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Tribune Tower
409 Thirteenth St., 8th Floor
Oakland, CA 94612

P.O. Box 687
Oakland, CA 94604

510.452.2944
510.452.2973 fax
www.mpfcorp.com

January 11, 2007

Mr. Jerry Wickham
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

RE: Soil Vapor and Soil Boring Sampling Results
P&D 23rd Avenue Associates
(Formerly 23rd Avenue Partners)
1125 Miller Avenue, Oakland, CA
Clearwater Group Project No, CB018E
Fuel Leak Case No. RO0000294

Dear Mr. Wickham,

As the legally authorized representative of the above-reference project location I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

Sincerely,

Mr. Dermot O'Doherty
Director of Property Management
For P&D 23rd Avenue Associates

Cc File

CLEARWATER
GROUP
Environmental Services

January 11, 2007

Mr. Jerry Wickham
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Re: Results of Soil Vapor and Soil Boring Sampling Investigation – Risk Based Corrective Analysis Report

P&D 23rd Avenue Associates
(Formerly 23rd Avenue Partners)
1125 Miller Avenue, Oakland, CA
Clearwater Project No. CB018E
Fuel Case Leak No. RO0000294

Dear Mr. Wickham,

Clearwater Group (Clearwater) on behalf of Mr. Dermot O'Doherty of P&D 23rd Avenue Associates (formerly 23rd Avenue Partners), is pleased to present the *Results of Soil Vapor and Soil Boring Investigation- Risk Based Corrective Analysis Report* prepared for the project site located at 1125 Miller Avenue, Oakland, Alameda County, California (**Figure 1**).

Purpose of Soil Vapor and Soil Sampling

The purpose of the investigation was to confirm the presence of shallow soil contamination in the vicinity of the former fuel dispenser and obtain additional vapor data to address concerns regarding vapor intrusion into the building sourcing from the residual hydrocarbons present in the soils near the former fuel dispenser location (**Figure 2**). Alameda County Environmental Health Department (ACEH) staff concurred in correspondence dated June 13, 2006 and August 4, 2006 with the recommendations for additional investigation, sampling methodology and completion of the Risk Based Corrective Analysis (RBCA) presented by Clearwater in its *Response to Agency Comments*

dated May 31, 2006 and *Response to Agency Comments Addendum* dated July 14, 2006 (**Attachment A**).

Investigation Activities – Event Preparation

Clearwater personnel submitted an online drilling permit application to the Alameda County Department of Public Works Department (ACDPW) on November 2, 2006. The permit application was approved and a permit was issued on November 6, 2006 (**Attachment B**). In preparation for the event, Clearwater personnel updated the site specific Health and Safety Plan to include the additional information regarding the collection of the soil vapor samples and emission controls for the truck mounted and internal combustion powered drill-rig. As required by Underground Service Alert (USA), Clearwater personnel marked the proposed boring locations in white marking paint and on November 10, 2006 contacted USA to request that all subsurface utilities leading to the project site be marked under USA drill ticket 411310.

Investigation Activities – Drilling Event

On November 15, 2006 under the supervision of Clearwater Geologist Mr. Rob Nelson P.G., Fast-Tek Engineering Support Services of Pt. Richmond, California (C-57 License No. 624461) advanced a total of six borings to approximately four feet below ground surface (bgs) for the collection of soil samples from borings S9 to S11 and soil vapor samples from borings V1 to V3 using a Geoprobe® 5400 Drill Rig outfitted with Direct Push Technology Macro-Core® Soil Sampler which is a single rod system used for soil sampling (**Figure 2**). Expandable vapor collection points were attached to the ends of the rods used to advance V1 thru V3 for soil vapor collection purposes.

Soil Samples

The soil samples were collected from S9 through S11 at 4 feet bgs by slicing a 6-inch section of soil from the 4-foot long, 2-inch diameter Macro-Core® Soil Sampler sleeve corresponding with the appropriate sample depth, labeled, documented on a chain of custody form and placed on ice for transport to Kiff Analytical LLC (Kiff) a California Department of Health Services certified laboratory located in Davis, California. The soil samples were submitted to Kiff for analysis of total

petroleum hydrocarbons as diesel (TPH-d) by EPA method 8015 and benzene, toluene, ethyl benzene and total xylenes (BTEX) by EPA method 8260. The samples collected for analysis of BTEX were prepared in the field according to EPA Method 5035. These samples were sealed in 5035 soil samplers and placed on dry ice for transport to the project laboratory. During the collection of the samples the soil core was screened with a photo-ionization detector (PID) and visual classification of the soil was made according to the Unified Soil Classification System. All field work was completed according to Clearwater Group Field Protocols included as **Attachment C**.

Soil Vapor Sampling Using TO-17 Multi-Bed Carbotrap 300 Tubes

To satisfy the distributive volume sampling requirement, soil vapor samples were collected with sample volumes equal to 1-liter (1L) and 4-liters (4L)using the TO-17 Multi-bed Carbotrap 300 tubes (TO-17 tubes) at each sampling point. The direct soil gas sampling system allows the driller (a C-57 licensed drilling contractor) to drive probe rods to the desired depth, connect the gas sampling cap to the top of the drive rod and pull up on the drive rod to expose the soil vapor screen located below ground. Once the desired sampling depth was reached and the soil vapor screen exposed the sample pump, a Gilair-5 Active Air Pump™ (provided by Clean Air Engineering, Palatine, Illinois) capable of flow rates ranging from 10 to 200 milliliters per minute (mL/min), was sleeved onto the nipple on the gas sampling cap. The flow rate was then calibrated for the collection of either a one liter sample volume with a flow rate of 66.7 milliliters per minute (mL/min) for 15 minutes or a four liter sample volume with a flow rate of 133.3 mL/min for 30 minutes. Calibrating the flow rate for each sample volume at each sample depth enabled the lines to be purged using source soil vapors. As a safety measure the ambient air was continuously monitored using a photo-ionization detector (PID) during the vapor sample collection process (see Clearwater Field Event Forms included as **Attachment D**).

The vapor samples were submitted for analysis of total petroleum hydrocarbons as diesel (TPH-d) and benzene, toluene, ethylbenzene and xylenes (BTEX) using modified EPA Method TO-17 by Air Toxics LTD located in Folsom, California. Each vapor sample was labeled according to the soil vapor boring location, corresponding sample depth and sample volume collected. For example, the one liter sample volume collected at four feet bgs in soil vapor boring location V1 was labeled as

V1.2 1L. The samples were then recorded on a chain of custody form supplied by Air-Toxics, placed in their respective shipping sleeves and placed on ice for transport to the project laboratory.

Confirmation Soil Vapor Sampling Using SUMA Canisters

Per the ACEH's request, confirmation soil vapor samples were collected using one Suma canister at each of the two soil vapor sample depths (2 feet and 4 feet) in soil vapor boring location V2. The confirmation samples were collected after each of the respective vapor samples had been collected using the TO-17 tubes. The Suma sampling system was assembled with a 6-liter canister connected to an air flow controller using Teflon tubing sleeved onto the Geoprobe® gas sampling cap. Since the sub-atmospheric pressure canister is an evacuated canister (final canister pressure is below atmospheric pressure), the soil vapor sample can be collected without the use of a sample pump (the air flow controller regulated the air flow to 200 mL/min for the recommended sample duration of approximately 30 minutes). The canisters were then labeled according to the sample depth and documented on a chain-of-custody form, packed in a shipping carton and transported to Air Toxics laboratory for analysis of BTEX and TPH-d using EPA Method TO-15.

Soil Sampling Results

Soil samples were collected from all three soil borings (S9-S11) at approximately four feet bgs. Prior to being analyzed, each soil sample was homogenized to ensure better representation of the contaminants present in the samples. The laboratory reported concentrations of TPH-d above the laboratory reporting limit of 50 mg/Kg in each soil sample submitted for analysis. The concentrations ranged in value from 7,500 milligram per kilogram (mg/Kg) in S9 at four feet bgs to 21 mg/Kg in S11 at four feet bgs (**Figure 3**). The soil sample results for S9.4 (7,500 mg/Kg) and S10.4 (940 mg/Kg) exceed the San Francisco Bay Regional Water Quality Control Board risk based screening level of 500 mg/Kg for middle distillates in soils less than 3 meters bgs for commercial and residential areas where groundwater is not a source of drinking water. All three soil samples submitted for analysis did not contain reportable concentrations of BTEX above the laboratory reporting limit of 0.0050 mg/Kg (**Table 1**). The soil cores were characterized as sandy clay (CL) and are illustrated in the boring logs included as **Attachment E**. The highest PID reading observed at 1,100 parts per million (ppm)

correlates with the soil sample collected from S9 in which the analytical results were 7,500 mg/Kg. Kiff report number 53371 is included as **Attachment F**.

Soil Vapor Sampling Results

Two soil vapor samples (1L and 4L) were collected from all three soil vapor borings (V1 to V3) at approximately four feet bgs. Two soil vapor samples (one liter and four liter) were collected from V2 at approximately two feet bgs. There were a total of eight TO-17 vapor samples; collection of vapor samples using the TO-17 tubes at the two foot depth interval in V1 and V3 was unsuccessful. The vapor collection point was set at the target depth however the sample pump could not generate a measurable flow. As previously stated, confirmation vapor samples were also collected at the two foot and four foot sampling depths in V2 using 6-liter summa canisters.

Air Toxics contacted Clearwater on December 4, 2006 regarding the analysis of the TO-17 tubes. The initial sample, V1.4 1L, analyzed using modified EPA method TO-17, as requested, saturated the mass spectrometer. According to Air Toxics saturation occurs when the detector is overwhelmed by the concentration introduced to the gas chromatograph (GC) and it is unable to accurately measure the mass. To provide an accurate concentration, samples are typically diluted and re-analyzed. However, the TO-17 analysis requires a thermal desorption step in which the entire contents of the tube are transferred to the GC inlet for analysis. Air Toxics provided Clearwater with two options for completing the analysis of the TO-17 tubes as follows.

The first option included desorbing the contents of the TO-17 tube into a tedlar bag and injecting a small volume back into the tube for a diluted analysis. However, since the constituents of concern were mainly TPH-d, dilution using the tedlar bag method was not feasible. Compounds in the low volatility range such as TPH-d do not effectively recover from a tedlar bag. The second option presented was to perform solvent desorption on the TO-17 tube using NIOSH 1550 methodology. The contents of the tube are transferred to a vial and extracted using carbon disulfide. Analysis of the samples is then completed using a gas chromatograph flame ionization detector (GC/FID) rather than a gas chromatograph mass spectrometer (GC/MS). The NIOSH 1550 methodology is less sensitive

than the modified EPA method TO-17 therefore decreasing the chance of reportable concentrations of BTEX above 1 microgram (µg). The GC/FID used in the NIOSH method is also non-specific and prone to interferences from compounds eluting at the same retention time as BTEX. Clearwater relayed the issues of analyzing the TO-17 tubes to ACEH via e-mail on December 4, 2006 followed up with a telephone conversation on December 5, 2006. It was determined that the NIOSH 1550 methodology would be used to analyze the TO-17 tubes mainly because BTEX compounds had not been reported above the laboratory reporting limit of 0.005 mg/Kg in the soil samples. The analytical results from the SUMA canisters had not been received at the time of discussion.

The laboratory reported concentrations of TPH-d above the laboratory reporting limit of 50 micrograms per cubic meter (µg/m^3) in all of the TO-17 tubes submitted for analysis. Concentrations of TPH-d ranged in value from 7,300,000 µg/m^3 in V3.4 1L to 180, 000 µg/m^3 in V2.2 4L (**Figure 4**). The concentration of TPH-d reported for the sample collected from V1.4 1L (>150,000 µg/m^3) is an estimate based on the saturation level of the mass spectrometer. The analytical results are summarized in **Table 2** and presented in full in Air Toxics' report numbers 0611361A and 0611361B included as **Attachment G**.

The laboratory reported detectable concentrations of benzene, toluene and xylenes above the laboratory reporting limits of 5.8, 6.9 and 7.9 µg/m^3 (respectively) in the vapor sample collected using the Suma canister at two feet bgs in V2. The concentration of benzene (41 µg/m^3) reported in V2.2 Suma is below the Bay Area Air Quality Management District's toxic air contaminant trigger level of 60 µg/m^3 for chronic inhalation risk exposure levels. The laboratory did not report any detectable concentration of BTEX above the laboratory reporting limit in the vapor sample collected using the Suma canister at four feet bgs in sample location V2. The laboratory report narrative stated that the reporting limits for V2.4Suma were elevated due to the presence of high level non-target species. The analytical results are summarized in **Table 2** and presented in full in Air Toxics' report numbers 0611359 and 0611360 included as **Attachment G**.

Risk Based Corrective Analysis

A risk based corrective analysis was performed using the Risk Based Corrective Analysis (RBCA) Tool Kit for Chemical Releases, Version 1.3b (the most recent version) © Groundwater Service Incorporated, Houston, Texas. Site specific data coupled with certain assumptions and/or default parameters were used to complete the Tier 2 human health risk assessment evaluating baseline toxic effects for both residential and commercial exposure scenarios. The following is a summary of the site specific data, assumptions or default parameters used to complete the RBCA.

- The analytical results of the constituents of concern for soil borings S8 through S11 were used to complete the RBCA (see **Table 1**).
- The RBCA program does not classify total petroleum hydrocarbons as diesel as a single constituent but rather requires the user to evaluate the specific carbon chains which occur within the compound group. The carbon chains range from C10 through C21 and are classified as either aliphatic or aromatic. A discussion with the project laboratory indicated that the compound groups for diesel comprise of mainly aliphatic compounds. For the purpose of the RBCA it is assumed that the carbon chains found within the hydrocarbon plume beneath the site are all aliphatic.
- The concentrations of TPH-d in each of the soil samples were divided evenly amongst the three carbon chain groups C10 to C12, C12-C16 and C16 to C21 for that sample set.
- The RBCA default carcinogen level for aliphatic carbon chains C10 to C21 is a level D or Group 4 Carcinogen.
- The contaminant exposure pathways were limited to the following: 1) surface soil exposure, 2) air exposure through volatilization and particulates to outdoor air inhalation and 3) air exposure through volatilization to indoor air inhalation.
- Transport modeling for outdoor air volatilization factors included a combination of the standard transport model for surface soil and the Johnson and Ettinger model where the thickness of the surface soil was specified to be four feet.
- Transport modeling for indoor air volatilization factors was completed using the Johnson and Ettinger model only.

- The depth to the top of the affected soils is approximately 0.417 feet based on the soil boring logs included as **Attachment E**.
- The depth to the base of the affected soils, 4 feet, is based on the completed depth of the soil borings S8 through S11.
- The affected soil area is the calculated area inside the iso-contour line of 10 mg/kg as illustrated on **Figure 3**.
- Wind direction is assumed to be toward the west according to www.wunderground.com/us/ca/oakland.
- The length of affected soil parallel to the assumed wind direction is equal to the maximum diameter of the 10 mg/Kg iso-contour line (Figure 3).
- The predominant soil type observed is sandy clay. Default values for this soil type were used to calculate total porosity, volumetric water content, dry bulk density, vertical hydraulic conductivity, vapor permeability and capillary zone thickness.
- The default value of 0.01 for the fraction of organic carbon was used.
- Soil pH of 7.35 was determined using a composite soil sample from S9.4 S10.4 and S11.4 (see Kiff Analytical Report number 53371 included in **Attachment F**).
- Default values for the air mixing zone were used the outdoor air pathway.
- The building is a conversion from an industrial use to a commercial use during the late 1960s or early 1970s then to a mixed use (residential and commercial) in the late 1980s. The actual building specifications are not available or do not exist, therefore the default values for indoor air building parameters were used.
- The target risk of one-in-a million generally used for Class A/B and Class C carcinogens and a target hazard quotient of one were used.

Risk Based Corrective Analysis Results

Three exposure pathways were evaluated in both the residential and commercial exposure scenarios: 1) outdoor air exposure, 2) indoor air exposure and 3) soil exposure. The toxicity limits were exceeded for the indoor air exposure pathway and the soil exposure pathway in both scenarios. The

following tables summarize the results for both exposure scenarios. The complete RBCA data output set is included as **Attachment H**.

Table A
Total Pathway Exposure – Indoor Air
Sum of Average Exposure Concentrations in Milligrams per Cubic Meter

Constituent of Concern	Residential Scenario	Commercial Scenario
TPH Aliph C10-C12	1.2×10^{1}	3.5×10^{0}
TPH Aliph C12-C16	2.6×10^{0}	7.5×10^{-1}
TPH Aliph C16-C21	1.9×10^{-1}	5.6×10^{-2}

Table B
Total Pathway Exposure – Soil Exposure
Average Daily Intake Rate in Milligrams per Kilogram per Day

Constituent of Concern	Residential	Commercial	Construction Worker
TPH Aliph C10-C12	1.0×10^{-1}	7.2×10^{-2}	7.3×10^{-2}
TPH Aliph C12-C16	1.0×10^{-1}	7.2×10^{-2}	7.3×10^{-2}
TPH Aliph C16-C21	1.3×10^{-2}	8.3×10^{-3}	8.9×10^{-3}

Conclusions

- The laboratory reported concentrations of TPH-d in all three soil samples submitted for analysis. The concentration of TPH-d ranged from 7,500 mg/Kg in S9.4 to 21 mg/Kg in S11.4.
- The laboratory did not report any detectable concentrations of BTEX above the standard laboratory reporting limit of 0.005 mg/Kg in the soil samples submitted for analysis.
- Eight soil vapor samples were collected using TO-17 Multi-Bed Carbotrap 300 tubes and two soil vapor samples were collected using 6-liter SUMA canisters.
- The laboratory was unable to analyze the TO-17 tubes using modified EPA method TO-17, instead the samples were analyzed using NIOSH 1550 methodology.

- The laboratory reported concentrations of TPH-d in all the TO-17 tube vapor samples submitted for analysis. The concentrations ranged in value from 180,000 µg/m^3 (V2.2 4L) to 7,300,000 µg/m^3 (V3.4 1L).
- The laboratory reported detectable concentrations of benzene (41 µg/m^3), toluene (43 µg/m^3) and xylenes (28.4 µg/m^3 total) in vapor sample collected using the Suma canister at 2 feet bgs in V2.
- There were no reportable concentrations of BTEX above the elevated laboratory reporting limits for the vapor sample collected 4 feet bgs using the Suma canister in V2.
- The RBCA baseline toxicity levels modeled are exceeded for indoor air exposure and soil exposure in both the residential and commercial exposure scenarios.

Project Discussion

EPA method TO-17 states that the agreement between distributive pairs should not deviate more than 25% to demonstrate a valid sampling event. The analytical results from the TO-17 tubes do not meet the distributive pair requirement. The laboratory double checked the results, re-analyzed each extract and simulated sample collection parameters by spiking the TO-17 tube and collecting one liter and four liter samples of humid nitrogen which did not result in any specific trend or issue. The analytical results also do not follow a trend. If breakthrough occurred in the one liter samples collected, then one would expect to see a lower concentration in the four liter samples. However the four liter samples collected in V1.4 and V2.4 have higher concentrations than the one liter samples. The distributive pair deviation may reflect the variability of the TPH-d in the soil gas and the heterogeneous nature of the shallow soils. Because the vapor samples were collected sequentially it is possible that the four liter sample may have pulled vapor from a larger area with varying TPH-d contamination.

Recommendations

Due to the elevated soil vapors and sorbed hydrocarbon concentrations detected during the recent subsurface investigation event, Clearwater recommends that a workplan for additional investigation be prepared. The workplan would focus on delineating the horizontal extent of the hydrocarbon

plume using soil gas detection samplers such as Gore Sorbers™. In order to determine the level of impact the contamination poses to the residents it is important to determine the size of the hydrocarbon plume. The results of the Gore Sorbers™ event will provide a foot print of the contamination and determine if the plume is isolated to the area illustrated in Figure 3, or if the plume has migrated with the direction of groundwater flow. The workplan would also include a discussion for ambient vapor sampling within the confines of the building. Multiple vapor samples collected in both the residential and commercial areas of the building would provide better data to calculate human exposure levels at the property and identify whether engineering controls or remediation is indicated in order to bring this site to closure. As part of the ambient air survey, Clearwater recommends that the building residents be interviewed to determine if they have experienced nuisance odors due to the location of the hydrocarbon plume.

CLEARWATER
GROUP, INC.
Environmental Services

CERTIFICATION

This report was prepared under the supervision of a Professional Geologist in the state of California. All statements, conclusions and recommendations are based solely upon published results from previous consultants, and field observations by Clearwater Group.

Information and interpretation presented herein are for the sole use of the client. A third party should not rely upon the information and interpretation contained in this document.

The service performed by Clearwater Group, has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions. No other warranty, expressed or implied, is made.

LICENSED PROFESSIONALS

In-house licensed professionals direct all projects. These professionals, including geologists or engineers, shall be guided by the highest standards of ethics, honesty, integrity, fairness, personal honor, and professional conduct. To the fullest extent possible, the licensed professional shall protect the public health and welfare and property in carrying out professional duties. In the course of normal business, recommendations by the in-house professional may include the use of equipment, services, or products in which the Company has an interest. Therefore, the Company is making full disclosure of potential or perceived conflicts of interest to all parties.

Sincerely,
CLEARWATER GROUP

Jessica Moreno
Project Manager

James A. Jacobs, P.G. # 4815, C.H.G.
Chief Hydrogeologist

PROFESSIONAL GEOLOGIST
JAMES ALAN JACOBS
NO. 88
CERTIFIED HYDROGEOLOGIST
STATE OF CALIFORNIA

FIGURES:

Figure 1 : Site Location Map
Figure 2 : Site Plan
Figure 3 : TPH-d Iso-Contour Map (11/15/2006)
Figure 4 : TPH-d Analytical Results Soil/Vapor Samples (11/15/2006)

TABLES:

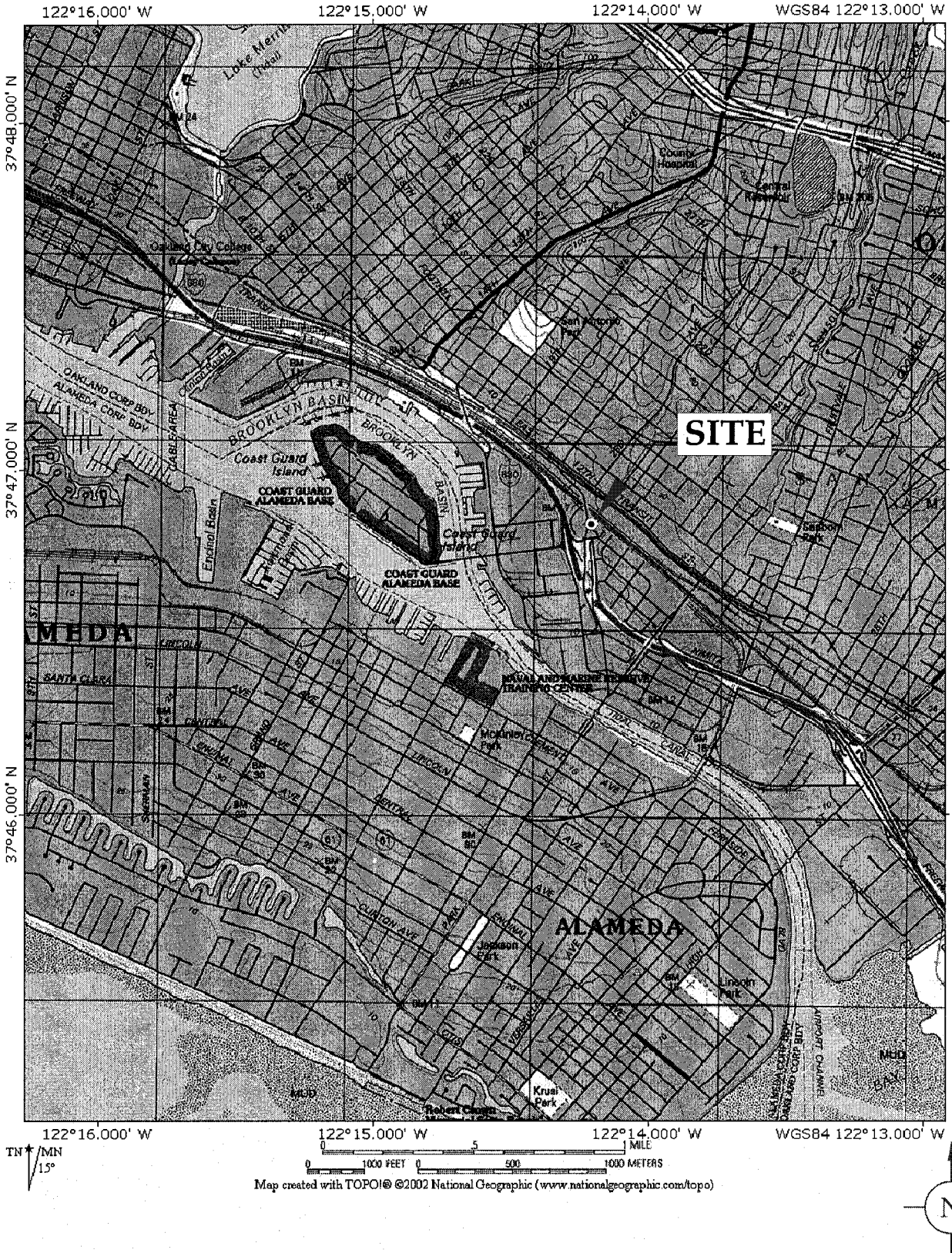
Table 1 : Soil Sampling Analytical Results
Table 2 : Soil Vapor Sampling Analytical Results

ATTACHMENTS:

Attachment A : Correspondence from Alameda County Health Care Services dated June 13, 2006 and August 4, 2006
Attachment B : Alameda County Boring Permit
Attachment C : Clearwater Field Protocols
Attachment D : Clearwater Field Event Forms
Attachment E : Soil Boring Logs
Attachment F : Kiff Analytical Report #53371
Attachment G : Air Toxics Analytical Report # 0611359, 0611360, 0611361A and 0611361B
Attachment H : RBCA Data Output for Residential and Commercial Scenarios

cc: Mr. Dermot O'Doherty
P&D 23rd Avenue Associates
c/o: Madison Park Financial Corporation
P.O. Box 687
Oakland, CA 94604

FIGURES



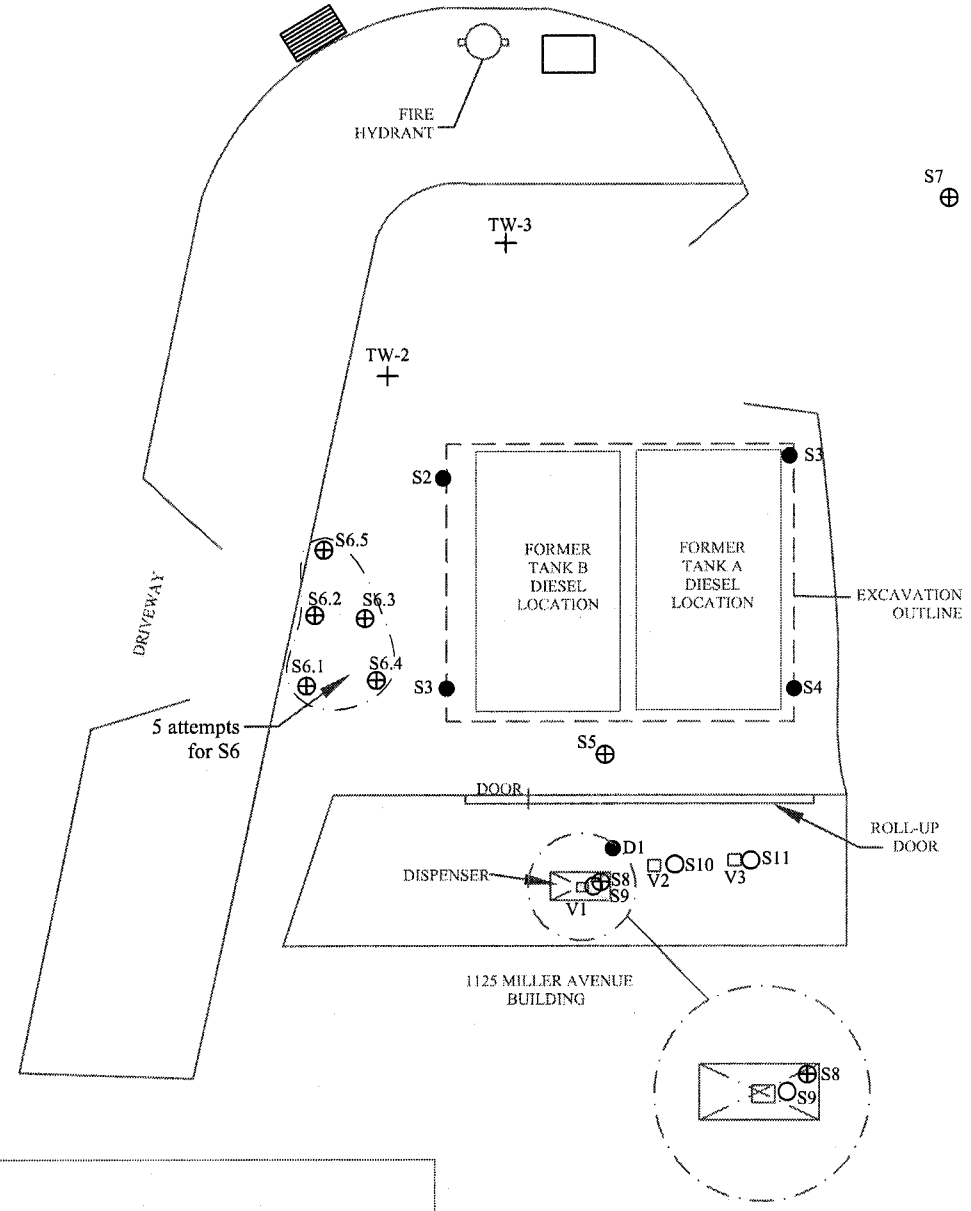
Site Vicinity Map

1125 Miller Avenue
Oakland, California

CLEARWATER GROUP

Project No.	Figure Date	Figure
CB018	**9/05**	**1**

\\Tagi\Shares\Department\Jobs\CB018 Miller Ave\CB018F Soil Vapor Investigation 2006\PDF\CB018F Figure 1 Site Vicinity Map



LEGEND

S1-S4 ⊕	Soil Boring Location (12/2/98)
S5-S8 ⊕	Soil Boring Location (11/16/05)
D1 ●	Soil Sample Location (10/24/00)
TW-3 +	Temporary Well (10/24/00)
S9-S11 ○	Soil Boring Location (11/15/06)
V1-V3 □	Soil Boring Location (11/15/06)

*Note: Five attempts to bore S6 met refusal at 4-6' due to subsurface debris

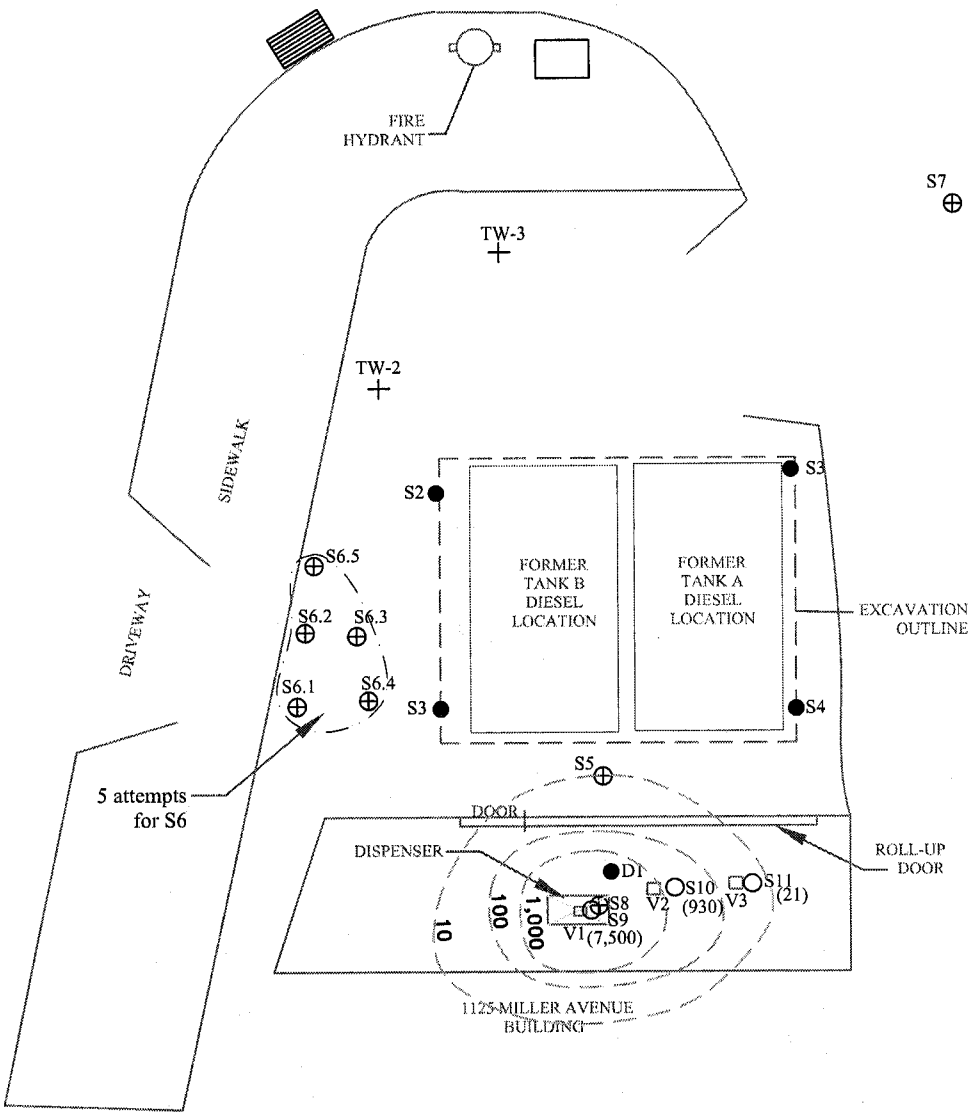
10'

Scale

5'

SITE MAP	CLEARWATER GROUP		
1125 Miller Avenue Oakland, California	Project No. **CB018F**	Figure Date **1/07**	Figure **2**

\\Tagi\Shares\Department\Jobs\CB018 Miller Ave\CB018F Soil Vapor Investigation 2006\PDF\CB018F Figure 2 Site Plan



LEGEND

S1-S4 ⊕	Soil Boring Location (12/2/98)
S5-S8 ⊕	Soil Boring Location (11/16/05)
D1 ●	Soil Sample Location (10/24/00)
TW-3 +	Temporary Well (10/24/00)
S9-S11 (930) ○	Soil Boring Location and concentration of total petroleum hydrocarbon as diesel in $\frac{mg}{kg}$ (11/15/06)
V1-V3 □	Soil Vapor Location (11/15/06)
TPH-d ISO-Contour Line in $\frac{mg}{kg}$	

*Note: Five attempts to bore S6 met refusal at 4-6' due to subsurface debris

10'

Scale

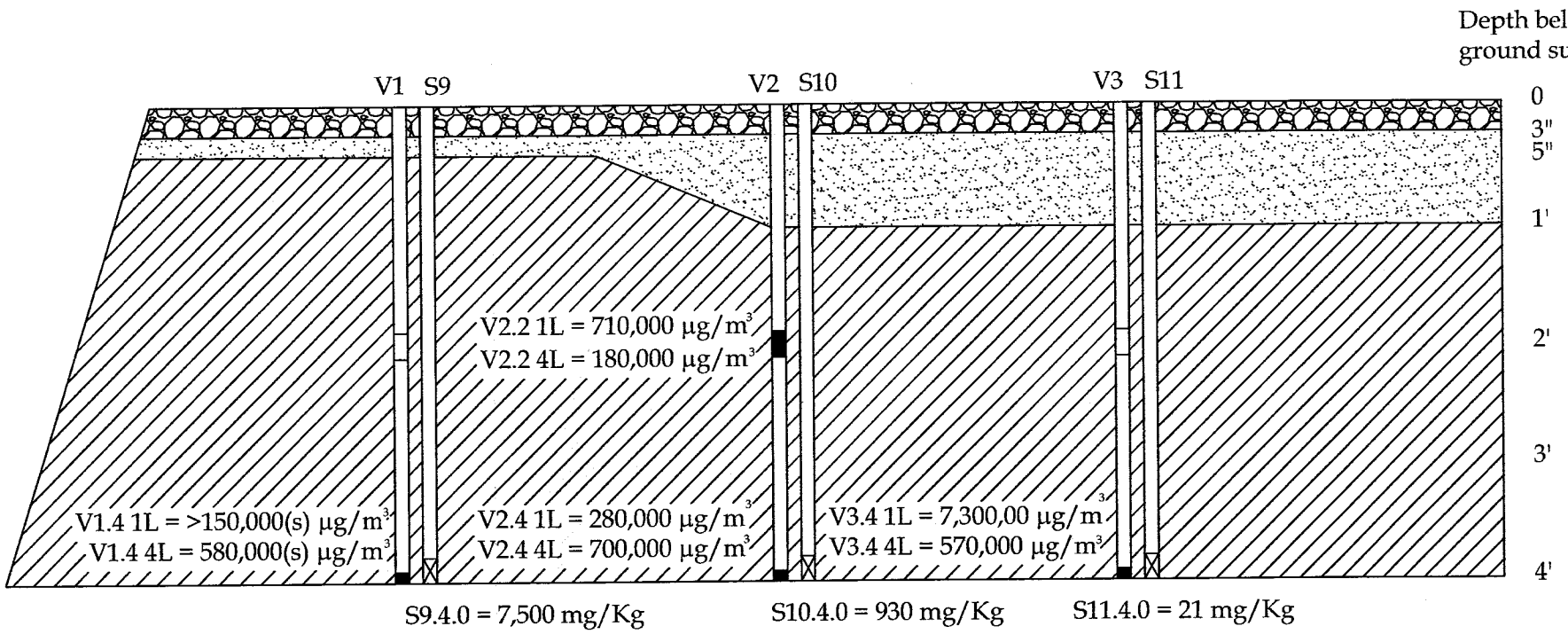
5'

Concentrations of TPH-d and ISO-Contour Map
November 15, 2006
1125 Miller Avenue
Oakland, California

CLEARWATER GROUP

Project No.	Figure Date	Figure
CB018F	**1/07**	**3**

\Tagi\Shares\Department\Jobs\CB018 Miller Ave\CB018F Soil Vapor Investigation 2006\PDF\CB018F Figure 3 TPH-d



Legend

Concrete

Sand

Lean Clay (CL)

V1 — Soil Boring Location Location (Vapor) (11/15/06)

S9 — Soil Sample Location (11/15/06)

V2.2 1L — 710,000 µg/m³ = Soil vapor sample location with corresponding vapor concentration of total petroleum hydrocarbons as diesel (TPH-d) in micrograms per cubic meter (µg/m³)

S9.4.0 — Soil sample location with corresponding concentration of TPH-d in milligrams per Kilogram (mg/Kg)

Vapor Sample Unsuccessful

0 4 8

APPROXIMATE SCALE IN FEET

TPH-d Analytical Results Soil / Vapor Samples
November 15, 2006
1125 Miller Avenue
Oakland Ca.

CLEARWATER GROUP

Project No.	Figure Date	Figure
CB018F	**1/07**	4

\\Tagi\Shares\Department\Jobs\CB018 Miller Ave\CB018F Soil Vapor Investigation 2006\PDF\CB018F Figure 4 TPHg

TABLES

TABLE 1
SOIL SAMPLING ANALYTICAL RESULTS
23rd Avenue Partners
1125 Miller Avenue
Oakland, CA
Clearwater Project No. CB018

Sample (#)	Sampling Date	TPH-d (mg/Kg)	B (mg/Kg)	T (mg/Kg)	E (mg/Kg)	X (mg/Kg)	MTBE (mg/Kg)
RBSLs^^ (mg/Kg)		**500**	**0.18**	**8.4**	**24**	**1**	**1**
S1-9	*Dec-98*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
S2-9	*Dec-98*	*1,800*	*ND*	*ND*	*ND*	*0.51*	*ND*
S3-9	*Dec-98*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
S4-9	*Dec-98*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*
TW2 -16.5	*24-Oct-00*	*4,200*	*1.4*	*ND*	*ND*	*ND*	*ND*
TW3-17	*24-Oct-00*	*2,700*	*ND*	*ND*	*ND*	*ND*	*ND*
D1-3	*24-Oct-00*	*3,400*	*ND*	*ND*	*ND*	*ND*	*ND*
D1-8	*24-Oct-00*	*34*	*ND*	*ND*	*ND*	*ND*	*ND*
S5-5	16-Nov-05	14*1	<0.0050	<0.0050	<0.0050	<0.0050	*****
S5-10	16-Nov-05	610	<0.0050	<0.0050	<0.0050	<0.0050	*****
S5-15	16-Nov-05	620	<0.0050	<0.0050	<0.0050	<0.0050	*****
S5-20	16-Nov-05	5.8	<0.0050	<0.0050	<0.0050	<0.0050	*****
S7-5	16-Nov-05	150*[1]	<0.0050	<0.0050	<0.0050	<0.0050	*****
S6-6	16-Nov-05	1,800*[1]	NA*[2]	NA*[2]	NA*[2]	NA*[2]	*****
S7-10	16-Nov-05	32*[1]	<0.0050	<0.0050	<0.0050	<0.0050	*****
S7-15	16-Nov-05	1,200	<0.0050	<0.0050	<0.0050	<0.0050	*****
S7-20	16-Nov-05	300	<0.0050	<0.0050	<0.0050	<0.0050	*****
S8-4	16-Nov-05	92	<0.0050	<0.0050	<0.0050	<0.0050	*****
S9.4.0	15-Nov-06	7,500	<0.0050	<0.0050	<0.0050	<0.0050	*****
S10.4.0	15-Nov-06	930	<0.0050	<0.0050	<0.0050	<0.0050	*****
S11.4.0	15-Nov-06	21	<0.0050	<0.0050	<0.0050	<0.0050	*****

NOTES

TPH-d	Total petroleum hydrocarbons as diesel using EPA Method 8015/8020(modified)
B	Benzene using EPA Method 8015/8020 (modified)
T	Toluene using EPA Method 8015/8020 (modified)
E	Ethyl benzene using EPA Method 8015/8020 (modified)
X	Xylenes using EPA Method 8015/8020 (modified)
MTBE	Methyl tertiary-butyl ether using EPA Method 8260
mg/Kg	Milligrams per kilogram (approximately equal to parts per million)
NA	Not analyzed
ND	Not detected/below laboratory reporting limits
TW3-17	Temporary well number and depth sampled
S5-5	Soil boring and depth sampled (11/16/05).
S9.4.0	Soil boring and depth sampled (11/15/06).
<0.0050	Not detected in concentrations exceeding the indicated laboratory reporting limit
*1	Concentration reported is atypical for diesel, these hydrocarbons have a higher boiling point
*2	Analysis not performed due to lack of sample volume.
*****	Analysis of MTBE not required by ACEH.
RBSLs^^ (mg/Kg)	San Francisco Bay Regional Water Quality Control Board (June 2001) *Table B. Surface Soil (≤3m bgs) Soil and Groundwater Risk-Based Screening Levels (Groundwater is NOT a Current or Potential Source of Drinking Water).*

Analytical results reported in italics are from the December 31, 2001 *Subsurface Exploration Report* prepared by Environmental Bio-Systems.

TABLE 2
SOIL VAPOR SAMPLING ANALYTICAL RESULTS
23rd Avenue Partners
1125 Miller Avenue
Oakland, CA
Clearwater Project No. CB018

Sample (ID)	Sampling Date	Analytical Method	TPH-d ($\mu g/m^3$)	B ($\mu g/m^3$)	T ($\mu g/m^3$)	E ($\mu g/m^3$)	m,pXylene ($\mu g/m^3$)	o-xylene ($\mu g/m^3$)
CTLS^^ Chronic Inhilation REL in $\mu g/m^3$			*No Data*	*60*	*300*	*2,000*	*700*	*700*
V2.2 Suma (200mL/mn*30mn)	11/15/2006	TO-15	NA	**41**	**43**	<7.9	**20**	**8.4**
V2.4 Suma (200mL/mn*30mn)	11/15/2006	TO-15	NA	<21*	<28*	<24*	<28*	<28*
V1.4 1L	11/15/2006	TO-17	**>150,000(S)**	NA	NA	NA	NA	NA
V1.4 4L	11/15/2006	NIOSH 1550	**580,000**	NA	NA	NA	NA	NA
V2.2 1L	11/15/2006	NIOSH 1550	**710,000**	NA	NA	NA	NA	NA
V2.2 4L	11/15/2006	NIOSH 1550	**180,000**	NA	NA	NA	NA	NA
V2.4 1L	11/15/2006	NIOSH 1550	**280,000**	NA	NA	NA	NA	NA
V2.4 4L	11/15/2006	NIOSH 1550	**700,000**	NA	NA	NA	NA	NA
V3.4 1L	11/15/2006	NIOSH 1550	**7,300,000**	NA	NA	NA	NA	NA
V3.4 4L	11/15/2006	NIOSH 1550	**570,000**	NA	NA	NA	NA	NA

Notes:

CTLS^^	Bay Area Air Quality Management District (June 15, 2005) Table 2-5-1 Toxic Air Contaminant Trigger Levels for chronic inhilation risk exposure level (REL)
V2.2 Suma (200mL/mn*30mn)	Vapor sample collected at 2 feet below ground surface using 6 liter Suma canister at a flow rate of 200 mL per minute for 30 minutes.
V2.4 Suma (200mL/mn*30mn)	Vapor sample collected at 4 feet below ground surface using 6 liter Suma canister at a flow rate of 200 mL per minute for 30 minutes.
V1.4 1L	Vapor sample collected at 4 feet below ground surface using TO-17 Carbotrap 300 tube at a flow rate of 66.7 mL per minute for 15 minutes. Sample was analyzed using modified EPA method TO-17.
V1.4 4L	Vapor sample collected at 4 feet below ground surface using TO-17 Carbotrap 300 tube at a flow rate of 133.3mL per minute for 30 minutes.

TABLE 2
SOIL VAPOR SAMPLING ANALYTICAL RESULTS
23rd Avenue Partners
1125 Miller Avenue
Oakland, CA
Clearwater Project No. CB018

Notes Continued

TO-15	Samples analyzed using modified EPA method TO-15 for air collected in specially prepared canisters and analyzed by gas chromatography/mass spectromerty (GC/MS).
TO-17	Samples analyzed using modified EPA method TO-17 for air samples collected using multi-bed sorbent tubes and analyzed by GC/MS.
NIOSH 1550	Alternative analytical method used for saturated sorbent tubes using chemical extraction (carbon disulfide) and analyzed using gass chromotography/flame ionization detector (GC/FID).
> ## (S)	Sample results are flagged as greater than saturated peak for analyte.
1L	Sample flow rate equal to 66.7 mililiters a minute for 15 minutes.
4L	Sample flow rate equal to 133.3 mililiters a minute for 30 minutes.
($\mu g/m^3$)	Micrograms per cubic meter
(μg)	Micrograms
TPH-d	Total petroleum hydrocarbons detected within the diesel range of C10-C28
B	Benzene
T	Toluene
E	Ethylbenzene
NA	Constituent not analyzed.

The samples were determined to be at slightly elevated at 12.5°C. According to Air Toxics in most cases elevated temperatures may cause volatile organic compounds to diffuse to the stronger sorbent in the multibed tube making it more difficult to thermally desorb. However since chemical extraction was used rather than thermal desoprtion and the constituent of concern was TPH-d the slightly elevated temperature is unlikely to result in any measurable loss.

ATTACHMENT A

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

August 4, 2006

Mr. Dermot O'Doherty
P&D 23rd Avenue Associates
P.O. Box 687
Oakland, CA 94604

Subject: Fuel Leak Case No. RO0000294, 1125 Miller Avenue, Oakland, CA – Work Plan Approval

Dear Mr. O'Doherty:

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case file for the above-referenced site and the document entitled, "Response to Agency Comments Addendum," dated July 14, 2006, prepared on your behalf by Clearwater Group. The "Response to Agency Comments Addendum," adequately addresses the technical comments regarding soil vapor sampling presented in ACEH's June 13, 2006 correspondence. Therefore, we request that you perform the proposed work and send us the reports described below.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **December 4, 2006** – Soil Vapor and Soil Boring Sampling Report

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

Effective **January 31, 2006**, the Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program ftp site are provided on the attached "Electronic Report Upload (ftp) Instructions." Please do not submit reports as attachments to electronic mail.

Submission of reports to the Alameda County ftp site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. Submission of reports to the Geotracker website does not fulfill the requirement to submit documents to the Alameda County ftp site. In September 2004, the

SWRCB adopted regulations that require electronic submittal of information for groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 567-6791.

Sincerely,

Jerry Wickham
Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Jessica Chiaro-Moreno
Clearwater Group
229 Tewksbury Avenue
Point Richmond, CA 94801

Donna Drogos, ACEH
Jerry Wickham, ACEH
File

Rec. 6-15-06

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

June 13, 2006

Mr. Dermot O'Doherty
P&D 23rd Avenue Associates
P.O. Box 687
Oakland, CA 94604

Subject: Fuel Leak Case No. RO0000294, 1125 Miller Avenue, Oakland, CA

Dear Mr. Pelton:

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case file for the above-referenced site and the document entitled, "Response to Agency Comments," dated May 31, 2006, prepared on your behalf by Clearwater Group. The "Response to Agency Comments," addresses technical comments presented in ACEH's March 24, 2006 correspondence. ACEH's March 24, 2006 correspondence requested a proposal to conduct additional work that may be required to evaluate the potential for residual product in shallow soil to create nuisance odors inside the building or pose a potential human health risk due to indoor vapor intrusion. In response to this request, the "Response to Agency Comments," proposes soil vapor sampling at three locations and three shallow soil borings in the portion of the building adjacent to the former dispenser. We concur with the proposed scope of work but request that you submit a Work Plan Addendum describing the proposed soil vapor sampling methods in greater detail.

We request that you address the following technical comments, perform the proposed work, and send us the reports described below.

TECHNICAL COMMENTS

1. **Soil Vapor Sampling.** Sampling onto sorbent tubes is proposed for the soil vapor samples. If sampling onto sorbent tubes is proposed for all samples, we request that duplicate soil vapor samples be collected in Suma canisters for the two soil vapor samples at proposed location V2.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **July 14, 2006** – Work Plan Addendum

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the

responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

Effective **January 31, 2006**, the Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program ftp site are provided on the attached "Electronic Report Upload (ftp) Instructions." Please do not submit reports as attachments to electronic mail.

Submission of reports to the Alameda County ftp site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. Submission of reports to the Geotracker website does not fulfill the requirement to submit documents to the Alameda County ftp site. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting).

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 567-6791.

Sincerely,

Jerry Wickham
Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Jessica Chiaro-Moreno
Clearwater Group
229 Tewksbury Avenue
Point Richmond, CA 94801

Donna Drogos, ACEH
Jerry Wickham, ACEH
File

ATTACHMENT B

Alameda County Public Works Agency - Water Resources Well Permit

399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 11/06/2006 By jamesy

Permit Numbers: W2006-0943
Permits Valid from 11/15/2006 to 11/16/2006

Application Id:	1162514231251	**City of Project Site:** Oakland
Site Location:	1125 Miller Avenue, Oakland CA	
	Three 2-inch soil borings to 4 feet for soil and vapor sample collection. Boring location behind roll up door in within building perimeter	
Project Start Date:	11/15/2006	**Completion Date:** 11/16/2006
Applicant:	Clearwater Group - Olivia Jacobs 229 Tewksbury Avenue, Pt. Richmond, CA 94801	**Phone:** 510-590-1096
Property Owner:	Attn: Dermot O'Doherty P&D 23rd Avenue Associates P.O. Box 687, Oakland, CA 94612	**Phone:** 510-452-2944
Client:	** same as Property Owner **	
Contact:	Jessica Moreno	**Phone:** 510-590-1096 **Cell:** --

	Total Due:	$200.00
Receipt Number: WR2006-0498	**Total Amount Paid:**	$200.00
Payer Name : Olivia Jacobs	Paid By: VISA	**PAID IN FULL**

Works Requesting Permits:

Borehole(s) for Geo Probes-Sampling 24 to 72 hours only - 6 Boreholes
Driller: Fast-Tek Engineering and Support Services - Lic #: 624461 - Method: DP **Work Total: $200.00**

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2006-0943	11/06/2006	02/13/2007	6	2.00 in.	4.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site.

2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

4. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

5. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

6. No Inspector Assigned to this site.
Applicant shall contact this office by email at wells@acpwa.org and certify in writing that work was completed and according to County Standards within 5 working days after the completion of work.

ATTACHMENT C

CLEARWATER GROUP

Direct-Push Drilling Investigation Procedures

The direct push method of soil boring has several advantages over hollow-stem auger drill rigs. The direct push method produces no drill cuttings and is capable of 150 to 200 feet of boring or well installation per work day. Direct push can be used for soil gas surveys, soil sampling, groundwater sampling, installation of small-diameter monitoring wells, and components of remediation systems such as air sparge points. The equipment required to perform direct push work is varied ranging from a roto-hammer and operator to a pickup truck-mounted rig capable of substantial static downward force combined with percussive force. This method allows subsurface investigation work to be performed in areas inaccessible to conventional drill rigs such as in basements, beneath canopies, or below power lines. Direct push equipment is ideal at sites with unconsolidated soil or overburden, and for sampling depths of less than 30 feet. This method is not appropriate for boring through bedrock or gravelly soils.

Permitting and Site Preparation

Prior to direct push boring work, Clearwater Group will obtain all necessary permits and locate all underground and above ground utilities through Underground Service Alert (USA) and a thorough site inspection. All drilling equipment will be inspected daily and will be maintained in safe operating condition. All down-hole drilling equipment will be cleaned prior to arriving on-site. Working components of the rig near the borehole, as well as driven casing and sampling equipment will be thoroughly decontaminated between each boring location by either steam cleaning or washing with an Alconox® solution. All drilling and sampling methods will be consistent with ASTM Method D-1452-80 and county, state and federal regulations.

Boring Installation and Soil Sampling

Direct push uses a 1.5-inch outer barrel with an inner rod held in place during pushing. Soil samples are collected by penetrating to the desired depth, retracting the inner rod and attaching a spoon sampler. The sampler is then thrust beyond the outer barrel into native soil. Soil samples are recovered in brass or stainless containers lining the spoon.

Soil removed from the upper tube section is used for lithologic descriptions (according to the unified soil classification system) and for organic vapor field analysis. If organic vapors will be analyzed in the field, a portion of each soil sample will be placed in a plastic zip-lock bag. The bag will be sealed and warmed for approximately 10 minutes to allow vapors to be released from the soil sample and diffuse into the head space of the bag. The bag is then pierced with the probe of a calibrated organic vapor detector. The results of the field testing will be noted with the lithologic descriptions on the field exploratory soil boring log. Soil samples selected for laboratory analysis will be covered on both ends with Teflon™ tape and plastic end caps. The samples will then be labeled, documented on a chain-of-custody form and placed in a cooler for transport to a state certified analytical laboratory.

Temporary Well Installation and Groundwater Sampling

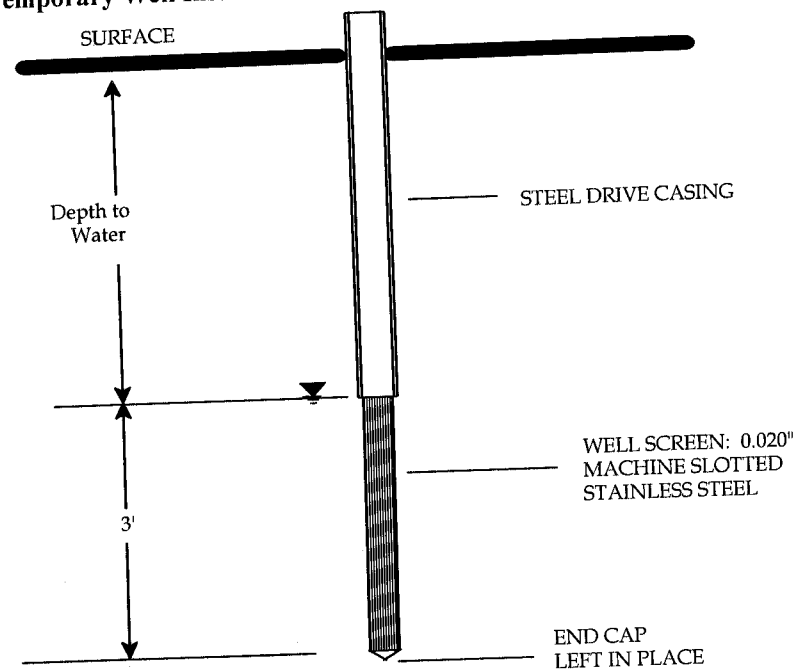


Figure 1

Groundwater samples are collected by removing the inner rod and attaching a 4-foot stainless steel screen with a drive point at the end (Figure 1). The screen and rod are then inserted in the outer barrel and driven to the desired depth where the outer rod is retracted to expose the screen. If enough water for sampling is not produced through the stainless well screen, a 1-inch PVC screen can be installed in the boring and the outer rod retracted to leave a temporary well point for collecting groundwater samples or water levels.

Monitoring Well Installation and Development

Permanent small-diameter monitoring wells are installed by driving the outer barrel and inner rod as described above. Upon reaching the desired depth the system is removed and 2-inch OD (1/2-inch ID) pre-packed PVC piping is installed. The well plug is created using granular bentonite. The well seal is constructed of cement and sealed at the surface with a conventional "Christy® Box" or similar vault. Monitoring wells are developed by surging the well with a small diameter bailer and removing 3 to 5 casing volumes of water until the produced water is clear.

Groundwater Sample Collection and Water Level Measurement

Prior to collecting groundwater from the wells the water levels are measured in all wells using an electronic water level gauge. Monitoring wells are prepared for sampling by purging three well bore volumes of water. Water is removed using small diameter bailers, a peristaltic pump, or manually using tubing with a check valve at the bottom. During removal of each volume, the temperature, pH and conductivity are measured and recorded on the field sampling form. Successive well volumes are removed until the parameters have stabilized or the well has gone dry. Prior to sampling, the well is allowed to recover to within 90% of the stabilized water levels.

Groundwater samples[1] are collected using small diameter bailers. The samples are decanted into laboratory supplied containers, labeled, recorded on a chain-of-custody form and placed on ice for transport to a certified laboratory.

[1] Small diameter wells often produce small sample quantities and are appropriate for analysis of volatile and aromatic compounds and dissolved metals analysis using VOA vials. Obtaining liter-size samples can be difficult and time consuming. Monitoring wells installed by the direct push method are most effective at sites where the subsurface soils are more coarse than silt, gasoline components are the key contaminants of concern, and water levels are not more than 25 feet below ground surface.

CLEARWATER GROUP

Soil Sampling Procedures

Soil samples are typically collected in six-inch long, two-inch diameter brass tubes. If copper or zinc contamination is the subject of the investigation, stainless steel liners are used instead of brass. Soil sample locations are typically selected by field screening a portion of the soil for organic vapors using a calibrated organic vapor meter.

Once the sampling location has been determined, a small thickness of superficial soil is removed prior to collection, to prevent cross contamination. If the location being sampled has been exposed to the air for more than a few minutes, hand-tools will be used to dig at least 12 inches into the soil in order to collect as fresh a sample as possible. The sample is collected by pushing the tube into the soil by hand, or a rubber mallet may be used if the tube can not be driven by hand. If it is not possible to drive the tube into the soil, loose soil may be scraped from the freshly exposed surface and placed in the tube by hand.

Soil samples may also be collected using a hand auger and a slide hammer-driven sampler. The hand auger is advanced the desired depth into the soil, then withdrawn and replaced with the slide hammer sampler. The slide hammer sampler contains a 6-inch long by 2-inch diameter brass sample liner (or two 3-inch long liners) inserted inside the threaded core barrel, which is attached to the slide hammer by an extension rod. The core barrel is driven into the soil by the slide hammer, then withdrawn, unscrewed, and the sample liner removed.

Soil samples selected for laboratory analysis are immediately sealed on both ends with Teflon® lined plastic end caps, labeled, documented on a chain-of-custody form, and placed in a chilled cooler for transport to a state-certified laboratory.

To prevent cross-contamination of the samples, Clearwater personnel adhere to the following procedures in the field:

- A new, clean pair of latex or nitrile gloves are donned prior to collecting each sample.
- All hand-digging and sampling equipment is thoroughly decontaminated between each sample, by scrubbing equipment in a wash of Alconox® solution, followed by a double rinse in potable water. If required the second rinse will consist of distilled water.

ATTACHMENT D

CLEARWATER GROUP
Environmental Services

Field Event Forms

Task Description	**As Each Task is completed enter the time.**
Arrive Onsite	
Set Caution Tape Perimeter	~~0925~~ 0830
PID Ambient Air Inside Roll up Door	Reading: 0 / 0915
Set Drill Rig on Vapor Location V'	0915
PID Ambient Air	Reading: 0 / 0915
Set exhaust diverter	
PID Ambient Air	Reading:
Use Roto Hammer/tile probe	
Drill to 2 feet bgs	0920
Set vapor point	0930
Form ambient air barrier	
Attach pump one	
Purge line till flow rate steady at 66.7 mL/min	~~935~~ Start: End: 0930 No flow
Attach V1.2 1L Sample	Start: End: disconnect pump one
Attach pump two	0940 no flow
Purge line till flow rate steady at 133.3mL/min	Start: 0940 End: 0945
Attach V1.2 4L Sample	Start: End: disconnect pump 2
Remove Ambient Air Barrier	
Drill to 4 feet bgs	950

CLEARWATER GROUP
Environmental Services

Field Event Forms

Task Description **As Each Task is completed enter the time.**

Set Vapor point 950

PID Ambient Air Reading: 0

Form ambient air barrier 955

Attach pump one 955

Purge line till flow rate steady at 66.7 mL/min Start: 955 End: 1002

Attach V1.4 1L Sample Start: 1003 End: 1018 Remove Sample Tube ✓

Return Sample to Glass House, Insert Cotton ends, Label end time on Sample Label, and Airtoxics COC

Attach pump two

Purge line till flow rate steady at 133.3mL/min Start: 1015 End: 1028

Attach V1.4 4L Sample Start: 1018 End: 1048 Remove Sample Tube 1048

Return Sample to Glass House, Insert Cotton ends, Label end time on Sample Label, and Airtoxics COC

Remove Ambient Air Barrier 1050

Remove vapor point 1050

Use Roto Hammer/tile probe on S9 location

Set Drill Rig on S9 drill continuous core to 4 ft Start: 1050 End: 1055

Cut Soil Core Into 6 inch Sections, PID each Section, Retain All for Laboratory Anaysis

Label Sections S9.0.06, S9.1.0, S9.1.06, S9.2.0, S9.2.06, S9.3.0, S9.3.06, S9.4.0

S9.0.06 through S9.3.6-Will be held at lab till further notice Sample time 11[am]

S9.4.0-Submit for analysis of TPHd by 8015, and BTEX by 5035

CLEARWATER GROUP
Environmental Services

Field Event Forms

Task Description **As Each Task is completed enter the time.**

Set Drill Rig on Vapor Location V3

PID Ambient Air Reading: 0

Set exhaust diverter

PID Ambient Air Reading: 0

Use Roto Hammer/tile probe 1110

Drill to 2 feet bgs 1115

Set vapor point 1116

Form ambient air barrier 1116

Attach pump one 1116

Purge line till flow rate steady at 66.7 mL/min Start: 1116 End: 1118 No flow

Attach V3.2 1L Sample Start: End: disconnect pump one

Attach pump two

Purge line till flow rate steady at 133.3mL/min Start: 1118 End: 1120 No flow

Attach V3.2 4L Sample Start: End: disconnect pump 2

Remove Ambient Air Barrier

Drill to 4 feet bgs 1122

Set Vapor point 1122

PID Ambient Air Reading: 0

CLEARWATER GROUP
Environmental Services

Field Event Forms

Task Description **As Each Task is completed enter the time.**

Form ambient air barrier

Attach pump one 1123

Purge line till flow rate steady at 66.7 mL/min Start: 1123 End: 1125

Attach V3.4 1L Sample Start: 1125 1130 End: 1140 1145 Remove Sample Tube 1145

Return Sample to Glass House, Insert Cotton ends, Label end time on Sample Label, and Airtoxics COC

Attach pump two 1146

Purge line till flow rate steady at 133.3mL/min ~~1146~~ Start: 1146 End: 1149

Attach V3.4 4L Sample Start: 1150 End: 1220 Remove Sample Tube

Return Sample to Glass House, Insert Cotton ends, Label end time on Sample Label, and Airtoxics COC

Remove Ambient Air Barrier

Remove vapor point

Use Roto Hammer/tile probe on S11 location

Set Drill Rig on S11 drill continuous core to 4 ft Start: 1228 End: 1230

Cut Soil Core Into 6 inch Sections, PID each Section, Retain All for Laboratory Anaysis

Label Sections S11.0.06, S11.1.0, S11.1.06, S11.2.0, S11.2.06, S11.3.0, S11.3.06, S11.4.0

S11.0.06 through S11.3.6-Will be held at lab till further notice

S11.4.0-Submit for analysis of TPHd by 8015, and BTEX by 5035

NOTE: While Vapor samples are collected, please grout V1 and S9- No inspector assigned from ACPW

CLEARWATER GROUP
Environmental Services

Field Event Forms

Task Description **As Each Task is completed enter the time.**

Set Drill Rig on Vapor Location V2

PID Ambient Air Reading: 0

Set exhaust diverter

PID Ambient Air Reading: 0 1129

Use Roto Hammer/tile probe

Drill to 2 feet bgs 1230

Set vapor point 1235

Form ambient air barrier 1235

Attach pump one 1233

Purge line till flow rate steady at 66.7 mL/min Start: 1240 End: 1245

Attach V2.2 1L Sample Start: 1245 End: 1300 disconnect pump one

Attach pump two 1300

Purge line till flow rate steady at 133.3mL/min 1300 Start: 1334 End:

Attach V2.2 4L Sample Start: 1305 End: 1335 disconnect pump 2 1335

Attach Air Flow valve and Suma Canister (V2.2) , set valve at 200mL/mn, collect for 30 min

Start: 1350 End: 1430 disconnect set up

Remove Ambient Air Barrier

Drill to 4 feet bgs

CLEARWATER GROUP
Environmental Services

Field Event Forms

Task Description **As Each Task is completed enter the time.**

Set Vapor point ~~1440~~ RN 1420

PID Ambient Air Reading: 0

Form ambient air barrier 1420

Attach pump one 1425

Purge line till flow rate steady at 66.7 mL/min 1425 Start: 1425 End: 1429

Attach V2.4 1L Sample Start: 1430 End: 1445 Remove Sample Tube

Return Sample to Glass House, Insert Cotton ends, Label end time on Sample Label, and Airtoxics COC

Attach pump two 1446

Purge line till flow rate steady at 133.3mL/min Start: 1446 End: 1450

Attach V2.4 4L Sample Start: 1450 End: 1520 Remove Sample Tube

Return Sample to Glass House, Insert Cotton ends, Label end time on Sample Label, and Airtoxics COC

Attach Air Flow valve and Suma Canister (V2.4) , set valve at 200mL/mn, collect for 30 min

Start: 1525 End: 1555 disconnect set up

Remove Ambient Air Barrier 1600

Remove vapor point 1600

Use Roto Hammer/tile probe on S10 location 1601

Set Drill Rig on S10 drill continuous core to 4 ft Start: End: 1605

Cut Soil Core Into 6 inch Sections, PID each Section, Retain All for Laboratory Anaysis

CLEARWATER
GROUP
Environmental Services

Field Event Forms

Task Description **As Each Task is completed enter the time.**

Label Sections S10.0.06, S10.1.0, S10.1.06, S10.2.0, S10.2.06, S10.3.0, S10.3.06, S10.4.0

S10.0.06 through S10.3.6-Will be held at lab till further notice

S10.4.0-Submit for analysis of TPHd by 8015, and BTEX by 5035

NOTE: While Vapor samples are collected, please grout V3 and S11- No inspector assigned from ACPW

Upon collecting S10.4.0, grout V2 and S10.

Clean Up site, laod all equipment and samples, CALL PM

Departure time: 1645

NOTES

CLEARWATER
GROUP
Environmental Services

Field Event Forms

Task Description **As Each Task is completed enter the time.**

NOTES

ATTACHMENT E

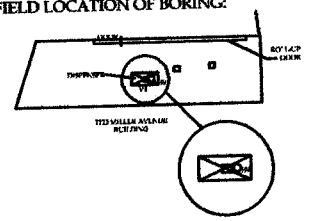
SOIL BORING AND WELL CONSTRUCTION LOG:

Project No. CB018F

Sheet 1 of 1

CLEARWATER GROUP

FIELD LOCATION OF BORING:



CLIENT/LOCATION:	JOB NO#.	PROJ. MANAGER:	BORING/WELL NO.:
1125 Miller Oakland	CB018F	Rob Nelson	S9
DRILLING CONTRACTOR:	**DRILL RIG TYPE:**	**WELL DEPTH:**	**BORING DIAMETER:**
Fast-Tek	GeoProbe	NA	2"
DRILL RIG OPERATOR:	**WELL MATERIAL:**	**BORING DEPTH:**	**FILTER PACK:**
Eric Austin	NA	4.0'	NA
			DRILLING DATE: 11-15-06

SAMPLING METHOD: GeoProbe

MONITORING INSTRUMENT: Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: not encountered

STATIC WATER DEPTH - DATE: not encountered

WELL CONSTRUCTION DETAIL	SAMPLE DEPTH	SAMPLE TYPE	BLOWS/6" INTERVAL	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION	DRILLING RATE (min/ft)	ODOR	PID	DEPTH (FEET)	GRAPHIC LOG
				48	44	G			1100	1	
										2	
										3	
										4	
										5	
										6	
										7	
										8	
										9	
										10	
										11	
										12	
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										24	
										25	
										26	
										27	
										28	
										29	
										30	

3" Concrete
2" Sand

Sandy lean clay (CL), very dark grayish brown (2.5 y 3/2), Soft, Moist, trace of roots, trace of fine subrounded gravel, faint petroleum odor, 60% lean clay, 20% silt, 20% fine sand.

Total depth 4.0'

REGISTERED GEOLOGIST
ROBERT L. NELSON
No. 2087
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

FINISH:

DRILLING START: 16:45am

LOGGED BY: Rob Nelson

APPROVED BY:

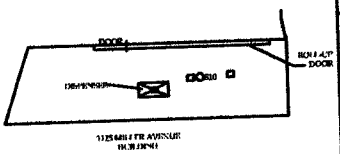
\\Tagi\Shares\Department\Jobs\CB018 Miller Ave\Boring Logs\S9

SOIL BORING AND WELL CONSTRUCTION LOG:

Project No. CB018F

Sheet 1 of 1

CLEARWATER GROUP

FIELD LOCATION OF BORING:	CLIENT/LOCATION: 1125 Miller Oakland	JOB NO#. CB018F	PROJ. MANAGER: Rob Nelson	BORING/WELL NO.: S10
	DRILLING CONTRACTOR: Fast-Tek	DRILL RIG TYPE: GeoProbe	WELL DEPTH: NA	BORING DIAMETER: 2"
	DRILL RIG OPERATOR: Eric Austin	WELL MATERIAL: NA	BORING DEPTH: 4.0'	FILTER PACK: NA
				DRILLING DATE: 11-15-06

SAMPLING METHOD: GeoProbe

MONITORING INSTRUMENT: Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: not encountered

STATIC WATER DEPTH - DATE: not encountered

WELL CONSTRUCTION DETAIL	SAMPLE DEPTH	SAMPLE TYPE	BLOWS/6" INTERVAL	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION	DRILLING RATE (min/ft)	ODOR	PID	DEPTH (FEET)	GRAPHIC LOG
				48	40	G			30	4	

3" Concrete
Sand

Sandy lean clay (CL), very dark grayish brown (2.5 y 3/2), Soft, Moist, trace of roots, trace of fine subrounded gravel, faint petroleum odor, 50% lean clay, 25% silt, 25% fine sand.

Total depth 4.0'

REGISTERED GEOLOGIST
ROBERT L. NELSON
No. 2087
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

FINISH:

DRILLING START: 16:45am

LOGGED BY: Rob Nelson

APPROVED BY:

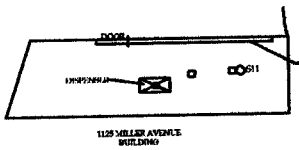
\\Tagi\Shares\Department\Jobs\CB018 Miller Ave\Boring Logs\S10

SOIL BORING AND WELL CONSTRUCTION LOG:

Project No. CB018F

Sheet 1 of 1

CLEARWATER GROUP

FIELD LOCATION OF BORING:	CLIENT/LOCATION: 1125 Miller Oakland	JOB NO#. CB018F	PROJ. MANAGER: Rob Nelson	BORING/WELL NO.: S11
	DRILLING CONTRACTOR: Fast-Tek	DRILL RIG TYPE: GeoProbe	WELL DEPTH: NA	BORING DIAMETER: 2"
	DRILL RIG OPERATOR: Eric Austin	WELL MATERIAL: NA	BORING DEPTH: 4.0'	FILTER PACK: NA
				DRILLING DATE: 11-15-06

SAMPLING METHOD: GeoProbe

MONITORING INSTRUMENT: Photoionization Detector

FIRST ENCOUNTERED WATER DEPTH: not encountered

STATIC WATER DEPTH - DATE: not encountered

WELL CONSTRUCTION DETAIL	SAMPLE DEPTH	SAMPLE TYPE	BLOWS/6" INTERVAL	INCHES DRIVEN	INCHES RECOVERED	SAMPLE CONDITION	DRILLING RATE (min/ft)	ODOR	PID	DEPTH (FEET)	GRAPHIC LOG
										1	
										2	
										3	
				48	40	G			40	4	
										5	
										6	
										7	
										8	
										9	
										10	
										11	
										12	
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										28	
										29	
										30	

3" Concrete
Sand

Sandy lean clay (CL), very dark grayish brown (2.5 y 3/3), Soft, Moist, trace of roots, trace of fine subrounded gravel, faint petroleum odor, 50% lean clay, 25% silt, 25% fine sand.

Total depth 4.0'

REGISTERED GEOLOGIST
ROBERT L. NELSON
No. 2087
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

FINISH:

DRILLING START: 10:45am

LOGGED BY: Rob Nelson

APPROVED BY:

\\Tagi\Shares\Department\Jobs\CB018 Miller Ave\Boring Logs\S11

ATTACHMENT F

KIFF Analytical LLC

Report Number : 53371
Date : 11/22/2006

Jessica Moreno
Clearwater Group, Inc.
229 Tewksbury Avenue
Point Richmond, CA 94801

Subject : 3 Soil Samples
Project Name : P+D 23rd Ave Associates
Project Number : CB018F

Dear Ms. Moreno,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

KIFF Analytical LLC

Report Number : 53371
Date : 11/22/2006

Subject : 3 Soil Samples
Project Name : P+D 23rd Ave Associates
Project Number : CB018F

Case Narrative

Matrix Spike/Matrix Spike Duplicate Results associated with samples S11.4.0, S10.4.0 and S9.4.0 for the analyte TPH as Diesel were outside of control limits. This may indicate a bias for the sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

Approved By: Joel Kiff

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

KIFF Analytical LLC

Report Number : 53371

Date : 11/22/2006

Project Name : **P+D 23rd Ave Associates**

Project Number : **CB018F**

Sample : **S9.4.0** Matrix : Soil Lab Number : 53371-04

Sample Date :11/15/2006

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	11/17/2006
Toluene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	11/17/2006
Ethylbenzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	11/17/2006
Total Xylenes	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	11/17/2006
Toluene - d8 (Surr)	99.9		% Recovery	EPA 8260B	11/17/2006
4-Bromofluorobenzene (Surr)	95.2		% Recovery	EPA 8260B	11/17/2006
TPH as Diesel	**7500**	10	mg/Kg	M EPA 8015	11/22/2006
1-Chlorooctadecane (Diesel Surrogate)	113		% Recovery	M EPA 8015	11/22/2006

Sample : **S11.4.0** Matrix : Soil Lab Number : 53371-07

Sample Date :11/15/2006

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	11/16/2006
Toluene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	11/16/2006
Ethylbenzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	11/16/2006
Total Xylenes	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	11/16/2006
Toluene - d8 (Surr)	97.9		% Recovery	EPA 8260B	11/16/2006
4-Bromofluorobenzene (Surr)	105		% Recovery	EPA 8260B	11/16/2006
TPH as Diesel	**21**	1.0	mg/Kg	M EPA 8015	11/21/2006
1-Chlorooctadecane (Diesel Surrogate)	111		% Recovery	M EPA 8015	11/21/2006

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

KIFF Analytical LLC

Report Number : 53371

Date : 11/22/2006

Project Name : **P+D 23rd Ave Associates**

Project Number : **CB018F**

Sample : **S10.4.0** Matrix : Soil Lab Number : 53371-11

Sample Date :11/15/2006

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	11/17/2006
Toluene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	11/17/2006
Ethylbenzene	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	11/17/2006
Total Xylenes	**< 0.0050**	0.0050	mg/Kg	EPA 8260B	11/17/2006
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	11/17/2006
4-Bromofluorobenzene (Surr)	93.7		% Recovery	EPA 8260B	11/17/2006
TPH as Diesel	**930**	5.0	mg/Kg	M EPA 8015	11/21/2006
1-Chlorooctadecane (Diesel Surrogate)	105		% Recovery	M EPA 8015	11/21/2006

Approved By: Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

Report Number : 53371

Date : 11/22/2006

QC Report : Method Blank Data

Project Name : **P+D 23rd Ave Associates**

Project Number : **CB018F**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	< 1.0	1.0	mg/Kg	M EPA 8015	11/17/2006
1-Chlorooctadecane (Diesel Surrogate)	86.0		%	M EPA 8015	11/17/2006
Benzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	11/16/2006
Toluene	< 0.0050	0.0050	mg/Kg	EPA 8260B	11/16/2006
Ethylbenzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	11/16/2006
Total Xylenes	< 0.0050	0.0050	mg/Kg	EPA 8260B	11/16/2006
Toluene - d8 (Surr)	98.1		%	EPA 8260B	11/16/2006
4-Bromofluorobenzene (Surr)	107		%	EPA 8260B	11/16/2006

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 53371

Date : 11/22/2006

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **P+D 23rd Ave Associates**

Project Number : **CB018F**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
TPH as Diesel	53358-02	6.7	20.0	20.0	21.8	31.6	mg/Kg	M EPA 8015	11/17/06	81.8	118	36.5	60-140	25
Benzene	53324-16	<0.0050	0.0398	0.0399	0.0364	0.0371	mg/Kg	EPA 8260B	11/16/06	91.5	93.0	1.64	70-130	25
Toluene	53324-16	<0.0050	0.0398	0.0399	0.0366	0.0374	mg/Kg	EPA 8260B	11/16/06	91.9	93.8	2.02	70-130	25
Methyl-t-Butyl Ether	53324-16	<0.0050	0.0398	0.0399	0.0296	0.0304	mg/Kg	EPA 8260B	11/16/06	74.5	76.2	2.21	70-130	25

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Report Number : 53371

Date : 11/22/2006

QC Report : Laboratory Control Sample (LCS)

Project Name : **P+D 23rd Ave Associates**

Project Number : **CB018F**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
TPH as Diesel	20.0	mg/Kg	M EPA 8015	11/17/06	81.5	70-130
Benzene	0.0400	mg/Kg	EPA 8260B	11/16/06	92.2	70-130
Toluene	0.0400	mg/Kg	EPA 8260B	11/16/06	92.5	70-130
Methyl-t-Butyl Ether	0.0400	mg/Kg	EPA 8260B	11/16/06	75.1	70-130

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

January 05, 2007

CLS Work Order #: CQA0092
COC #: 53371

Troy Turpen
KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project Name: P+D 23rd Ave Associates

Enclosed are the results of analyses for samples received by the laboratory on 01/04/07 09:18. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

01/05/07 11:03

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: P+D 23rd Ave Associates
Project Number: CB018F
Project Manager: Troy Turpen

CLS Work Order #: CQA0092
COC #: 53371

CQA0092

KIFF Analytical LLC
2795 Second Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4808

California Lab Services
3249 Fitzgerald Rd.
Rancho Cordova, CA 95742
tel: (916) 638-7301 COC# 53371 Page 1 of 1

Project Contact (Hardcopy or PDF to): Troy Turpen
Company/Address: Kiff Analytical, LLC
Phone No.: FAX No.:
Project Number: CB018F
P.O. No.: 53371
Project Name: P+D 23rd Ave Associates
Project Address: 1125 Miller Ave. Oakland, CA

EDF Report? ___ Yes _X_ No
Recommended but not mandatory to complete this section:
Sampling Company Log Code:
Global ID:
EDF Deliverable to (Email Address):
E-mail address: inbox@kiffanalytical.com

Chain-of-Custody Record and Analysis Request

Sample Designation	Sampling Date	Sampling Time	Container: Glass Jar	Container: Poly	Container: Amber	Container: Other	Preservative: HCl	Preservative: HNO3	Preservative: ICE	Preservative: NONE	Preservative: Na2S2O3	Matrix: WATER	Matrix: SOIL	Analysis Request: BTEX	Date due: January 5, 2007	For Lab Use Only
Composite (S9.4, S11.4, S10.4)	11/15/06		1							X			X	X	X	

Relinquished by: [signature] Date: [illegible] Time: 0915 Received by:
Relinquished by: Date: Time: Received by:
Relinquished by: Date: 11-17 Time: 0938 Received at Laboratory: 3°

Remarks:

Bill to: Accounts Payable

CALIFORNIA LABORATORY SERVICES

01/05/07 11:03

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: P+D 23rd Ave Associates
Project Number: CB018F
Project Manager: Troy Turpen

CLS Work Order #: CQA0092
COC #: 53371

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Composite (S9.4, S11.4, S10.4) (CQA0092-01) Soil	**Sampled: 11/15/06 00:00**			**Received: 01/04/07 09:18**					
pH	**7.35**	1.00	pH Units	1	CQ00112	01/04/07	01/04/07	EPA 9045C	

CALIFORNIA LABORATORY SERVICES

01/05/07 11:03

KIFF Analytical
2795 Second St. Suite 300
Davis, CA 95616

Project: P+D 23rd Ave Associates
Project Number: CB018F
Project Manager: Troy Turpen

CLS Work Order #: CQA0092
COC #: 53371

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

CALIFORNIA LABORATORY SERVICES

01/05/07 11:03

KIFF Analytical	Project: P+D 23rd Ave Associates	
2795 Second St. Suite 300	Project Number: CB018F	**CLS Work Order #: CQA0092**
Davis, CA 95616	Project Manager: Troy Turpen	COC #: 53371

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

KIFF Analytical LLC

2795 2nd Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4802

SRG # / Lab No. 53371

Page 1 of 3

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Jessica Moreno

California EDF Report? ☑ Yes ☐ No

Company / Address: ClearwaterGroup 229 Tewksbury Ave, Pt. Richmond

Sampling Company Log Code: CWGO

Phone #: 510-590-1096 Fax #: 510-232-2823

Global ID: T0600177455

Project #: CB018F P.O. #:

EDF Deliverable To (Email Address): JPOPP@ClearwaterGroup.com

Project Name: PDD 23rd Ave Associates

Sampler Signature: Robert L. Nolan

Project Address: 1125 Miller Ave Oakland, CA

Sample Designation	Sampling: Date	Sampling: Time	Container: 40 ml VOA	Container: Sleeve	Container: Poly	Container: Glass	Container: Tedlar	Container: 5035 Sampler	Preservative: HCl	Preservative: HNO_3	Preservative: None	Preservative: Ice	Preservative: Dry Ice	Matrix: Water	Matrix: Soil	Matrix: Air	MTBE (EPA 8260B) per EPA 8021 level @ 5.0 ppb	MTBE (EPA 8260B) @ 0.5 ppb	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	5 Oxygenates (EPA 8260B)	7 Oxygenates (EPA 8260B)	Lead Scav.(1,2 DCA & 1,2 EDB-EPA 8260B)	Volatile Halocarbons (EPA 8260B)	Volatile Organics Full List (EPA 8260B)	Volatile Organics (EPA 524.2 Drinking Water)	TPH as Diesel (EPA 8015M)	TPH as Motor Oil (EPA 8015M)	Total Lead (EPA 6010)	W.E.T. Lead (STLC)	BTEX 5035	HOLD	TAT	For Lab Use Only
S9.0.06	11/15	1055		X								X			X																	X	☐ 12 hr ☐ 24 hr ☐ 48 hr ☐ 72 hr ☑ 1 wk	01
S9.1.0		1056																														X		02
S9.1.06		1057																														X		03
~~S9.2.0~~		~~RN~~																																
~~S9.2.06~~		~~RN~~																																
~~S9.3.0~~		~~RN~~																																
~~S9.3.06~~		~~RN~~																																
S9.4.0	✓	1100		X				3				X	X		X												X				X			04

SAMPLE RECEIPT
Temp °C 3.0 Therm. ID# IR-5
Initial RLM Date 11/16/06
Time 1523 Coolant present: Yes No
Cooler #1 with wet ice

Relinquished by:	Date	Time	Received by:
Robert L. Nolan	11-15-2006		
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	111606	1124	Ron McLee Kiff Analytical

Remarks:
~~Hold Samples S9.0.06 thru~~ RN
~~S9.3.06 till further notice~~
Homogenize sample S9.4.0

Bill to:

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
3.0	RLM	111606	1523	IR-5	(Yes) No

Cooler #1 with wet ice

Distribution: White - Lab; Pink - Originator
Rev: 051805

KIFF Analytical LLC

2795 2nd Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4802

SRG # / Lab No. 53371

Page 2 of 3

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Jessica Moreno	California EDF Report? ☑ Yes ☐ No
Company / Address: Clearwater Group 229 Tewksbury Ave, Pt. Richmond	Sampling Company Log Code: CWGO
Phone #: 510-590-1096 Fax #: 510-232-2825	Global ID: T0600177455
Project #: CB018F P.O. #:	EDF Deliverable To (Email Address): JPOPP@Clearwatergroup.com
Project Name: P&D 23rd Ave Associates	Sampler Signature: Robert Z. Nelson
Project Address: 1125 Miller Ave Oakland, CA	

Sample Designation	Sampling: Date	Sampling: Time	Container: 40 ml VOA	Container: Sleeve	Container: Poly	Container: Glass	Container: Tedlar	Container: 5035 sampler	Preservative: HCl	Preservative: HNO_3	Preservative: None	Preservative: Ice	Preservative: Dry ice	Matrix: Water	Matrix: Soil	Matrix: Air	MTBE (EPA 8260B) per EPA 8021 level @ 5.0 ppb	MTBE (EPA 8260B) @ 0.5 ppb	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	5 Oxygenates (EPA 8260B)	7 Oxygenates (EPA 8260B)	Lead Scav.(1,2 DCA & 1,2 EDB-EPA 8260B)	Volatile Halocarbons (EPA 8260B)	Volatile Organics Full List (EPA 8260B)	Volatile Organics (EPA 524.2 Drinking Water)	TPH as Diesel (EPA 8015M)	TPH as Motor Oil (EPA 8015M)	Total Lead (EPA 6010)	W.E.T. Lead (STLC)	BTEX 5035	Hold	For Lab Use Only
S11.0.06	11/15	1227		X								X			X																	X	05
S11.1.0		1228																														X	06
~~S11.1.06~~		RN																															
S11.2.0		RN																															
S11.2.06		RN																															
S11.3.0		RN																															
S11.3.06		RN																															
S11.4.0		1230		X				X				X	X		X												X			X			07

Relinquished by:	Date	Time	Received by:
Robert Z. Nelson	11-16-2006		
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	111606	1124	Ron McLean Kiff Analytical

Remarks: ~~Hold Samples S11.0.06 thru RN S11.3.06 till Further Notice~~ Homogenize sample S11.4.0

Bill to:

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present Yes / No

TAT: ☐ 12 hr ☐ 24 hr ☐ 48 hr ☐ 72 hr ☑ 1 wk

Distribution: White - Lab; Pink - Originator
Rev: 051805

KIFF Analytical LLC

2795 2nd Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4802

SRG # / Lab No. 53371

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Jessica Moreno

California EDF Report? ☑ Yes ☐ No

Company / Address: Clearwater Group 229 Tewksbury Ave, Pt. Richmond

Sampling Company Log Code: CWGO

Phone #: 510-590-1096

Fax #: 510-232-2823

Global ID: T0600177455

Project #: CB018F

P.O. #:

EDF Deliverable To (Email Address): JPopp@clearwatergroup.com

Project Name: P&D 23rd Ave Associates

Sampler Signature: Robert L. Nelson

Project Address: 1125 Miller Ave Oakland, CA

TAT: ☐ 12 hr ☐ 24 hr ☐ 48 hr ☐ 72 hr ☑ 1 wk

Sample Designation	Date	Time	40 ml VOA	Sleeve	Poly	Glass	Tedlar		HCl	HNO_3	None	Ice	Dry ICE	Water	Soil	Air	MTBE (EPA 8260B) per EPA 8021 level @ 5.0 ppb	MTBE (EPA 8260B) @ 0.5 ppb	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	5 Oxygenates (EPA 8260B)	7 Oxygenates (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB-EPA 8260B)	Volatile Halocarbons (EPA 8260B)	Volatile Organics Full List (EPA 8260B)	Volatile Organics (EPA 524.2 Drinking Water)	TPH as Diesel (EPA 8015M)	TPH as Motor Oil (EPA 8015M)	Total Lead (EPA 6010)	W.E.T. Lead (STLC)	BTEX 5035	Hold	For Lab Use Only
S10,0.06	11/15	1600		X											X																	X	08
S10,1.0	|	1601		|								|	|		|																X	09
S10,1.06	|	1603		|								|	|		|																X	10
~~S10,2.0~~	|	RLN		|								|	|		|																	
~~S10,2.06~~	|	RLN		|								|	|		|																	
~~S10,3.0~~	|	RLN		|								|	|		|																	
~~S10,3.06~~	|	RLN		|								|	|		|																	
S10,4.0	11/15	1605		X				3				X	X		X												X				X		11

Relinquished by:	Date	Time	Received by:
Robert L. Nelson	11-15-2006		
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by Laboratory:
	11/16/06	1124	Roz McGee Kiff Analytical

Remarks: ~~Hold samples S10.0.06 thru S10.3.06 till further notice~~ RN
~~[illegible] Sample S10.4.0~~

Bill to:

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
					Yes / No

Distribution: White - Lab; Pink - Originator
Rev: 051805

ATTACHMENT G

Analytical Report Index Sheet

Air Toxics Work Order	Report Date	Analyte	Sample ID
611359	12/4/2006	BTEX	V2.4 Suma
611360	12/4/2006	BTEX	V2.2 Suma
611361A	12/20/2006	TPH-d	V1.4 1L
611361B	12/14/2006	TPH-d	V1.4 4L
611361B	12/14/2006	TPH-d	V3.4 1L
611361B	12/14/2006	TPH-d	V3.4 4L
611361B	12/14/2006	TPH-d	V2.2 1L
611361B	12/14/2006	TPH-d	V2.2 4L
611361B	12/14/2006	TPH-d	V2.4 1L
611361B	12/14/2006	TPH-d	V2.4 4L

3611354
V2.4
SUMMA

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Air Toxics Ltd. Introduces the Electronic Report

Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020
Hours 8:00 A.M to 6:00 P.M. Pacific

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0611359

Work Order Summary

CLIENT:	Ms. Jessica Moreno Clearwater Group, Inc. 229 Tewksbury Avenue Point Richmond, CA 94801	**BILL TO:**	Ms. Jessica Moreno Clearwater Group, Inc. 229 Tewksbury Avenue Point Richmond, CA 94801
PHONE:	510-590-1096	**P.O. #**	0667
FAX:		**PROJECT #**	CB018F P&D 23rd Avenue Associates
DATE RECEIVED:	11/16/2006	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	12/04/2006		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	V2.4 Suma(200mL/mn*30mn)	Modified TO-15	5.0 "Hg
02A	Lab Blank	Modified TO-15	NA
03A	CCV	Modified TO-15	NA
04A	LCS	Modified TO-15	NA

CERTIFIED BY: Linda D. Truman DATE: 12/04/06

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/06, Expiration date: 06/30/07
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15
Clearwater Group, Inc.
Workorder# 0611359

One 6 Liter Summa Canister sample was received on November 16, 2006. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 0.2 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

Method modifications taken to run these samples are summarized in the below table. Specific project requirements may over-ride the ATL modifications.

Requirement	*TO-15*	*ATL Modifications*
Daily CCV	+- 30% Difference	</= 30% Difference with two allowed out up to </=40%.; flag and narrate outliers
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

The Chain of Custody (COC) information for the sample did not match the entry on the sample tag with regard to sample identification. The discrepancy was noted in the Sample Receipt Confirmation email/fax and the information on the COC was used to process and report the sample.

Sample collection date was incomplete on the chain of custody for the sample. The sampling date was taken from the tag and the discrepancy was noted in the Sample Receipt Confirmation email/fax.

OR

The client was contacted and a date of <enter date> was provided. The discrepancy was noted in the Sample Receipt Confirmation email/fax and the analysis proceeded.

Analytical Notes

Dilution was performed on sample(s) V2.4 Suma(200mL/mn*30mn) due to the presence of high level non-target species.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction no performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: V2.4 Suma(200mL/mn*30mn)

Lab ID#: 0611359-01A

No Detections Were Found.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: V2.4 Suma(200mL/mn*30mn)

Lab ID#: 0611359-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	f112708	Date of Collection:	11/15/06
Dil. Factor:	12.9	Date of Analysis:	11/27/06 03:22 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	6.4	Not Detected	21	Not Detected
Ethyl Benzene	6.4	Not Detected	28	Not Detected
Toluene	6.4	Not Detected	24	Not Detected
m,p-Xylene	6.4	Not Detected	28	Not Detected
o-Xylene	6.4	Not Detected	28	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	85	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	98	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Lab Blank

Lab ID#: 0611359-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**f112705**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/27/06 12:37 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.50	Not Detected	1.6	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	111	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: CCV

Lab ID#: 0611359-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	f112702	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 11/27/06 10:26 AM	

Compound	%Recovery
Benzene	101
Ethyl Benzene	96
Toluene	104
m,p-Xylene	95
o-Xylene	98

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	85	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	95	70-130

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: LCS

Lab ID#: 0611359-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**f112703**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/27/06 11:11 AM**	

Compound	%Recovery
Benzene	98
Ethyl Benzene	100
Toluene	100
m,p-Xylene	91
o-Xylene	85

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	84	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	97	70-130

Air Toxics LTD.

Chain-of-Custody Record

Sample Transportation Notice

Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection handling or shipping of these samples. Relinquished signature also indicated agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922.

AIR TOXICS LTD.
180 BLUE RAVINE RD, SUITE B
FOLSOM, CA 95630-1020
916-985-1000 main line
916-985-1020 fax line

Contact Person Jessica Moreno
Company Clearwater Group
Address 229 Tewksbury Ave City Pt. Richmond StateCA
Zip 94801
Phone 510-590-1096 FAX 510-232-2823
Collected By: (Signature)

Project Information:
P.O. # 0667
Project # CB018F
Project Name P&D 23rd Avenue Associates

Turn Around Time:
☒ Normal
☐ Rush Specify

Pressurized by: [illegible] Date: [illegible]
Press. Gas: N2 He

Lab I.D.	Field Sample I.D.	Canister I.D.	Date & Time	Analysis Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	V2.4 Suma(200mL/mn*30mn)	9408	11/15 1555	BTEX	27 "Hg	7	5.1	5.2
					"Hg			
					"Hg			
					"Hg			
					"Hg			
					"Hg			
					"Hg			
					"Hg			
					"Hg			
					"Hg			

Relinquished By: (Signature) Date/Time: Robert L. Nelson 11/15/2005
Received By: (Signature) Date/Time: T. LaFesh-ATL 11/16/06 0900
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time:
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time:

Notes:

Lab Use Only	Shipper Name	Air Bill #	Opened By	Temp ©	Condition	Custody Seals	Work Order #
	FedEx	8558 7607 4327	TLR	~~+25°C~~ NA	~~see discrepancy~~ good	Yes No Name	0611359

V2.2
summA

Air Toxics LTD.

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Air Toxics Ltd. Introduces the Electronic Report

Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020
Hours 8:00 A.M to 6:00 P.M. Pacific

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0611360

Work Order Summary

CLIENT:	Ms. Jessica Moreno Clearwater Group, Inc. 229 Tewksbury Avenue Point Richmond, CA 94801	**BILL TO:**	Ms. Jessica Moreno Clearwater Group, Inc. 229 Tewksbury Avenue Point Richmond, CA 94801
PHONE:	510-590-1096	**P.O. #**	0667
FAX:		**PROJECT #**	CB018F P&D 23rd Avenue Associates
DATE RECEIVED:	11/16/2006	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	12/04/2006		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	V2.2 Suma(200mL/mn*30mn)	Modified TO-15	8.0 "Hg
01AA	V2.2 Suma(200mL/mn*30mn) Duplicate	Modified TO-15	8.0 "Hg
02A	Lab Blank	Modified TO-15	NA
03A	CCV	Modified TO-15	NA
04A	LCS	Modified TO-15	NA

CERTIFIED BY: Linda D. Truman DATE: 12/04/06

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/06, Expiration date: 06/30/07
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15
Clearwater Group, Inc.
Workorder# 0611360

One 6 Liter Summa Canister sample was received on November 16, 2006. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 0.2 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

Method modifications taken to run these samples are summarized in the below table. Specific project requirements may over-ride the ATL modifications.

Requirement	*TO-15*	*ATL Modifications*
Daily CCV	+- 30% Difference	</= 30% Difference with two allowed out up to </=40%.; flag and narrate outliers
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

The Chain of Custody (COC) information for sample V2.2 Suma(200mL/mn*30mn) did not match the entry on the sample tag with regard to sample identification. The discrepancy was noted in the Sample Receipt Confirmation email/fax and the information on the COC was used to process and report the sample.

Sample collection date was incomplete on the chain of custody for sample V2.2 Suma(200mL/mn*30mn). The sampling date was taken from the tag and the discrepancy was noted in the Sample Receipt Confirmation email/fax.

OR

The client was contacted and a date of <enter date> was provided. The discrepancy was noted in the Sample Receipt Confirmation email/fax and the analysis proceeded.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction no performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: V2.2 Suma(200mL/mn*30mn)

Lab ID#: 0611360-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	1.8	13	5.8	41
Toluene	1.8	11	6.9	43
m,p-Xylene	1.8	4.5	7.9	20
o-Xylene	1.8	1.9	7.9	8.4

Client Sample ID: V2.2 Suma(200mL/mn*30mn) Duplicate

Lab ID#: 0611360-01AA

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	1.8	13	5.8	42
Toluene	1.8	12	6.9	46
m,p-Xylene	1.8	4.7	7.9	20
o-Xylene	1.8	2.3	7.9	9.8

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: V2.2 Suma(200mL/mn*30mn)

Lab ID#: 0611360-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**f112706**	**Date of Collection:**	**11/15/06**
Dil. Factor:	**3.66**	**Date of Analysis:**	**11/27/06 01:49 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	1.8	13	5.8	41
Ethyl Benzene	1.8	Not Detected	7.9	Not Detected
Toluene	1.8	11	6.9	43
m,p-Xylene	1.8	4.5	7.9	20
o-Xylene	1.8	1.9	7.9	8.4

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	107	70-130
4-Bromofluorobenzene	102	70-130

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: V2.2 Suma(200mL/mn*30mn) Duplicate

Lab ID#: 0611360-01AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**f112707**	**Date of Collection:**	**11/15/06**
Dil. Factor:	**3.66**	**Date of Analysis:**	**11/27/06 02:42 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	1.8	13	5.8	42
Ethyl Benzene	1.8	Not Detected	7.9	Not Detected
Toluene	1.8	12	6.9	46
m,p-Xylene	1.8	4.7	7.9	20
o-Xylene	1.8	2.3	7.9	9.8

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	84	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	102	70-130

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Lab Blank

Lab ID#: 0611360-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**f112705**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/27/06 12:37 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	0.50	Not Detected	1.6	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	111	70-130
4-Bromofluorobenzene	96	70-130

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: CCV

Lab ID#: 0611360-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**f112702**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/27/06 10:26 AM**	

Compound	%Recovery
Benzene	101
Ethyl Benzene	96
Toluene	104
m,p-Xylene	95
o-Xylene	98

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	85	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	95	70-130

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: LCS

Lab ID#: 0611360-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**f112703**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/27/06 11:11 AM**	

Compound	%Recovery
Benzene	98
Ethyl Benzene	100
Toluene	100
m,p-Xylene	91
o-Xylene	85

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	84	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	97	70-130

Receipt Vacuum
VBK 11/18/06

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Chain-of-Custody Record

Sample Transportation Notice

Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection handling or shipping of these samples. Relinquished signature also indicated agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922.

AIR TOXICS LTD.
180 BLUE RAVINE RD, SUITE B
FOLSOM, CA 95630-1020
916-985-1000 main line
916-985-1020 fax line

Contact Person Jessica Moreno
Company Clearwater Group
Address 229 Tewksbury Ave City Pt. Richmond StateCA
Zip 94801
Phone 510-590-1096 FAX 510-232-2823
Collected By: (Signature)

Project Information:
P.O. # 0667
Project # CB018F
Project Name P&D 23rd Avenue Associates

Turn Around Time:
☒ Normal
☐ Rush Specify

Pressurized by:
Date:
Press. Gas: N2 He

Lab ID	Field Sample I.D.	Canister I.D.	Date & Time	Analysis Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	V2.2 Suma(200mL/mn*30mn)	10988	11/15 1420	BTEX	30 "Hg	~~3~~ rev	8.0 "Hg	5.4 psi
				~~BTEX~~	"Hg			
					"Hg			
					"Hg			
					"Hg			
					"Hg			
					"Hg			
					"Hg			
					"Hg			
					"Hg			

Relinquished By: (Signature) Date/Time: Robert L. Nelson 11/15/2006
Received By: (Signature) Date/Time: T. LaFleur-Hall 11/16/06 09:00
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time:
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time:

Notes:

Lab Use Only	Shipper Name	Air Bill #	Opened By	Temp °	Condition	Custody Seals	Work Order #
	FedEx	853176674327	TEL	12.5°C	acceptable	Yes No None	061136

0611361 A, B

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Air Toxics Ltd. Introduces the Electronic Report

Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020
Hours 8:00 A.M to 6:00 P.M. Pacific

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0611361A

Work Order Summary

CLIENT:	Ms. Jessica Moreno Clearwater Group, Inc. 229 Tewksbury Avenue Point Richmond, CA 94801	**BILL TO:**	Ms. Jessica Moreno Clearwater Group, Inc. 229 Tewksbury Avenue Point Richmond, CA 94801
PHONE:	510-590-1096	**P.O. #**	0667
FAX:		**PROJECT #**	CB018F P&D 23rd Avenue Associates
DATE RECEIVED:	11/16/2006	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	12/20/2006		

FRACTION #	NAME	TEST
01A	V1.4 1L	Modified TO-17
02A	Lab Blank	Modified TO-17

CERTIFIED BY: Linda A. Frumarx DATE: 12/20/06

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/06, Expiration date: 06/30/07
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-17
Clearwater Group, Inc.
Workorder# 0611361A

One TO-17 Tube sample was received on November 16, 2006. The laboratory performed the analysis via modified EPA Method TO-17 using GC/MS in the full scan mode. TO-17 sorbent tubes are thermally desorbed at 240 degrees centigrade for ten minutes by UHP helium carrier gas. The gas stream is then bubbled through 5 mL of organic free water and trapped on the sorbent trap of the purge and trap system. The trap is thermally desorbed to elute the components into the GC/MS system for further separation. See the data sheets for the reporting limits for each compound.

Requirement	*TO-17*	*ATL Modifications*
ICAL RRF %RSD Acceptance Criteria	+- 30 % RSD, with two compounds allowed out to 40% RSD	</= 30 % RSD for standard compounds, </= 40 % RSD for non-standard and polar compounds
IS Recoveries	± 40 % of mean over ICAL for blanks, and ± 40 % of daily CCV for samples.	± 40 % of CCV recoveries for blank and samples.
Daily CCV	+- 30 % D	Standard compounds:</= 30 % D for at least 90 %;Non-standard and polar compounds: </= 40 % D for at least 80 %
Batch Certification	Blanks from the same media as samples	Analysis of set of cartridges prior to onset of any project; Sampling media provided by the client is batch certified ahead of time, only if client provides blank cartridges.
Method Blank	Cartridges from the same media batches as the samples. Do not dry purge Lab Blanks	Cartridges used for daily method blank may or may not be from the same batch or sampling media. Lab Blanks are dry purged to eliminate the possibility of sample anomaly attributed to Dry purge process.
Sorbent Tube Storage	After conditioning of sorbent tubes, wrap the sealed tubes in uncoated aluminium foil and place the tubes in clean opaque container.	After conditioning of sorbent tubes, the sealed sorbent tubes are placed in clean air-tight glass culture tubes containing activated charcoal. Sorbent batch certification results confirm the sorbent integrity and storage process.
Sample Desorption	Method involves primary and secondary desorption.	After primary desorption, the stream of effluent gas is passed through 5 mL of clean, purged D.I. water before the secondary desorption. D.I. water acts as a filter for excessive acidic moisture in the samples.
Method Detection Limit	Follow 40CFR Pt.136 App. B	The Method Detection Limit study met all relevant requirements in 40CFR Pt. 136, Appendix B (including a statistically calculated MDL that is less than the Reporting Limit) with the exception that for some compounds the level of the analyte in the spiked

Receiving Notes

A Temperature Blank was not included with the shipment. Temperature was measured on a representative

sample and was not within 4±2 °C. Coolant in the form of blue ice was present. The discrepancy was noted in the Sample Receipt Confirmation email/fax and the analysis proceeded.

Sample collection date was incomplete on the chain of custody for all samples. The year of collection was assumed to be 2006 and the discrepancy was noted in the Sample Receipt Confirmation email/fax.

Analytical Notes

Diesel was calibrated using a single point at 500 ng and external calibration technique.

Results reported for Diesel in sample V1.4 1L may be biased low due to extreme saturation.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

Air Toxics LTD.

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Summary of Detected Compounds
MODIFIED METHOD TO-17

Client Sample ID: V1.4 1L

Lab ID#: 0611361A-01A

Compound	Rpt. Limit (ng)	Rpt. Limit (uG/m3)	Amount (ng)	Amount (uG/m3)
TPH (Diesel Range)	100	100	>150000 S	>150000 S

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: V1.4 1L

Lab ID#: 0611361A-01A

MODIFIED METHOD TO-17

File Name:	**I112906**	**Date of Collection: 11/15/06**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/29/06 08:49 PM**	
		Date of Extraction: NA	

Compound	Rpt. Limit (ng)	Rpt. Limit (uG/m3)	Amount (ng)	Amount (uG/m3)
TPH (Diesel Range)	100	100	>150000 S	>150000 S

S = Saturated peak; data reported as estimated.

Sample volume = 1L.

Container Type: TO-17 Tube

Client Sample ID: Lab Blank

Lab ID#: 0611361A-02A

MODIFIED METHOD TO-17

File Name:	**I112905**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/29/06 08:06 PM**	
		Date of Extraction: NA	

Compound	Rpt. Limit (ng)	Rpt. Limit (uG/m3)	Amount (ng)	Amount (uG/m3)
TPH (Diesel Range)	100	100	Not Detected	Not Detected

Assume sample volume = 1L.

Container Type: NA - Not Applicable

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0611361B

Work Order Summary

CLIENT:	Ms. Jessica Moreno Clearwater Group, Inc. 229 Tewksbury Avenue Point Richmond, CA 94801	**BILL TO:**	Ms. Jessica Moreno Clearwater Group, Inc. 229 Tewksbury Avenue Point Richmond, CA 94801
PHONE:	510-590-1096	**P.O. #**	0667
FAX:		**PROJECT #**	CB018F P&D 23rd Avenue Associates
DATE RECEIVED:	11/16/2006	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	12/14/2006		

FRACTION #	NAME	TEST
02A	V1.4 4L	Modified NIOSH 1550
02AA	V1.4 4L Duplicate	Modified NIOSH 1550
03A	V3.4 1L	Modified NIOSH 1550
04A	V3.4 4L	Modified NIOSH 1550
05A	V2.2 1L	Modified NIOSH 1550
06A	V2.2 4L	Modified NIOSH 1550
07A	V2.4 1L	Modified NIOSH 1550
08A	V2.4 4L	Modified NIOSH 1550
09A	Lab Blank	Modified NIOSH 1550
10A	LCS	Modified NIOSH 1550

CERTIFIED BY: Linda J. Truman DATE: 12/19/06

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/06, Expiration date: 06/30/07
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified NIOSH 1550
Clearwater Group, Inc.
Workorder# 0611361B

Seven TO-17 Tube samples were received on November 16, 2006. Due to the high concentrations of diesel in the samples, thermal desorption and analysis by GC/MS using Method TO-17 was not possible due to saturation of the analytes on the instrumentation. As an alternative, the laboratory performed the analysis via Modified NIOSH Method 1550. The method involves solvent desorption of the sample tubes using carbon disulfide, followed by separation and analysis using GC/FID.

Receiving Notes

A Temperature Blank was not included with the shipment. Temperature was measured on a representative sample and was not within 4±2 °C. Coolant in the form of blue ice was present. The discrepancy was noted in the Sample Receipt Confirmation email/fax and the analysis proceeded.

Sample collection date was incomplete on the chain of custody for all samples. The year of collection was assumed to be 2006 and the discrepancy was noted in the Sample Receipt Confirmation email/fax.

Analytical Notes

Sampling volume was supplied by the client. A sample volume of 1.0 L was assumed for all QC samples.

The distributive volume pairs of tubes taken in each sampling set did not meet the TO-17 performance criteria of 25% agreement. All sample extracts were re-analyzed to confirm the initial results, and additional tests were performed to validate laboratory procedures. Three TO-17 tubes were spiked with 250 ug of diesel and a volume of humidified nitrogen was collected on each spiked tube to simulate sample collection. Both 1L and 4L volumes were evaluated. Recoveries ranged from 68% to 81%.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED NIOSH 1550 GC/FID

Client Sample ID: V1.4 4L

Lab ID#: 0611361B-02A

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	50000	2300	580000

Client Sample ID: V1.4 4L Duplicate

Lab ID#: 0611361B-02AA

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	50000	2400	600000

Client Sample ID: V3.4 1L

Lab ID#: 0611361B-03A

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	200000	7300	7300000

Client Sample ID: V3.4 4L

Lab ID#: 0611361B-04A

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	50000	2300	570000

Client Sample ID: V2.2 1L

Lab ID#: 0611361B-05A

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	200000	710	710000

Client Sample ID: V2.2 4L

Lab ID#: 0611361B-06A

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	50000	710	180000

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Summary of Detected Compounds
MODIFIED NIOSH 1550 GC/FID

Client Sample ID: V2.4 1L

Lab ID#: 0611361B-07A

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	200000	280	280000

Client Sample ID: V2.4 4L

Lab ID#: 0611361B-08A

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	50000	2800	700000

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: V1.4 4L

Lab ID#: 0611361B-02A

MODIFIED NIOSH 1550 GC/FID

File Name:	**x120716**	**Date of Collection: 11/15/06**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/06 01:46 AM**	
		Date of Extraction: 12/7/06	

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	50000	2300	580000

Air Sample Volume(L): 4.00
Container Type: TO-17 Tube

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: V1.4 4L Duplicate

Lab ID#: 0611361B-02AA

MODIFIED NIOSH 1550 GC/FID

File Name:	**x120717**	**Date of Collection: 11/15/06**
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/06 02:25 AM**
		Date of Extraction: 12/7/06

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	50000	2400	600000

Air Sample Volume(L): 4.00
Container Type: TO-17 Tube

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: V3.4 1L

Lab ID#: 0611361B-03A

MODIFIED NIOSH 1550 GC/FID

File Name:	**x120718**	**Date of Collection: 11/15/06**
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/06 02:48 AM**
		Date of Extraction: 12/7/06

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	200000	7300	7300000

Air Sample Volume(L): 1.00

Container Type: TO-17 Tube

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: V3.4 4L

Lab ID#: 0611361B-04A

MODIFIED NIOSH 1550 GC/FID

File Name:	**x120719**	**Date of Collection: 11/15/06**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/06 03:11 AM**	
		Date of Extraction: 12/7/06	

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	50000	2300	570000

Air Sample Volume(L): 4.00
Container Type: TO-17 Tube

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: V2.2 1L

Lab ID#: 0611361B-05A

MODIFIED NIOSH 1550 GC/FID

File Name:	**x120720**	**Date of Collection: 11/15/06**
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/06 03:34 AM**
		Date of Extraction: 12/7/06

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	200000	710	710000

Air Sample Volume(L): 1.00
Container Type: TO-17 Tube

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: V2.2 4L

Lab ID#: 0611361B-06A

MODIFIED NIOSH 1550 GC/FID

File Name:	**x120721**	**Date of Collection: 11/15/06**
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/06 03:57 AM**
		Date of Extraction: 12/7/06

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	50000	710	180000

Air Sample Volume(L): 4.00
Container Type: TO-17 Tube

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: V2.4 1L

Lab ID#: 0611361B-07A

MODIFIED NIOSH 1550 GC/FID

File Name:	**x120722**	**Date of Collection: 11/15/06**
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/06 04:21 AM**
		Date of Extraction: 12/7/06

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	200000	280	280000

Air Sample Volume(L): 1.00
Container Type: TO-17 Tube

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: V2.4 4L

Lab ID#: 0611361B-08A

MODIFIED NIOSH 1550 GC/FID

File Name:	**x120723**	**Date of Collection: 11/15/06**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/8/06 04:44 AM**	
		Date of Extraction: 12/7/06	

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	50000	2800	700000

Air Sample Volume(L): 4.00
Container Type: TO-17 Tube

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Lab Blank

Lab ID#: 0611361B-09A

MODIFIED NIOSH 1550 GC/FID

File Name:	x120714	**Date of Collection: NA**	
Dil. Factor:	1.00	**Date of Analysis: 12/8/06 12:13 AM**	
		Date of Extraction: 12/7/06	

Compound	Rpt. Limit (ug)	Rpt. Limit (uG/m3)	Amount (ug)	Amount (uG/m3)
TPH ref. to Diesel	200	200000	Not Detected	Not Detected

Air Sample Volume(L): 1.00

Container Type: NA - Not Applicable

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: LCS

Lab ID#: 0611361B-10A

MODIFIED NIOSH 1550 GC/FID

File Name:	**x120713**	**Date of Collection: NA**
Dil. Factor:	**1.00**	**Date of Analysis: 12/7/06 11:50 PM**
		Date of Extraction: 12/7/06

Compound	%Recovery
TPH ref. to Diesel	90

Air Sample Volume(L): 1.00
Container Type: NA - Not Applicable

Air Toxics LTD.

Chain-of-Custody Record

Sample Transportation Notice
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AIR TOXICS LTD.
180 BLUE RAVINE RD, SUITE B
FOLSOM, CA 95630-1020
916-985-1000 main line
916-985-1020 fax line

Contact Person Jessica Moreno
Company Cleanwater Group
Address 229 Tewksbury Ave City Pt. Richmond State CA
Zip 94801
Phone 510-590-1096 FAX 510-232-2823
Collected By: (Signature)

Project Information:
P.O. # 0667
Project # CB016F
Project Name P&D 23rd Avenue Associates

Turn Around Time:
☒ Normal
☐ Rush Specify

Lab #	Field Sample I.D.	Canister I.D.	Date & Time	Analysis Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
	~~V1.2 1L~~		~~11/15~~	BTEX/TPHd	"Hg			
	(133.3mL/mn x 15 mn)				"Hg			
	~~V1.2 4L~~		~~11/15~~	BTEX/TPHd	"Hg			
	(66.7 mL/mn x 30 mn)				"Hg			
	V1.4 1L		11/15	BTEX/TPHd	"Hg			
	(133.3mL/mn x 15 mn)				"Hg			
	V1.4 4L		11/15	BTEX/TPHd	"Hg			
	(66.7 mL/mn x 30 mn)				"Hg			
	~~V3.2 4L~~		~~11/15~~	BTEX/TPHd	"Hg			
	133.3mL/mn x 15 mn)				"Hg			

Relinquished By: (Signature) Date/Time: 11/15/2006
Received By: (Signature) Date/Time: 11/16/06 0900
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time:
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time:

Notes:

Lab Use Only	Shipper Name	Air Bill #	Opened By	Temp @	Condition	Custody Seals	Work Order #
	FedEx	8581 7607 4327	Tae	12.5°C	ok/discrep		0611361

Air Toxics LTD.

Chain-of-Custody Record

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection handling or shipping of these samples. Relinquished signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922.

AIR TOXICS LTD.
180 BLUE RAVINE RD, SUITE B
FOLSOM, CA 95630-4020
916-985-1000 main line
916-985-1020 fax line

Contact Person Jessica Moreno
Company Clearwater Group
Address 229 Tewksbury Ave City Pt. Richmond State CA
Zip 94801
Phone 510-590-1096 FAX 510-232-2823
Collected By: (Signature)

Project Information:
P.O. # 0667
Project # CB018F
Project Name P&D 23rd Avenue Associates

Turn Around Time:
☒ Normal
☐ Rush Specify

Lab I.D.	Field Sample I.D.	Canister I.D.	Date & Time	Analysis Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
	V3.2 4L		11/15 ~~1145~~ RN	BTEX/TPHd	"Hg			
	(66.7 mL/mn x 30 mn)				"Hg			
X	V3.4 1L		11/15 1145	BTEX/TPHd	"Hg			
	(133.3mL/mn x 15 mn)				"Hg			
X	V3.4 4L		11/15 1220	BTEX/TPHd	"Hg			
	(66.7 mL/mn x 30 mn)(				"Hg			
X	V2.2 1L		11/15 1320	BTEX/TPHd	"Hg			
	(133.3mL/mn x 15 mn)				"Hg			
					"Hg			
					"Hg			

Rel/Rec 11/16/05

Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time
[signature]	[signature] 11/16/05 0700
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time

Notes:

Lab Use Only	Shipper Name	Air Bill #	Opened By	Temp °	Condition	Custody Seals	Work Order #
	FedEx	5581 7607 4327	TAR	12.5°C	see discrep		0611361

Air Toxics LTD.

Chain-of-Custody Record

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Contact Person Jessica Moreno
Company Clearwater Group
Address 229 Tewksbury Ave City Pt. Richmond State CA
Zip 94801
Phone 510-590-1096 FAX 510-232-2823
Collected By: (Signature)

Project Information:
P.O. # 0667
Project # CB018F
Project Name P&D 23rd Avenue Associates

Turn Around Time:
☒ Normal
☐ Rush
Specify

Field Sample I.D.	Canister I.D.	Date & Time	Analysis Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
V2.2 4L		11/15 1335	BTEX/TPHd	"Hg			
(66.7 mL/mn x 30 mn)				"Hg			
V2.4 1L		11/15 1425	BTEX/TPHd	"Hg			
(133.3mL/mn x 15 mn)				"Hg			
V2.4 4L		11/15 1520	BTEX/TPHd	"Hg			
(66.7 mL/mn x 30 mn)				"Hg			
				"Hg			
				"Hg			
				"Hg			
				"Hg			

TR 12/7/06

Relinquished By: (Signature) Date/Time 11/17/2006
Received By: (Signature) Date/Time 11/16/06 09:00
Relinquished By: (Signature) Date/Time
Received By: (Signature) Date/Time
Relinquished By: (Signature) Date/Time
Received By: (Signature) Date/Time

Notes:

Lab Use Only

Shipper Name	Air Bill #	Opened By	Temp ©	Condition	Custody Seals	Work Order #
Fed Ex	8581 7607 4327	TR	12.5°C	See discrep		0611361A

Air Toxics LTD.

Chain-of-Custody Record

Sample Transportation Notice
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AIR TOXICS LTD.
180 BLOOR RAVINE RD, SUITE B
FOLSOM, CA 95630-1620
916-985-1000 main line
916-985-1020 fax line

Contact Person: Jessica Moreno
Company: Cleanwater Group
Address: 229 Tewksbury Ave City Pt. Richmond State: CA
Zip: 94801
Phone: 510-590-1096 FAX: 510-232-2823
Collected By: (Signature)

Project Information:
P.O. # 0557
Project # C8018F
Project Name: P&D 23rd Avenue Associates

Turn Around Time:
☒ Normal
☐ Rush Specify

Field Sample I.D.	Canister I.D.	Date & Time	Analysis Requested	Canister Pressure/Vacuum: Initial	Final	Receipt	Final (psi)
V1.2 1L		11/15	BTEX/TPHd	"Hg			
(133.3mL/min x 15 min)				"Hg			
V1.2 4L		11/15	BTEX/TPHd	"Hg			
(66.7 mL/min x 30 min)				"Hg			
V1.4 1L		11/15	BTEX/TPHd	"Hg			
(133.3mL/min x 15 min) 66.7mL/min x 15 min				"Hg			
V1.4 4L		11/15	BTEX/TPHd	"Hg			
(66.7 mL/min x 30 min) 133.3 mL/min x 30 min				"Hg			
V2.2 1L		11/15	BTEX/TPHd	"Hg			
133.3mL/min x 15 min)				"Hg			

Relinquished By: (Signature) Date/Time: 11/15/2015
Received By: (Signature) Date/Time:
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time:

Notes: EDF please
Sample Log CWG10
Global ID: T0600172455

Lab Use Only	Shipper Name	Air Bill #	Opened By	Temp °	Condition	Custody Seals	Work Order #
	FedEx	8528 7607 4827	TAL	12.5°C	on ice/cap		0611361

Air Toxics LTD.

Chain-of-Custody Record

Sample Transportation Notice

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FOLSOM, CA 95630-4020
916-985-1000 main line
916-985-1020 fax line

Contact Person Jessica Moreno
Company Clearwater Group
Address 229 Tewksbury Ave City Pt. Richmond State CA
Zip 94801
Phone 510-590-1096 FAX 510-232-2823

Collected By: (Signature)

Project Information:
P.O. # 0657
Project # C8018F
Project Name P&D 23rd Avenue Associates

Turn Around Time:
☒ Normal
☐ Rush
Specify

Field Sample I.D.	Canister I.D.	Date & Time	Analysis Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
V5.2 4L		11/15	BTEX/TPHd	"Hg			
(66.7 mL/min x 30 min)				"Hg			
V3.4 1L		11/15 1145	BTEX/TPHd	"Hg			
~~(133.3 mL/min x 15 min)~~ 66.7 mL/min x 15 min				"Hg			
V3.4 4L		11/15 1220	BTEX/TPHd	"Hg			
~~(66.7 mL/min x 30 min)~~ 133.3 mL/min x 30 min				"Hg			
V2.2 1L		11/15 1320	BTEX/TPHd	"Hg			
~~(133.3 mL/min x 15 min)~~ 66.7 mL/min x 15 min				"Hg			
				"Hg			
				"Hg			
				"Hg			

Relinquished By: (Signature) Date/Time [signature] 11/15
Received By: (Signature) Date/Time [signature] 11/16/06 0930
Relinquished By: (Signature) Date/Time
Received By: (Signature) Date/Time
Relinquished By: (Signature) Date/Time
Received By: (Signature) Date/Time

Notes:

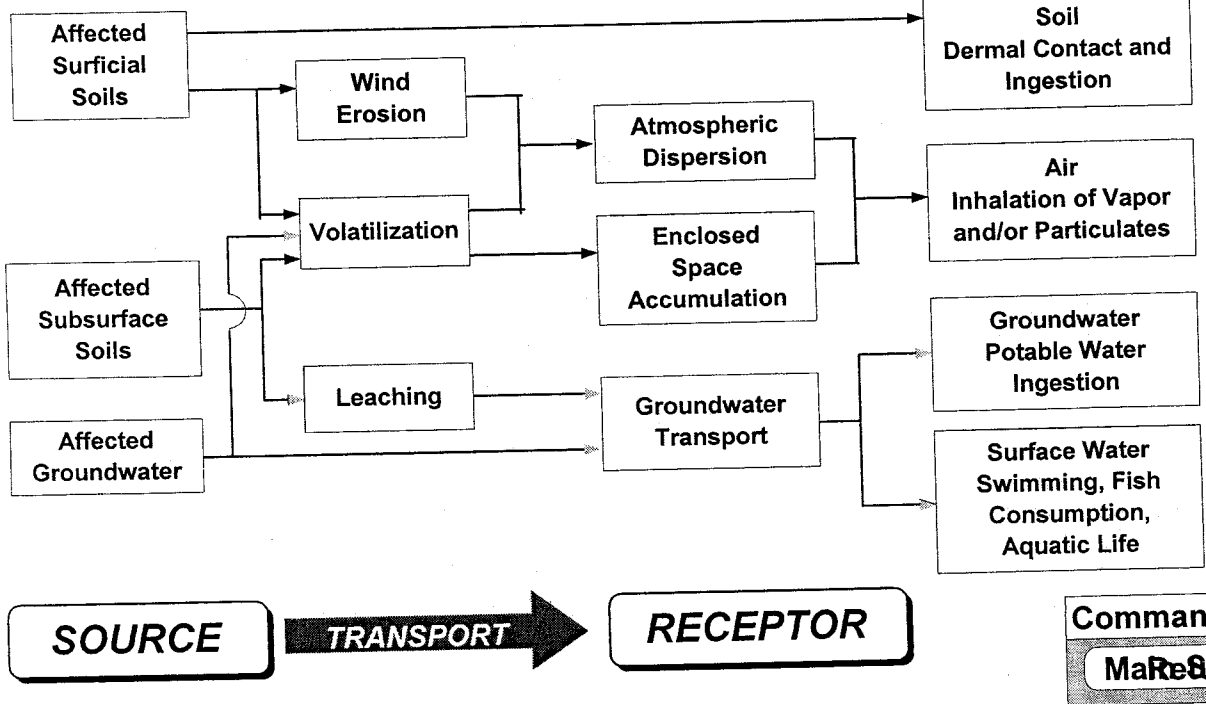
Lab Use Only	Shipper Name	Air Bill #	Opened By	Temp ©	Condition	Custody Seals	Work Order #
	Cal Ex	5881 7607 4509	Tina	13.6°C	see discrep.		0611361

ATTACHMENT H

Exposure Pathway Flowchart

Site Name: P&D 23rd Avenue Associates
Location: 1125 Miller Avenue, Oakland, CA
Compl. By: Jessica Moreno

Job ID: CB018F
Date: 5-Jan-07



Receptors	On-site	Off-site1	Off-site2
Soil Dermal Contact and Ingestion	*Com./Constr.*	*NA*	*NA*
Air Inhalation of Vapor and/or Particulates	Outdoor Air: *Com./Constr.*	*None*	*None*
	Indoor Air: *Commercial*	*NA*	*NA*
Groundwater Potable Water Ingestion	None	None	None
Surface Water Swimming, Fish Consumption, Aquatic Life	NA	NA	NA

SOURCE → TRANSPORT → RECEPTOR

Commands and Options

Main Screen | Print Sheet | Help

RBCA SITE ASSESSMENT

Input Parameter Summary

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA

Completed By: Jessica Moreno
Date Completed: 5-Jan-07

Job ID: CB018F

Exposure Parameters		Residential			Commercial/Industrial	
		Adult	(1-6yrs)	(1-16 yrs)	Chronic	Construc.
AT_c	Averaging time for carcinogens (yr)	70				
AT_n	Averaging time for non-carcinogens (yr)	30			25	1
BW	Body weight (kg)	70	15	35	70	
ED	Exposure duration (yr)	30	6	16	25	1
τ	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure frequency (days/yr)	350			250	180
EF_D	Exposure frequency for dermal exposure	350			250	
IR_w	Ingestion rate of water (L/day)	2			1	
IR_s	Ingestion rate of soil (mg/day)	100	200		50	100
SA	Skin surface area (dermal) (cm^2)	5800		2023	5800	5800
M	Soil to skin adherence factor	1				
ET_{swim}	Swimming exposure time (hr/event)	3				
EV_{swim}	Swimming event frequency (events/yr)	12	12	12		
IR_{swim}	Water ingestion while swimming (L/hr)	0.05	0.5			
SA_{swim}	Skin surface area for swimming (cm^2)	23000		8100		
IR_{fish}	Ingestion rate of fish (kg/yr)	0.025				
FI_{fish}	Contaminated fish fraction (unitless)	1				

Complete Exposure Pathways and Receptors	On-site	Off-site 1	Off-site 2
Groundwater:			
Groundwater Ingestion	None	None	None
Soil Leaching to Groundwater Ingestion	None	None	None
Applicable Surface Water Exposure Routes:			
Swimming			NA
Fish Consumption			NA
Aquatic Life Protection			NA
Soil:			
Direct Ingestion and Dermal Contact	Com./Constr.		
Outdoor Air:			
Particulates from Surface Soils	Com./Constr.	None	None
Volatilization from Soils	Com./Constr.	None	None
Volatilization from Groundwater	None	None	None
Indoor Air:			
Volatilization from Subsurface Soils	Commercial	NA	NA
Volatilization from Groundwater	None	NA	NA

Receptor Distance from Source Media	On-site	Off-site 1	Off-site 2	(Units)
Groundwater receptor	NA	NA	NA	(ft)
Soil leaching to groundwater receptor	NA	NA	NA	(ft)
Outdoor air inhalation receptor	0	NA	NA	(ft)

Target Health Risk Values		Individual	Cumulative
TR_{ab}	Target Risk (class A&B carcinogens)	1.0E-6	1.0E-5
TR_c	Target Risk (class C carcinogens)	1.0E-6	
THQ	Target Hazard Quotient (non-carcinogenic risk)	1.0E+0	1.0E+0

Modeling Options	
RBCA tier	Tier 2
Outdoor air volatilization model	Surface & subsurface models
Indoor air volatilization model	Johnson & Ettinger model
Soil leaching model	NA
Use soil attenuation model (SAM) for leachate?	NA
Air dilution factor	NA
Groundwater dilution-attenuation factor	NA

NOTE: NA = Not applicable

Surface Parameters		General	Construction	(Units)
A	Source zone area	3.9E+1	0.0E+0	(ft^2)
W	Length of source-zone area parallel to wind	9.0E+0	0.0E+0	(ft)
W_{gw}	Length of source-zone area parallel to GW flow	NA		(ft)
U_{air}	Ambient air velocity in mixing zone	7.4E+0		(ft/s)
δ_{air}	Air mixing zone height	6.6E+0		(ft)
P_a	Areal particulate emission rate	6.9E-14		(g/cm^2/s)
L_{ss}	Thickness of affected surface soils	4.0E+0		(ft)

Surface Soil Column Parameters		Value			(Units)
h_{cap}	Capillary zone thickness	NA			(ft)
h_v	Vadose zone thickness	NA			(ft)
ρ_s	Soil bulk density	1.7E+0			(g/cm^3)
f_{oc}	Fraction organic carbon	1.0E-2			(-)
θ_T	Soil total porosity	3.8E-1			(-)
K_{vs}	Vertical hydraulic conductivity	8.6E-2			(cm/d)
k_v	Vapor permeability	1.1E-15			(ft^2)
L_{gw}	Depth to groundwater	NA			(ft)
L_s	Depth to top of affected soils	4.2E-1			(ft)
L_{base}	Depth to base of affected soils	4.0E+0			(ft)
L_{subs}	Thickness of affected soils	3.6E+0			(ft)
pH	Soil/groundwater pH	7.4E+0			(-)
		capillary	vadose	foundation	
θ_w	Volumetric water content	0.342	0.31	0.12	(-)
θ_a	Volumetric air content	0.038	0.07	0.26	(-)

Building Parameters		Residential	Commercial	(Units)
L_b	Building volume/area ratio	NA	9.84E+0	(ft)
A_b	Foundation area	NA	7.53E+2	(ft^2)
X_{crk}	Foundation perimeter	NA	1.12E+2	(ft)
ER	Building air exchange rate	NA	2.30E-4	(1/s)
L_{crk}	Foundation thickness	NA	4.92E-1	(ft)
Z_{crk}	Depth to bottom of foundation slab	NA	4.92E-1	(ft)
η	Foundation crack fraction	NA	1.00E-2	(-)
dP	Indoor/outdoor differential pressure	NA	0.00E+0	(psi)
Q_s	Convective air flow through slab	NA	0.00E+0	(ft^3/s)

Groundwater Parameters		Value	(Units)
δ_{gw}	Groundwater mixing zone depth	NA	(ft)
I_f	Net groundwater infiltration rate	NA	(in/yr)
U_{gw}	Groundwater Darcy velocity	NA	(cm/d)
V_{gw}	Groundwater seepage velocity	NA	(cm/d)
K_s	Saturated hydraulic conductivity	NA	(cm/d)
i	Groundwater gradient	NA	(-)
S_w	Width of groundwater source zone	NA	(ft)
S_d	Depth of groundwater source zone	NA	(ft)
θ_{eff}	Effective porosity in water-bearing unit	NA	(-)
$f_{oc\text{-}sat}$	Fraction organic carbon in water-bearing unit	NA	(-)
pH_{sat}	Groundwater pH	NA	(-)
	Biodegradation considered?	NA	

Transport Parameters		Off-site 1	Off-site 2	Off-site 1	Off-site 2	(Units)
Lateral Groundwater Transport		Groundwater Ingestion		Soil Leaching to GW		
α_x	Longitudinal dispersivity	NA	NA	NA	NA	(ft)
α_y	Transverse dispersivity	NA	NA	NA	NA	(ft)
α_z	Vertical dispersivity	NA	NA	NA	NA	(ft)
Lateral Outdoor Air Transport		Soil to Outdoor Air Inhal.		GW to Outdoor Air Inhal.		
σ_y	Transverse dispersion coefficient	NA	NA	NA	NA	(ft)
σ_z	Vertical dispersion coefficient	NA	NA	NA	NA	(ft)
ADF	Air dispersion factor	NA	NA	NA	NA	(-)

Surface Water Parameters		Off-site 2	(Units)
Q_{sw}	Surface water flowrate	NA	(ft^3/s)
W_{pi}	Width of GW plume at SW discharge	NA	(ft)
δ_{pi}	Thickness of GW plume at SW discharge	NA	(ft)
DF_{sw}	Groundwater-to-surface water dilution factor	NA	(-)

RBCA SITE ASSESSMENT | **Baseline Risk Summary-All Pathways**

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA

Completed By: Jessica Moreno
Date Completed: 5-Jan-07

TIER 2 BASELINE RISK SUMMARY TABLE

EXPOSURE PATHWAY	BASELINE CARCINOGENIC RISK					BASELINE TOXIC EFFECTS				
	Individual COC Risk		Cumulative COC Risk		Risk Limit(s) Exceeded?	Hazard Quotient		Hazard Index		Toxicity Limit(s) Exceeded?
	Maximum Value	Target Risk	Total Value	Target Risk		Maximum Value	Applicable Limit	Total Value	Applicable Limit	
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	1.0E-5	☐	1.2E-3	1.0E+0	1.8E-3	1.0E+0	☐
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	1.0E-5	☐	3.5E+0	1.0E+0	4.3E+0	1.0E+0	■
SOIL EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	1.0E-5	☐	7.3E-1	1.0E+0	1.5E+0	1.0E+0	■
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	NA	NA	NA	NA	☐	NA	NA	NA	NA	☐
SURFACE WATER EXPOSURE PATHWAYS										
Complete:	NA	NA	NA	NA	☐	NA	NA	NA	NA	☐
CRITICAL EXPOSURE PATHWAY (Maximum Values From Complete Pathways)										
	NC	***1.0E-6***	***NC***	***1.0E-5***	☐	***3.5E+0***	***1.0E+0***	***4.3E+0***	***1.0E+0***	■
	Outdoor Air		***Outdoor Air***			***Indoor Air***		***Indoor Air***		

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS (0.4 - 4 ft):
VAPOR AND DUST INHALATION

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/kg) Receptor				3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)			
	Soil Conc. (mg/kg)	On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)	On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)
		Commercial	Construction Worker	None	None	Commercial	Construction Worker	None	None
TPH - Aliph >C10-C12*	2.5E+3	1.4E+6	NA			1.7E-3			
TPH - Aliph >C12-C16*	2.5E+3	3.1E+6	NA			8.1E-4			
TPH - Aliph >C16-C21*	2.5E+3	1.1E+7	NA			2.2E-4			

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SURFACE SOILS (0.4 - 4 ft):
VAPOR AND DUST INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)				5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)			
	On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)	On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)
	Commercial	Construction Worker	None	None	Commercial	Construction Worker	None	None
TPH - Aliph >C10-C12*	6.8E-1	4.9E-1			1.2E-3			
TPH - Aliph >C12-C16*	6.8E-1	4.9E-1			5.5E-4			
TPH - Aliph >C16-C21*	6.8E-1	4.9E-1			1.5E-4			

* = Chemical with user-specified data

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS (4 - 4 ft):

VAPOR INHALATION

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/kg) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Soil Conc. (mg/kg)	On-site (0 ft) Commercial	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None	On-site (0 ft) Commercial	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None
TPH - Aliph >C10-C12*	2.5E+3						
TPH - Aliph >C12-C16*	2.5E+3						
TPH - Aliph >C16-C21*	2.5E+3						

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SUBSURFACE SOILS (4 - 4 ft):

VAPOR INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)			5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)		
	On-site (0 ft) Commercial	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None	On-site (0 ft) Commercial	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None
TPH - Aliph >C10-C12*						
TPH - Aliph >C12-C16*						
TPH - Aliph >C16-C21*						

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 ft) None	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None	On-site (0 ft) None	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None
TPH - Aliph >C10-C12*							
TPH - Aliph >C12-C16*							
TPH - Aliph >C16-C21*							

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

GROUNDWATER: VAPOR INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)			5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)		
	On-site (0 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)	On-site (0 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)
	None	None	None	None	None	None
TPH - Aliph >C10-C12*						
TPH - Aliph >C12-C16*						
TPH - Aliph >C16-C21*						

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

TOTAL PATHWAY EXPOSURE (mg/m^3)

(Sum average expsosure concentrations from soil and groundwater routes.)

Constituents of Concern	On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)
	Commercial	Construction Worker	None	None
TPH - Aliph >C10-C12*	1.2E-3			
TPH - Aliph >C12-C16*	5.5E-4			
TPH - Aliph >C16-C21*	1.5E-4			

Site Name: P&D 23rd Avenue Associates
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SOILS (0.4 - 4 ft): VAPOR INTRUSION INTO ON-SITE BUILDINGS

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/kg) Receptor	3) Exposure Medium Indoor Air: POE Conc. (mg/m^3) (1) / (2)	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)	5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)
	Soil Conc. (mg/kg)	Commercial	Commercial	Commercial	Commercial
TPH - Aliph >C10-C12*	2.5E+3	4.9E+2	5.1E+0	6.8E-1	3.5E+0
TPH - Aliph >C12-C16*	2.5E+3	2.3E+3	1.1E+0	6.8E-1	7.5E-1
TPH - Aliph >C16-C21*	2.5E+3	3.1E+4	8.2E-2	6.8E-1	5.6E-2

* = Chemical with user-specified data

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr) NAF = Natural attenuation factor POE = Point of exposure

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INTRUSION INTO ON-SITE BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium	2) NAF Value (m^3/L) Receptor	3) Exposure Medium Indoor Air: POE Conc. (mg/m^3) (1) / (2)	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)	5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)
	Groundwater Conc. (mg/L)	None	None	None	None
TPH - Aliph >C10-C12*					
TPH - Aliph >C12-C16*					
TPH - Aliph >C16-C21*					

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr) NAF = Natural attenuation factor POE = Point of exposure

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS

Constituents of Concern	TOTAL PATHWAY EXPOSURE (mg/m^3) *(Sum average expsosure concentrations from soil and groundwater routes.)* Commercial
TPH - Aliph >C10-C12*	3.5E+0
TPH - Aliph >C12-C16*	7.5E-1
TPH - Aliph >C16-C21*	5.6E-2

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
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RBCA SITE ASSESSMENT

Site Name: P&D 23rd Avenue Associates Site Location: 1125 Miller Avenue, Oaklan Completed By: Jessica Moreno Date Completed: 5-Jan-07

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAY ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS: ON-SITE INGESTION AND DERMAL CONTACT

Constituents of Concern	1) Source/Exposure Medium	2) Exposure Multiplier (IR+SAxMxRAF)xEFxED/(BWxAT) (kg/kg/day)		3) Average Daily Intake Rate (mg/kg/day) (1) x (2)	
	Surface Soil Conc. (mg/kg)	Commercial	Construction Worker	Commercial	Construction Worker
TPH - Aliph >C10-C12*	2.5E+3	2.9E-5	2.9E-5	7.2E-2	7.3E-2
TPH - Aliph >C12-C16*	2.5E+3	2.9E-5	2.9E-5	7.2E-2	7.3E-2
TPH - Aliph >C16-C21*	2.5E+3	3.3E-6	3.5E-6	8.3E-3	8.9E-3

NOTE: RAF = Relative absorption factor (-)
M = Adherence factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
IR = Soil ingestion rate (mg/day)
SA = Skin exposure area (cm^2/day)

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno
Date Completed: 5-Jan-07
Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAYS ARE ACTIVE)**

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Exposure (mg/m^3)				(3) Inhalation Unit Risk Factor (µg/m^3)^-1	(4) Individual COC Risk (2) x (3) x 1000			
		On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)		On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)
		Commercial	Construction Worker	None	None		Commercial	Construction Worker	None	None
TPH - Aliph >C10-C12*	D									
TPH - Aliph >C12-C16*	D									
TPH - Aliph >C16-C21*	D									
Total Pathway Carcinogenic Risk =										

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA

Completed By: Jessica Moreno
Date Completed: 5-Jan-07

Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

TOXIC EFFECTS

Constituents of Concern	(5) Total Toxicant Exposure (mg/m^3) On-site (0 ft) Commercial	(5) Total Toxicant Exposure (mg/m^3) On-site (0 ft) Construction Worker	(5) Total Toxicant Exposure (mg/m^3) Off-site 1 (0 ft) None	(5) Total Toxicant Exposure (mg/m^3) Off-site 2 (0 ft) None	(6) Inhalation Reference Conc. (mg/m^3)	(7) Individual COC Hazard Quotient (5) / (6) On-site (0 ft) Commercial	(7) Individual COC Hazard Quotient (5) / (6) On-site (0 ft) Construction Worker	(7) Individual COC Hazard Quotient (5) / (6) Off-site 1 (0 ft) None	(7) Individual COC Hazard Quotient (5) / (6) Off-site 2 (0 ft) None
TPH - Aliph >C10-C12*	1.2E-3				1.0E+0	1.2E-3			
TPH - Aliph >C12-C16*	5.5E-4				1.0E+0	5.5E-4			
TPH - Aliph >C16-C21*									
Total Pathway Hazard Index =						**1.8E-3**			

Site Name: P&D 23rd Avenue Associates
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Completed By: Jessica Moreno
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RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAYS ARE ACTIVE)**

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Exposure (mg/m^3) Commercial	(3) Inhalation Unit Risk Factor (µg/m^3)^-1	(4) Individual COC Risk (2) x (3) x 1000 Commercial
TPH - Aliph >C10-C12*	D			
TPH - Aliph >C12-C16*	D			
TPH - Aliph >C16-C21*	D			

Total Pathway Carcinogenic Risk =

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAYS ARE ACTIVE)**

Constituents of Concern	(5) Total Toxicant Exposure (mg/m^3)	(6) Inhalation Reference Concentration (mg/m^3)	(7) Individual COC Hazard Quotient (5) / (6)
	Commercial	TOXIC EFFECTS	Commercial
TPH - Aliph >C10-C12*	3.5E+0	1.0E+0	3.5E+0
TPH - Aliph >C12-C16*	7.5E-1	1.0E+0	7.5E-1
TPH - Aliph >C16-C21*			

Total Pathway Hazard Index = **4.3E+0**

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAY ■ (CHECKED IF PATHWAY IS ACTIVE)

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Intake Rate (mg/kg/day)				(3) Slope Factor (mg/kg/day)^-1		(4) Individual COC Risk	
		(a) via Ingestion	(b) via Dermal Contact	(c) via Ingestion	(d) via Dermal Contact	(a) Oral	(b) Dermal	(2a)x(3a) + (2b)x(3b)	(2c)x(3a) + (2d)x(3b)
		Commercial		Construction Worker				Commercial	Construction Worker
TPH - Aliph >C10-C12*	D								
TPH - Aliph >C12-C16*	D								
TPH - Aliph >C16-C21*	D								

* No dermal slope factor available--oral slope factor used.

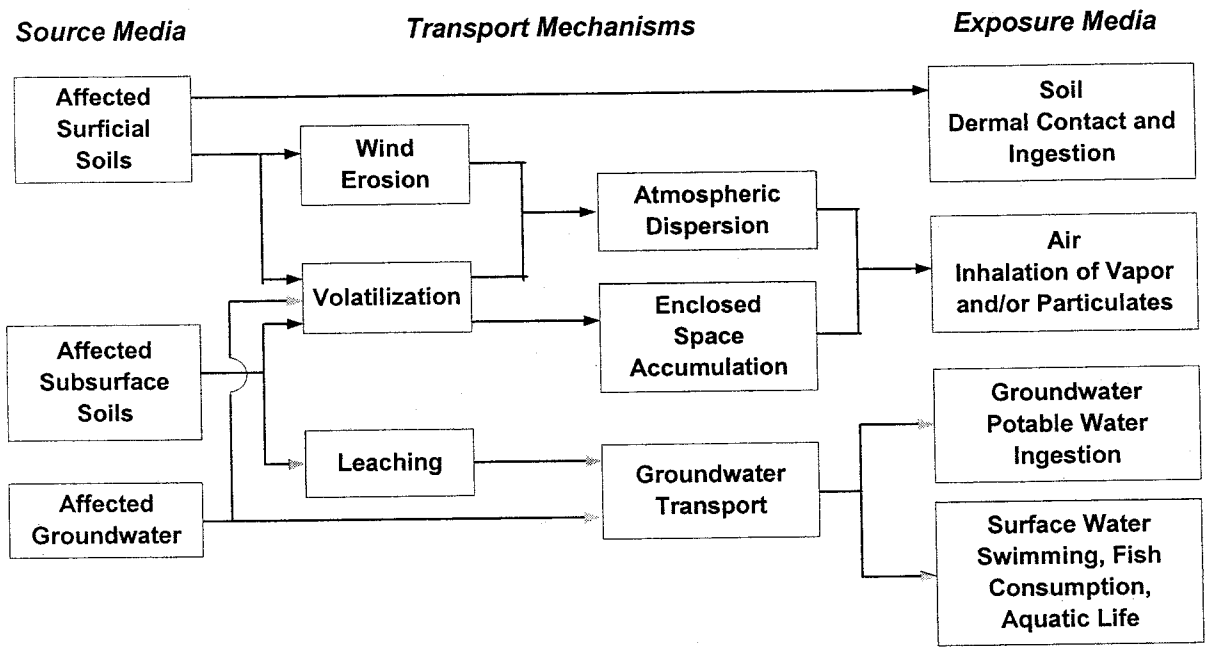
Total Pathway Carcinogenic Risk =

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
Job ID: CB018F

Exposure Pathway Flowchart

Site Name: P&D 23rd Avenue Associates
Location: 1125 Miller Avenue, Oakland, CA
Compl. By: Jessica Moreno
Job ID: CB018F
Date: 5-Jan-07



Receptors	On-site	Off-site1	Off-site2
	Res./Constr.	*NA*	*NA*
Outdoor Air:	*Res./Constr.*	*None*	*None*
Indoor Air:	*Residential*	*NA*	*NA*
Groundwater Potable Water Ingestion	None	None	None
Surface Water Swimming, Fish Consumption, Aquatic Life	NA	NA	NA

SOURCE → TRANSPORT → RECEPTOR

Commands and Options

Main Screen | Print Sheet | Help

RBCA SITE ASSESSMENT

Input Parameter Summary

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA

Completed By: Jessica Moreno
Date Completed: 5-Jan-07

Job ID: CB018F

Exposure Parameters		Residential			Commercial/Industrial	
		Adult	(1-6yrs)	(1-16 yrs)	Chronic	Construc.
AT_c	Averaging time for carcinogens (yr)	70				
AT_n	Averaging time for non-carcinogens (yr)	30			25	1
BW	Body weight (kg)	70	15	35	70	
ED	Exposure duration (yr)	30	6	16	25	1
τ	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure frequency (days/yr)	350			250	180
EF_D	Exposure frequency for dermal exposure	350			250	
IR_w	Ingestion rate of water (L/day)	2			1	
IR_s	Ingestion rate of soil (mg/day)	100	200		50	100
SA	Skin surface area (dermal) (cm^2)	5800		2023	5800	5800
M	Soil to skin adherence factor	1				
ET_{swim}	Swimming exposure time (hr/event)	3				
EV_{swim}	Swimming event frequency (events/yr)	12	12	12		
IR_{swim}	Water ingestion while swimming (L/hr)	0.05	0.5			
SA_{swim}	Skin surface area for swimming (cm^2)	23000		8100		
IR_{fish}	Ingestion rate of fish (kg/yr)	0.025				
FI_{fish}	Contaminated fish fraction (unitless)	1				

Complete Exposure Pathways and Receptors	On-site	Off-site 1	Off-site 2
Groundwater:			
Groundwater Ingestion	None	None	None
Soil Leaching to Groundwater Ingestion	None	None	None
Applicable Surface Water Exposure Routes:			
Swimming			NA
Fish Consumption			NA
Aquatic Life Protection			NA
Soil:			
Direct Ingestion and Dermal Contact	Res./Constr.		
Outdoor Air:			
Particulates from Surface Soils	Res./Constr.	None	None
Volatilization from Soils	Res./Constr.	None	None
Volatilization from Groundwater	None	None	None
Indoor Air:			
Volatilization from Subsurface Soils	Residential	NA	NA
Volatilization from Groundwater	None	NA	NA

Receptor Distance from Source Media	On-site	Off-site 1	Off-site 2	(Units)
Groundwater receptor	NA	NA	NA	(ft)
Soil leaching to groundwater receptor	NA	NA	NA	(ft)
Outdoor air inhalation receptor	0	NA	NA	(ft)

Target Health Risk Values		Individual	Cumulative
TR_{ab}	Target Risk (class A&B carcinogens)	1.0E-6	1.0E-5
TR_c	Target Risk (class C carcinogens)	1.0E-6	
THQ	Target Hazard Quotient (non-carcinogenic risk)	1.0E+0	1.0E+0

Modeling Options	
RBCA tier	Tier 2
Outdoor air volatilization model	Surface & subsurface models
Indoor air volatilization model	Johnson & Ettinger model
Soil leaching model	NA
Use soil attenuation model (SAM) for leachate?	NA
Air dilution factor	NA
Groundwater dilution-attenuation factor	NA

NOTE: NA = Not applicable

Surface Parameters		General	Construction	(Units)
A	Source zone area	3.9E+1	0.0E+0	(ft^2)
W	Length of source-zone area parallel to wind	9.0E+0	0.0E+0	(ft)
W_{gw}	Length of source-zone area parallel to GW flow	NA		(ft)
U_{air}	Ambient air velocity in mixing zone	7.4E+0		(ft/s)
δ_{air}	Air mixing zone height	6.6E+0		(ft)
P_a	Areal particulate emission rate	6.9E-14		(g/cm^2/s)
L_{ss}	Thickness of affected surface soils	4.0E+0		(ft)

Surface Soil Column Parameters		Value			(Units)
h_{cap}	Capillary zone thickness	NA			(ft)
h_v	Vadose zone thickness	NA			(ft)
ρ_s	Soil bulk density	1.7E+0			(g/cm^3)
f_{oc}	Fraction organic carbon	1.0E-2			(-)
θ_T	Soil total porosity	3.8E-1			(-)
K_{vs}	Vertical hydraulic conductivity	8.6E-2			(cm/d)
k_v	Vapor permeability	1.1E-15			(ft^2)
L_{gw}	Depth to groundwater	NA			(ft)
L_s	Depth to top of affected soils	4.2E-1			(ft)
L_{base}	Depth to base of affected soils	4.0E+0			(ft)
L_{subs}	Thickness of affected soils	3.6E+0			(ft)
pH	Soil/groundwater pH	8.0E+0			(-)
		capillary	vadose	foundation	
θ_w	Volumetric water content	0.342	0.31	0.12	(-)
θ_a	Volumetric air content	0.038	0.07	0.26	(-)

Building Parameters		Residential	Commercial	(Units)
L_b	Building volume/area ratio	6.56E+0	NA	(ft)
A_b	Foundation area	7.53E+2	NA	(ft^2)
X_{crk}	Foundation perimeter	1.12E+2	NA	(ft)
ER	Building air exchange rate	1.40E-4	NA	(1/s)
L_{crk}	Foundation thickness	4.92E-1	NA	(ft)
Z_{crk}	Depth to bottom of foundation slab	4.92E-1	NA	(ft)
η	Foundation crack fraction	1.00E-2	NA	(-)
dP	Indoor/outdoor differential pressure	0.00E+0	NA	(psi)
Q_s	Convective air flow through slab	0.00E+0	NA	(ft^3/s)

Groundwater Parameters		Value	(Units)
δ_{gw}	Groundwater mixing zone depth	NA	(ft)
I_f	Net groundwater infiltration rate	NA	(in/yr)
U_{gw}	Groundwater Darcy velocity	NA	(cm/d)
V_{gw}	Groundwater seepage velocity	NA	(cm/d)
K_s	Saturated hydraulic conductivity	NA	(cm/d)
i	Groundwater gradient	NA	(-)
S_w	Width of groundwater source zone	NA	(ft)
S_d	Depth of groundwater source zone	NA	(ft)
θ_{eff}	Effective porosity in water-bearing unit	NA	(-)
$f_{oc\text{-}sat}$	Fraction organic carbon in water-bearing unit	NA	(-)
pH_{sat}	Groundwater pH	NA	(-)
	Biodegradation considered?	NA	

Transport Parameters		Off-site 1	Off-site 2	Off-site 1	Off-site 2	(Units)
Lateral Groundwater Transport		Groundwater Ingestion		Soil Leaching to GW		
α_x	Longitudinal dispersivity	NA	NA	NA	NA	(ft)
α_y	Transverse dispersivity	NA	NA	NA	NA	(ft)
α_z	Vertical dispersivity	NA	NA	NA	NA	(ft)
Lateral Outdoor Air Transport		Soil to Outdoor Air Inhal.		GW to Outdoor Air Inhal.		
σ_y	Transverse dispersion coefficient	NA	NA	NA	NA	(ft)
σ_z	Vertical dispersion coefficient	NA	NA	NA	NA	(ft)
ADF	Air dispersion factor	NA	NA	NA	NA	(-)

Surface Water Parameters		Off-site 2	(Units)
Q_{sw}	Surface water flowrate	NA	(ft^3/s)
W_{pi}	Width of GW plume at SW discharge	NA	(ft)
δ_{pi}	Thickness of GW plume at SW discharge	NA	(ft)
DF_{sw}	Groundwater-to-surface water dilution factor	NA	(-)

RBCA SITE ASSESSMENT | **Baseline Risk Summary-All Pathways**

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA

Completed By: Jessica Moreno
Date Completed: 5-Jan-07

TIER 2 BASELINE RISK SUMMARY TABLE

EXPOSURE PATHWAY	BASELINE CARCINOGENIC RISK					BASELINE TOXIC EFFECTS				
	Individual COC Risk		Cumulative COC Risk		Risk Limit(s) Exceeded?	Hazard Quotient		Hazard Index		Toxicity Limit(s) Exceeded?
	Maximum Value	Target Risk	Total Value	Target Risk		Maximum Value	Applicable Limit	Total Value	Applicable Limit	
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	1.0E-5	☐	1.5E-3	1.0E+0	2.2E-3	1.0E+0	☐
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	1.0E-5	☐	1.2E+1	1.0E+0	1.5E+1	1.0E+0	■
SOIL EXPOSURE PATHWAYS										
Complete:	NC	1.0E-6	NC	1.0E-5	☐	1.0E+0	1.0E+0	2.1E+0	1.0E+0	■
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	NA	NA	NA	NA	☐	NA	NA	NA	NA	☐
SURFACE WATER EXPOSURE PATHWAYS										
Complete:	NA	NA	NA	NA	☐	NA	NA	NA	NA	☐
CRITICAL EXPOSURE PATHWAY (Maximum Values From Complete Pathways)										
	NC	***1.0E-6***	***NC***	***1.0E-5***	☐	***1.2E+1***	***1.0E+0***	***1.5E+1***	***1.0E+0***	■
	Outdoor Air		***Outdoor Air***			***Indoor Air***		***Indoor Air***		

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS (0.4 - 4 ft):
VAPOR AND DUST INHALATION

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/kg) Receptor				3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)			
	Soil Conc. (mg/kg)	On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)	On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)
		Residential	Construction Worker	None	None	Residential	Construction Worker	None	None
TPH - Aliph >C10-C12*	2.5E+3	1.6E+6	NA			1.6E-3			
TPH - Aliph >C12-C16*	2.5E+3	3.4E+6	NA			7.4E-4			
TPH - Aliph >C16-C21*	2.5E+3	1.2E+7	NA			2.0E-4			

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: P&D 23rd Avenue Associates
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SURFACE SOILS (0.4 - 4 ft):
VAPOR AND DUST INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)				5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)			
	On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)	On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)
	Residential	Construction Worker	None	None	Residential	Construction Worker	None	None
TPH - Aliph >C10-C12*	9.6E-1	4.9E-1			1.5E-3			
TPH - Aliph >C12-C16*	9.6E-1	4.9E-1			7.1E-4			
TPH - Aliph >C16-C21*	9.6E-1	4.9E-1			1.9E-4			

* = Chemical with user-specified data

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

Site Name: P&D 23rd Avenue Associates
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS (4 - 4 ft):

VAPOR INHALATION

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/kg) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Soil Conc. (mg/kg)	On-site (0 ft) Residential	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None	On-site (0 ft) Residential	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None
TPH - Aliph >C10-C12*	2.5E+3						
TPH - Aliph >C12-C16*	2.5E+3						
TPH - Aliph >C16-C21*	2.5E+3						

NOTE: NAF = Natural attenuation factor POE = Point of exposure

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

SUBSURFACE SOILS (4 - 4 ft):

VAPOR INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)			5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)		
	On-site (0 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)	On-site (0 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)
	Residential	None	None	Residential	None	None
TPH - Aliph >C10-C12*						
TPH - Aliph >C12-C16*						
TPH - Aliph >C16-C21*						

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/L) Receptor			3) Exposure Medium Outdoor Air: POE Conc. (mg/m^3) (1) / (2)		
	Groundwater Conc. (mg/L)	On-site (0 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)	On-site (0 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)
		None	None	None	None	None	None
TPH - Aliph >C10-C12*							
TPH - Aliph >C12-C16*							
TPH - Aliph >C16-C21*							

NOTE: NAF = Natural attenuation factor POE = Point of exposure

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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

GROUNDWATER: VAPOR

INHALATION (cont'd)

Constituents of Concern	4) Exposure Multiplier (EFxED)/(ATx365) (unitless)			5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4)		
	On-site (0 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)	On-site (0 ft)	Off-site 1 (0 ft)	Off-site 2 (0 ft)
	None	None	None	None	None	None
TPH - Aliph >C10-C12*						
TPH - Aliph >C12-C16*						
TPH - Aliph >C16-C21*						

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr)

Site Name: P&D 23rd Avenue Associates
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS

TOTAL PATHWAY EXPOSURE (mg/m^3)

(Sum average expsosure concentrations from soil and groundwater routes.)

Constituents of Concern	On-site (0 ft) Residential	On-site (0 ft) Construction Worker	Off-site 1 (0 ft) None	Off-site 2 (0 ft) None
TPH - Aliph >C10-C12*	1.5E-3			
TPH - Aliph >C12-C16*	7.1E-4			
TPH - Aliph >C16-C21*	1.9E-4			

Site Name: P&D 23rd Avenue Associates
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

SOILS (0.4 - 4 ft): VAPOR INTRUSION INTO ON-SITE BUILDINGS

Constituents of Concern	1) Source Medium Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor Residential	3) Exposure Medium Indoor Air: POE Conc. (mg/m^3) (1) / (2) Residential	4) Exposure Multiplier (EFxED)/(ATx365) (unitless) Residential	5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4) Residential
TPH - Aliph >C10-C12*	2.5E+3	2.0E+2	1.3E+1	9.6E-1	1.2E+1
TPH - Aliph >C12-C16*	2.5E+3	9.3E+2	2.7E+0	9.6E-1	2.6E+0
TPH - Aliph >C16-C21*	2.5E+3	1.2E+4	2.0E-1	9.6E-1	1.9E-1

* = Chemical with user-specified data

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr) NAF = Natural attenuation factor POE = Point of exposure

Site Name: P&D 23rd Avenue Associates
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Completed By: Jessica Moreno

Date Completed: 5-Jan-07
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INTRUSION INTO ON-SITE BUILDINGS

Exposure Concentration

Constituents of Concern	1) Source Medium Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor None	3) Exposure Medium Indoor Air: POE Conc. (mg/m^3) (1) / (2) None	4) Exposure Multiplier (EFxED)/(ATx365) (unitless) None	5) Average Inhalation Exposure Concentration (mg/m^3) (3) X (4) None
TPH - Aliph >C10-C12*					
TPH - Aliph >C12-C16*					
TPH - Aliph >C16-C21*					

NOTE: AT = Averaging time (days) EF = Exposure frequency (days/yr) ED = Exposure duration (yr) NAF = Natural attenuation factor POE = Point of exposure

Site Name: P&D 23rd Avenue Associates
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RBCA SITE ASSESSMENT

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS

Constituents of Concern	TOTAL PATHWAY EXPOSURE (mg/m^3) (Sum average expsosure concentrations from soil and groundwater routes.) Residential
TPH - Aliph >C10-C12*	1.2E+1
TPH - Aliph >C12-C16*	2.6E+0
TPH - Aliph >C16-C21*	1.9E-1

Site Name: P&D 23rd Avenue Associates
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Completed By: Jessica Moreno

Date Completed: 5-Jan-07
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RBCA SITE ASSESSMENT

Site Name: P&D 23rd Avenue Associates Site Location: 1125 Miller Avenue, Oaklan Completed By: Jessica Moreno Date Completed: 5-Jan-07

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAY ■ **(CHECKED IF PATHWAY IS ACTIVE)**

SURFACE SOILS OR SEDIMENTS:
ON-SITE INGESTION AND DERMAL CONTACT

Constituents of Concern	1) Source/Exposure Medium	2) Exposure Multiplier (IR+SAxMxRAF)xEFxED/(BWxAT) (kg/kg/day)		3) Average Daily Intake Rate (mg/kg/day) (1) x (2)	
	Surface Soil Conc. (mg/kg)	Residential	Construction Worker	Residential	Construction Worker
TPH - Aliph >C10-C12*	2.5E+3	4.1E-5	2.9E-5	1.0E-1	7.3E-2
TPH - Aliph >C12-C16*	2.5E+3	4.1E-5	2.9E-5	1.0E-1	7.3E-2
TPH - Aliph >C16-C21*	2.5E+3	5.3E-6	3.5E-6	1.3E-2	8.9E-3

NOTE: RAF = Relative absorption factor (-)
M = Adherence factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
IR = Soil ingestion rate (mg/day)
SA = Skin exposure area (cm^2/day)

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno
Date Completed: 5-Jan-07
Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAYS ARE ACTIVE)**

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Exposure (mg/m^3)				(3) Inhalation Unit Risk Factor (µg/m^3)^-1	(4) Individual COC Risk (2) x (3) x 1000			
		On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)		On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)
		Residential	Construction Worker	None	None		Residential	Construction Worker	None	None
TPH - Aliph >C10-C12*	D									
TPH - Aliph >C12-C16*	D									
TPH - Aliph >C16-C21*	D									
Total Pathway Carcinogenic Risk =										

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA

Completed By: Jessica Moreno
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Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

TOXIC EFFECTS

Constituents of Concern	(5) Total Toxicant Exposure (mg/m^3)				(6) Inhalation Reference Conc. (mg/m^3)	(7) Individual COC Hazard Quotient (5) / (6)			
	On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)		On-site (0 ft)		Off-site 1 (0 ft)	Off-site 2 (0 ft)
	Residential	Construction Worker	None	None		Residential	Construction Worker	None	None
TPH - Aliph >C10-C12*	1.5E-3				1.0E+0	1.5E-3			
TPH - Aliph >C12-C16*	7.1E-4				1.0E+0	7.1E-4			
TPH - Aliph >C16-C21*									
Total Pathway Hazard Index =						**2.2E-3**			

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA

Completed By: Jessica Moreno
Date Completed: 5-Jan-07

Job ID: CB018F

RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAYS ARE ACTIVE)**

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Exposure (mg/m^3) Residential	(3) Inhalation Unit Risk Factor (µg/m^3)^-1	(4) Individual COC Risk (2) x (3) x 1000 Residential
TPH - Aliph >C10-C12*	D			
TPH - Aliph >C12-C16*	D			
TPH - Aliph >C16-C21*	D			

Total Pathway Carcinogenic Risk =

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
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RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAYS ARE ACTIVE)**

	TOXIC EFFECTS		
	(5) Total Toxicant Exposure (mg/m^3)	(6) Inhalation Reference Concentration (mg/m^3)	(7) Individual COC Hazard Quotient (5) / (6)
Constituents of Concern	Residential		Residential
TPH - Aliph >C10-C12*	1.2E+1	1.0E+0	1.2E+1
TPH - Aliph >C12-C16*	2.6E+0	1.0E+0	2.6E+0
TPH - Aliph >C16-C21*			

Total Pathway Hazard Index = **1.5E+1**

Site Name: P&D 23rd Avenue Associates
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Completed By: Jessica Moreno

Date Completed: 5-Jan-07
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RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAY ■ **(CHECKED IF PATHWAY IS ACTIVE)**

CARCINOGENIC RISK

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Intake Rate (mg/kg/day)				(3) Slope Factor (mg/kg/day)^-1		(4) Individual COC Risk	
		(a) via Ingestion	(b) via Dermal Contact	(c) via Ingestion	(d) via Dermal Contact	(a) Oral	(b) Dermal	(2a)x(3a) + (2b)x(3b) Residential	(2c)x(3a) + (2d)x(3b) Construction Worker
		Residential		Construction Worker					
TPH - Aliph >C10-C12*	D								
TPH - Aliph >C12-C16*	D								
TPH - Aliph >C16-C21*	D								

* No dermal slope factor available--oral slope factor used.

Total Pathway Carcinogenic Risk =

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
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RBCA SITE ASSESSMENT

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAY ■ (CHECKED IF PATHWAY IS ACTIVE)

TOXIC EFFECTS

Constituents of Concern	(5) Total Toxicant Intake Rate (mg/kg/day)				(6) Oral Reference Dose (mg/kg-day)		(7) Individual COC Hazard Quotient (5a)/(6a) + (5b)/(6b)	(5c)/(6a) + (5d)/(6b)
	(a) via Ingestion	(b) via Dermal Contact	(c) via Ingestion	(d) via Dermal Contact	(a) Oral	(b) Dermal	Residential	Construction Worker
	Residential		Construction Worker					
TPH - Aliph >C10-C12*	3.4E-3	9.9E-2	1.8E-3	7.1E-2	1.0E-1	1.0E-1*	1.0E+0	7.3E-1
TPH - Aliph >C12-C16*	3.4E-3	9.9E-2	1.8E-3	7.1E-2	1.0E-1	1.0E-1*	1.0E+0	7.3E-1
TPH - Aliph >C16-C21*	3.4E-3	9.9E-3	1.8E-3	7.1E-3	2.0E+0	2.0E+0*	6.7E-3	4.4E-3

* No dermal reference dose available--oral reference dose used.

Total Pathway Hazard Index = **2.1E+0** | **1.5E+0**

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA
Completed By: Jessica Moreno

Date Completed: 5-Jan-07
Job ID: CB018F

RBCA SITE ASSESSMENT | **User-Specified COC Data**

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

CONSTITUENT	Representative COC Concentration			
	Groundwater		Soils (0.4 - 4 ft)	
	value (mg/L)	note	value (mg/kg)	note
TPH - Aliph >C10-C12*			2.5E+3	
TPH - Aliph >C12-C16*			2.5E+3	
TPH - Aliph >C16-C21*			2.5E+3	

*** = Chemical with user-specified data**

Site Name: P&D 23rd Avenue Associates

Site Location: 1125 Miller Avenue, Oakland, CA

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Date Completed: 5-Jan-07

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RBCA SITE ASSESSMENT

Site Name: P&D 23rd Avenue Associates
Site Location: 1125 Miller Avenue, Oakland, CA

Completed By: Jessica Moreno
Date Completed: 5-Jan-07

TIER 2 SOIL CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	Typical Detection Limit (mg/kg)	No. of Samples	No. of Detects	Maximum Conc. (mg/kg)	Mean Conc. (mg/kg)	UCL on Mean Conc. (mg/kg)
0-00-0	TPH - Aliph >C10-C12*	5.0E+01	4	4	2.5E+03	1.1E+02	2.4E+03
0-00-0	TPH - Aliph >C12-C16*	5.0E+01	4	4	2.5E+03	1.1E+02	2.4E+03
0-00-0	TPH - Aliph >C16-C21*	5.0E+01	4	4	2.5E+03	1.1E+02	2.4E+03

* = Chemical with user-specified data

CHEMICAL DATA FOR SELECTED COCs

Physical Property Data

Constituent	CAS Number	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(L/kg) partition		ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3) mol	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
TPH - Aliph >C10-C12*	0-00-0	T	72	T	1.00E-01	T	1.00E-05	T	5.40	Koc	T	2.96E+00	1.22E+02	T	4.79E-01	-	3.40E-02	T	-	-	-
TPH - Aliph >C12-C16*	0-00-0	T	200	T	1.00E-01	T	1.00E-05	T	6.70	Koc	T	1.26E+01	5.21E+02	T	3.65E-02	-	7.60E-04	T	-	-	-
TPH - Aliph >C16-C21*	0-00-0	T	270	T	1.00E-01	T	1.00E-05	T	8.80	Koc	T	1.19E+02	4.90E+03	T	8.36E-04	-	2.50E-06	T	-	-	-

* = Chemical with user-specified data

Site Name: P&D 23rd Avenue Associates

Site Location: 1125 Miller Avenue, Oakland, CA

Completed By: Jessica Moreno

Date Completed: 5-Jan-07

Job ID: CB018F

CHEMICAL DATA FOR SELECTED COCs

Toxicity Data

Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Reference Dose (mg/kg/day) Dermal RfD_dermal	ref	Reference Conc. (mg/m3) Inhalation RfC_inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Slope Factors 1/(mg/kg/day) Dermal SF_dermal	ref	Unit Risk Factor 1/(µg/m3) Inhalation URF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
TPH - Aliph >C10-C12*	1.00E-01	T	-	-	1.00E+00	T	-	-	-	-	-	-	D	FALSE
TPH - Aliph >C12-C16*	1.00E-01	T	-	-	1.00E+00	T	-	-	-	-	-	-	D	FALSE
TPH - Aliph >C16-C21*	2.00E+00	T	-	-	-	T	-	-	-	-	-	-	D	FALSE

* = Chemical with user-specified

Site Name: P&D 23rd Avenue A

Site Location: 1125 Miller Ave

Miscellaneous Chemical Data

Constituent	Maximum Contaminant Level MCL (mg/L)	ref	Time-Weighted Average Workplace Criteria TWA (mg/m3)	ref	Aquatic Life Prot. Criteria AQL (mg/L)	ref	Biocon-centration Factor (L-wat/kg-fish)
TPH - Aliph >C10-C12*	1.00E-01	-	-	-	-	-	1
TPH - Aliph >C12-C16*	1.00E-01	-	-	-	-	-	1
TPH - Aliph >C16-C21*	1.00E-01	-	-	-	-	-	1

* = Chemical with user-specified

Site Name: P&D 23rd Avenue A

Site Location: 1125 Miller Ave

CHEMICAL DATA FOR SELECTED COCs

Miscellaneous Chemical Data

Constituent	Dermal Relative Absorp. Factor (unitless)	Water Dermal Permeability Data: Dermal Permeability Coeff. (cm/hr)	Lag time for Dermal Exposure (hr)	Critical Exposure Time (hr)	Relative Contr of Derm Perm Coeff (unitless)	Water/Skin Derm Adsorp Factor (cm/event)	ref	Detection Limits: Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days): Saturated	Unsaturated	ref
TPH - Aliph >C10-C12*	0.5	-	-	-	-	-	-	0.05	-	50	-	-	-	-
TPH - Aliph >C12-C16*	0.5	-	-	-	-	-	-	0.05	-	50	-	-	-	-
TPH - Aliph >C16-C21*	0.05	-	-	-	-	-	-	0.05	-	50	-	-	-	-

* = Chemical with user-specified

Site Name: P&D 23rd Avenue A

Site Location: 1125 Miller Ave