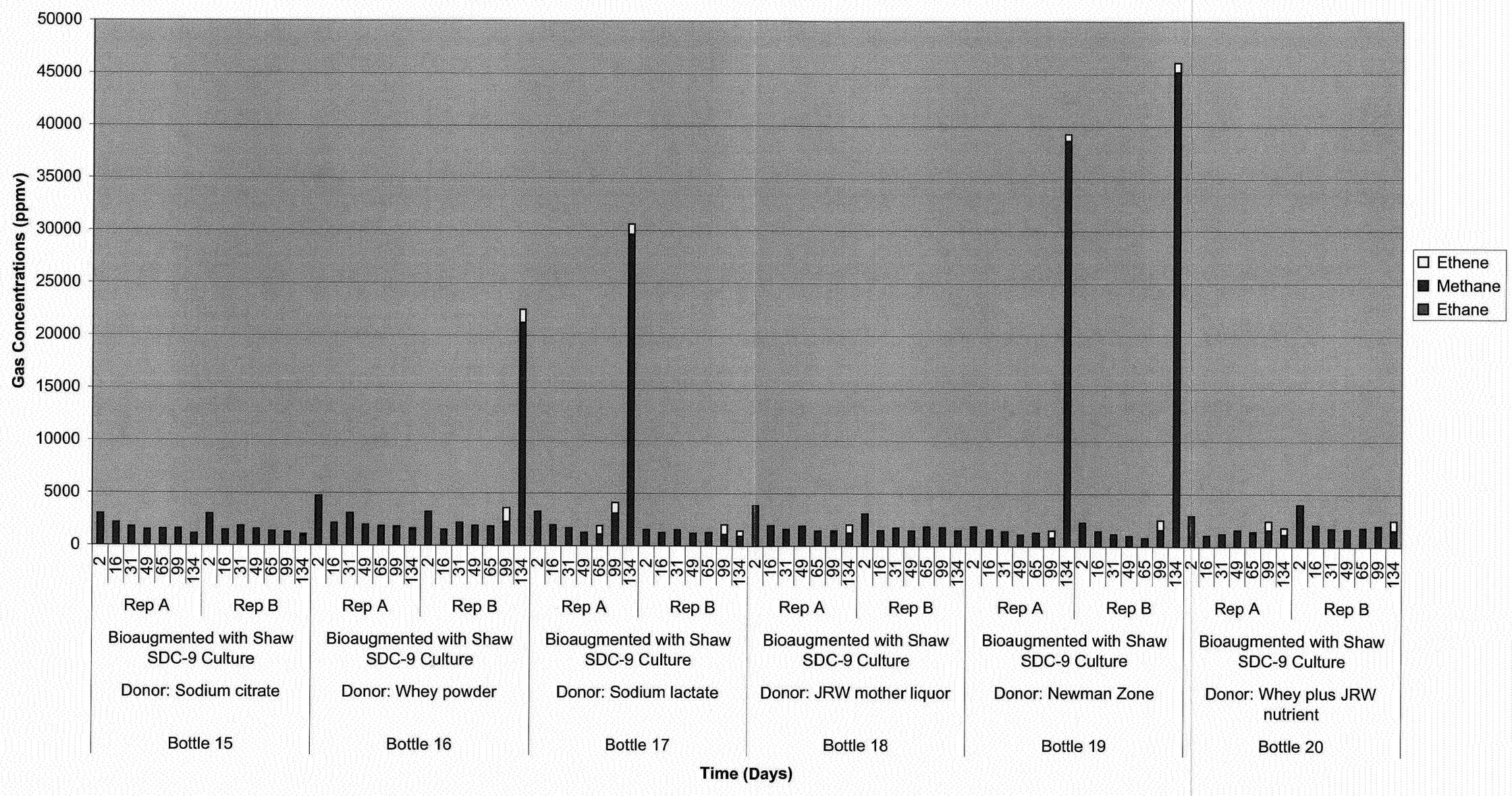
## Figure 10 - Headspace Gas Production in Microcosms with No Bioaugmentation



## Figure 11 - Headspace Gas Production in Microcosms Bioaugmented with Sirem KB-1 Culture



## Figure 12 - Headspace Gas Production in Microcosms Bioaugmented with Shaw SDC-9 Culture



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