

ALASKA
Department of
Environmental
Conservation

ADDITIONAL SITE CHARACTERIZATION 4TH AND GAMBELL SITE

FINAL
August 2010



Prepared by:



825 W. 8th Ave.
Anchorage, AK 99501

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ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
bgs	Below ground surface
DCE.....	Dichloroethene
DO.....	Dissolved oxygen
DRO	Diesel range organics
EPA.....	United States Environmental Protection Agency
ESA.....	Environmental site assessment
°F	Degrees Fahrenheit
GCL.....	Groundwater cleanup level
IDW	Investigation-derived waste
inHg.....	Inches of mercury
µg/kg	Micrograms per kilogram
mg/L	Milligrams per liter
NC	Northern Commercial
NTP	Notice to Proceed
OASIS	OASIS Environmental, Inc.
PCE.....	Tetrachloroethene
ppm	Parts per million
RPD.....	Relative percent difference
SCL	Soil cleanup level
TCE	Trichloroethene
UST	Underground storage tank
VOC	Volatile organic compound

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EXECUTIVE SUMMARY

OASIS Environmental, Inc. (OASIS) conducted additional site characterization activities involving the vapor intrusion pathway for the 4th and Gambell site located in downtown Anchorage, Alaska. OASIS collected air samples at four residences north of the site in February and May 2010. During each event, soil gas samples were collected adjacent to each residence from permanent soil gas monitoring points. Indoor air samples were collected at the two western residences, while crawl space air samples were collected at the two eastern residences. Outdoor air samples also were collected. A passive soil gas survey of a four-block area also was performed to understand the distribution of contamination.

Analytical results from the two assessments indicate that tetrachloroethene (PCE), the primary contaminant of concern at the site, was present in soil gas at concentrations exceeding Alaska Department of Environmental Conservation (ADEC) target soil gas levels at all four residences for both sampling events. In addition, indoor air or crawl space air analytical results show that PCE also was present above ADEC indoor air target levels at all four residences for both sampling events. These findings indicate that PCE is present in the residences above risk-based target levels likely as a result of vapor intrusion.

These results were consistent with similar winter and spring assessments in 2009. The cumulative data from the four rounds of air sampling suggest that indoor air concentrations peak in the winter as compared to the spring sampling results, but the opposite holds for soil gas as the greater concentrations have been observed in spring. The crawl space analytical results have not been consistent.

Passive soil gas sampling showed that elevated PCE concentrations occur around the former C&K Cleaners and extend to the four residences where vapor intrusion assessments have occurred. These elevated PCE concentrations are assumed to represent vadose-zone contamination. The passive soil gas data also appear to map a groundwater plume moving northeast from the source area and a path of increased PCE concentrations that occur along the utility corridor in the alley.

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1. INTRODUCTION

Under Notice-to-Proceed (NTP) 18-4002-11-007, the Alaska Department of Environmental Conservation (ADEC) tasked OASIS Environmental, Inc. (OASIS) with conducting additional site characterization activities involving the vapor intrusion pathway at the 4th and Gambell site (hereafter, “the site”) in Anchorage, Alaska. The site is located on the northeast corner of the 4th Avenue and Gambell Street intersection (Figure 1). This report summarizes the results of sampling efforts in February and May 2010.

1.1. Objective

The objective for this project, based on the project plan outlined in *Additional Site Characterization Work Plan, 4th and Gambell* (OASIS 2009a), is to determine the potential for vapor intrusion at four buildings located north of the site and to delineate the source area of vadose-zone and groundwater contamination.

1.2. Project Organization

ADEC contracted OASIS to manage and execute this project under NTP 18-9028-13-52. OASIS subcontracted with Air Toxics Ltd, of Folsom, California, to perform analysis of air and soil gas samples. GORE and Associates were subcontracted to analyze passive soil gas samples.

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2. BACKGROUND

This section summarizes the environmental setting and previous investigations at the 4th and Gambell site. The environmental setting is based on information from existing investigation reports. Section 8 lists all referenced materials.

2.1. Environmental Setting

The following paragraph on the environmental setting at the site is taken from *Environmental Assessment* (EnviroAmerica 1993):

Local site conditions may consist of alluvium in abandoned stream channels and in terraces along modern streams. Gravel and sand appears to be generally well bedded and well sorted. Deposits in large channels and in other broad areas are chiefly gravel and thicker than deposits in small narrow channels and terraces, which contain chiefly sand and gravel; some channels and broad areas may contain significant amounts of peat, silt or clay.

Drilling logs from soil borings installed at the site indicate that vadose-zone soils are fine- to coarse-grained sands and gravel. The water table is located approximately 40 feet below ground surface (bgs), although the saturated zone appears to vary by as much as 5 feet. The groundwater flow direction has been mapped to the northeast. A layer of clay exists around 45 feet bgs and may serve as a confining layer for migration of contaminants (BGES 2005).

2.2. Previous Investigations

A Phase I environmental site assessment (ESA) was performed for the site in 1993. The Phase I ESA identified the operation of a C&K Cleaners from 1968 to 1970 and a Northern Commercial (NC) Tire Center from 1976 to 1978. C&K Cleaners appears to have been located on the western side of the property, and NC Tire Center appears to have been located on the eastern side of the property. The Phase I site reconnaissance indicated that an underground storage tank (UST) vent pipe was visible on the property. All buildings were removed from the site in 1978. The site has since served as a parking lot (EnviroAmerica 1993).

A Phase II ESA was performed in 1997. Trenches dug near the former C&K Cleaners unearthed a log crib with four empty drums marked for use in dry cleaning. A soil sample collected near the drums had a concentration of tetrachloroethene (PCE) of 3.2 parts per million (ppm). Seven hydraulic lifts, associated piping, sumps, an UST, and a log crib also were identified near the former NC Tire Center. Soil samples collected near the log crib had concentrations of PCE, ethylbenzene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, arsenic, barium, cadmium, and chromium above ADEC soil cleanup levels (SCLs). Three monitoring wells (MW-1, EPM-2, and EPM-3) also were installed. No volatile organic compounds (VOCs) were detected in MW-2 and MW-3. The concentration of PCE in MW-1 was 4.25 ppm (EPMI 1997).

Another Phase II ESA was performed in August 2004, which included excavation of six test pits, removal of five hydraulic lifts, removal of four USTs, removal of soil contaminated with diesel range organics (DRO) above the SCL, and identification of monitoring well MW-1. The hydraulic lifts and USTs were associated with the former NC Tire Center operation. The contaminated soil came from underneath the hydraulic lifts and USTs. Concentrations of PCE above the SCL were detected in three of the test pits. These three test pits were located on the western side of the property near the location of the former cleaners (BGES 2004b).

Monitoring well MW-1 was sampled in October 2004. The sample was analyzed for VOCs by United States Environmental Protection Agency (EPA) method 8260. The concentration of PCE was 2.28 milligrams per liter (mg/L), which exceeds the ADEC groundwater cleanup level (GCL) of 0.005 mg/L. All other compounds were less than laboratory reporting limits (BGES 2004a).

Three additional monitoring wells (MW-2, MW-3, and MW-4) were installed in March 2005. Soil samples were collected during drilling from various intervals and analyzed for VOCs. Concentrations of PCE ranged from 2,130 micrograms per kilogram ($\mu\text{g}/\text{kg}$) in the interval from 36 to 38 feet bgs in MW-4 to 79,500 $\mu\text{g}/\text{kg}$ in the interval from 28 to 30 feet bgs in MW-2. All other compounds were less than laboratory reporting limits. PCE results for groundwater were 1.49 mg/L in MW-1, 0.0707 mg/L in MW-2, 1.79 mg/L in MW-3, and 0.372 mg/L in MW-4. All other compounds in groundwater were less than laboratory reporting limits. The conclusion was made that biodegradation of PCE was not occurring at a significant rate because of a lack of PCE daughter compounds and the oxygenated state of the aquifer (BGES 2005). However, it should be pointed out that dissolved oxygen (DO) was measured at ground surface in purge water obtained by the use of a bailer, which generally does not provide a representative measurement for DO.

Five soil borings (A, C, D, E, and F) were drilled and three monitoring wells (MW-5, MW-6, and MW-7) were installed in an assessment performed in 2007. Soil samples were collected from two or three intervals in all eight borings. Concentrations of PCE exceeded the SCL in all samples. Concentrations of PCE in groundwater exceeded the GCL of 0.005 mg/L in all three wells: 0.523 mg/L in MW-5, 0.822 mg/L in MW-6, and 0.0051 mg/L in MW-7 (BGES 2007).

A site characterization was performed in July 2008. The site characterization included drilling and sampling six soil borings (SB-1, SB-2, SB-3, SB-4, SB-5, and SB-6), sampling monitoring wells MW-5 and MW-6, and sampling two temporary wells (SB-1 and SB-2). Analytical results for soil borings SB-2, SB-3, SB-4, and SB-5 indicate an area of PCE-impacted soil that is located north and northeast of the former C&K Cleaners. Contamination is present at ground surface in the areas of SB-2, SB-3, and SB-4, but the significant mass of contamination occurs in a gravelly sand profile that begins around 15 feet bgs and extends to approximately 35 feet bgs. Analytical results from groundwater samples collected at the monitoring and temporary wells during this site characterization demonstrate that PCE exceeds the GCL underneath the entire area of the former C&K Cleaners. The plume appears to extend northeastward, which is the

reported direction of local groundwater flow. Based on the elevated PCE concentration in MW-2 and MW-6, the plume likely extends west of Gambell Street and north of 3rd Avenue, respectively. The absence of PCE or other significant concentrations of VOCs in temporary well SB-1 indicates that no upgradient source is contributing to contamination at the 4th and Gambell site (OASIS 2008).

Additional site characterization was performed in March 2009 and May 2009 with the inclusion of vapor intrusion assessments at four residential buildings located north of the 4th and Gambell site. The assessments included the collection of soil gas samples and outdoor air samples outside each building and the collection of either indoor air or crawl space air samples. Analytical results from the two assessments indicated that PCE was present in soil gas at concentrations exceeding ADEC target soil gas levels at all four residences for both sampling events. In addition, indoor air or crawl space air analytical results showed that PCE also was present above ADEC indoor air target levels at all four residences for both sampling events, except for the south duplex in June 2009. These findings indicated that PCE was present in the residences above risk-based screening levels, likely as a result of vapor intrusion (OASIS 2009b).

Figure 2 shows the locations of soil borings and monitoring wells discussed in this section.

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3. REGULATORY FRAMEWORK

A regulatory framework for this project has been developed using the following regulations and guidance documents:

- EPA, *OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)*, November 2002
- Interstate Technology Regulatory Council, *Vapor Intrusion Pathway: A Practical Guideline*, January 2007
- California Environmental Protection Agency, *Advisory–Active Soil Gas Investigations*, January 28, 2003

3.1. Contaminants of Concern

The contaminants of concern originally identified for the initial ADEC characterization effort in July 2008 included the following contaminants:

- PCE and its daughter compounds trichloroethene (TCE), cis-1,2-dichloroethene (DCE), trans-1,2-DCE, and vinyl chloride
- Petroleum hydrocarbons–benzene, toluene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, gasoline range organics, and DRO
- Heavy metals–arsenic, barium, cadmium, and chromium

However, the site characterization and subsequent vapor intrusion assessments demonstrated that PCE was the main release compound and the main contaminant affecting risk for the vapor intrusion pathway. Therefore, only risk-based screening levels for PCE and its degradation compounds will be used to evaluate air samples.

3.2. Target Levels

A multiple-lines-of-evidence approach involving analytical data from outdoor air samples, indoor air samples, soil gas samples, weather conditions, and results of building surveys is used to evaluate the vapor intrusion pathway. If analysis of the lines of evidence indicates that indoor air concentrations appear to be the result of vapor intrusion, then indoor air analytical results are compared to ADEC indoor air target levels as presented in *Draft Vapor Intrusion Guidance at Contaminated Sites, July 2009*, to evaluate risk from vapor intrusion. The indoor air target levels represent an incremental cancer risk of 1 in 100,000 from chronic exposure to carcinogenic contaminants in indoor air or a hazard quotient of 1.0 for non-carcinogenic contaminants. Table 1 summarizes the ADEC screening levels for contaminants of concern as well as screening levels for soil gas concentrations.

**TABLE 1. TARGET LEVELS FOR CONTAMINANTS OF CONCERN,
4TH AND GAMBELL, ANCHORAGE, ALASKA**

Compound	ADEC Residential Soil Gas Target Levels ($\mu\text{g}/\text{m}^3$)	ADEC Residential Indoor Air Target Levels ($\mu\text{g}/\text{m}^3$)
PCE	41	4.1
TCE	2.2	0.22
cis-1,2-DCE	370	37
trans-1,2-DCE	630	63
Vinyl chloride	8.1	0.81

Note: $\mu\text{g}/\text{m}^3$ = Micrograms per cubic meter

4. FIELD ACTIVITIES

This section presents a summary of field activities associated with vapor intrusion assessments performed at four residential buildings in February and May 2010 and a passive soil gas survey conducted in April and May 2010. Vapor intrusion assessments were performed at the following four buildings:

- Single family residence located at 710 3rd Avenue
- Single family residence located at 720 3rd Avenue
- North duplex located at 736 3rd Avenue
- South duplex located at 736 3rd Avenue

This section is divided into subsections that address sampling activities by sample type. Appendix A contains a copy of field notes. Appendix B presents photographs of field activities.

4.1. Air Sampling

OASIS field personnel conducted two sampling events: February 2010 and May 2010. The following subsections detail the procedures for air sampling. Table 2 presents a summary of sample information. Figure 3 shows the sample locations for outdoor, indoor, crawl space, and soil gas air samples. Figure 4 presents the locations where passive soil gas modules were deployed.

4.1.1. Outdoor, Indoor, and Crawl Space Air Samples

Outdoor, indoor, and crawl space air samples were collected in 6-liter, 100%-certified summa canisters with 24-hour flow controllers. The canisters for the indoor and outdoor air samples were elevated between 3 and 5 feet above the ground to capture the breathing zone for a seated individual. The canisters for the crawl space air samples were placed on the ground surface in the crawl space.

OASIS field personnel measured the initial vacuums in the canisters prior to sample collection to ensure adequate beginning vacuum. OASIS field personnel also measured the final vacuums in the canisters after 24 hours of sample collection.

4.1.2. Soil Gas Samples

The process for sampling the soil gas monitoring points began with a leak check of the monitoring point and sample manifold. The leak check was comprised of two parts: a manifold check and a soil gas monitoring point check. The following procedure was used for conducting the manifold leak check:

- Measured the initial vacuum in the summa canister.
- Connected the entire sample train. This entailed attaching a piece of Teflon sample tubing to the sub-slab monitoring point and the other end to the monitoring point valve on the inside of the leak detection hood. Another piece of Teflon sample tubing was then connected to the monitoring point valve on the

outside of the leak detection hood and the other end to the manifold. Then, the helium supply was connected to the leak detection hood; the pump was connected to the pump valve on the manifold; and the rotameter was connected to the other side of the pump. Lastly, a 30-minute flow controller and 1-liter summa canister were connected to each other, and the other end of the flow controller was connected to the sample valve on the manifold. Figure 5 shows a schematic of the leak detection system.

- Closed the monitoring point valve on the leak detection hood and opened the sample and pump valves. Ran the sample pump so that a vacuum was pulled on the manifold.
- Closed the pump valve and turned off the pump. Verified that the manifold maintained a constant vacuum.

At this point, the leak check for the soil gas monitoring point was performed. The following process was used for the soil gas monitoring point leak check:

- Opened the monitoring point and pump valves and turned on the sample pump. Verified that the flow rate was 200 milliliters per minute using the rotameter.
- Allowed helium to flood the leak detection hood for approximately one minute. Measured the helium concentration in the leak detection hood by sampling the exhaust port on the leak detection hood.
- Purged 2 liters of soil gas (ten minutes of purging). During purging, connected a tedlar bag to the exhaust line of the rotameter to collect a sample of the purge air. At the completion of the purge, analyzed the helium concentration of the air in the tedlar bag using a helium detector. A reading of less than 10% of the helium concentration measured in the leak detection hood was considered a successful leak check.
- Measured oxygen, carbon dioxide, and volatile compound readings from the tedlar bag using a multi-gas meter.

At this point, the soil gas sample was collected. The following process occurred:

- Closed the pump valve on the manifold, turned off the pump, and verified that the sample valve was open on the manifold.
- Opened the valve on the summa canister and allowed the canister to fill for 30 minutes.
- Closed the valve on the summa canister at the end of 30 minutes, disconnected the flow controller from the summa canister, and measured the final vacuum in the canister.

4.1.3. Passive Soil Gas Sampling

OASIS conducted passive soil gas sampling to delineate the extent of the PCE-impacted soil in the vadose zone. OASIS deployed GORESorber® modules along a grid as depicted in Figure 4, except where property access prevented the installation of a

module. The grid began at the northeast corner of the intersection of 4th Avenue and Gambell Street and proceeded at 50-foot spacing to the east and north.

The modules were deployed at a depth of 3 feet bgs. The process involved using a rotary hammer drill to bore a 1-inch boring to a depth of 3 feet. The modules were inserted into the boring using a stainless steel insertion rod. Each module had string attached to it that extended to the ground surface where the string was tied to a cork for capping the boring. The modules were left in place to absorb contaminant vapors for two weeks, at which time they were retrieved and shipped to GORE for analysis of chlorinated solvents by gas chromatograph/mass spectrometry. A total of 176 modules, which includes 16 duplicate samples, were installed. Four probes were not recovered.

4.2. Work Plan Deviations

OASIS prepared *Additional Site Characterization Work Plan, 4th and Gambell* (OASIS 2009a), which outlined the strategy and methodology for the evaluation of the vapor intrusion pathway. The fieldwork was executed as per the plan except for the following deviation:

- A vapor intrusion assessment was to be performed at the residence located at 744 E 3rd Avenue. However, OASIS was not able to contact the tenants of the residence despite repeated attempts. OASIS tried to contact the tenants by going through the property owner, but the property owner had no contact information for the tenants.
- Four proposed passive soil gas sample locations were not sampled because of restricted access. These locations were K-3, J-5, J-6, and J-7.

4.3. Investigation-Derived Waste

Field activities for the vapor intrusion assessments generated minimal investigation-derived waste (IDW). Solid IDW included used personal protective equipment and sampling equipment, such as Teflon tubing and tedlar bags. These items were disposed of at the Anchorage landfill as hazardous using OASIS' conditionally exempt small quantity generator status. No aqueous IDW was generated.

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5. RESULTS

This section discusses field observations and analytical results of the vapor intrusion assessments. It is divided into subsections based on the type of sampling. Results are discussed by sampling event and building. Appendix C contains a copy of the laboratory analytical reports.

5.1. Air Sampling

This subsection presents analytical results for the vapor intrusion assessments at the four buildings.

5.1.1. February 2010

Air samples were collected from February 25 to 26, 2010. The barometric pressure consistently increased during the sampling event. The readings began at 29.34 inches of mercury (inHg) and ended at 29.80 inHg, which also corresponded to the minimum and maximum pressure readings (see Figure 6). Temperatures ranged from 18 degrees Fahrenheit (°F) to 30°F.

5.1.1.1. 710 3rd Avenue

Table 3 presents analytical results for air samples collected in February 2010 at 710 3rd Avenue. Figure 7 displays a subset of analytical results.

PCE was detected in the soil gas sample from SG-1, the indoor air sample, and the outdoor air sample. The soil gas concentration exceeded the ADEC soil gas target level, and the indoor air concentration exceeded the indoor air target level.

Given that PCE was detected in both the soil gas and indoor air samples, the evidence suggests that PCE is present in the residence at least partially because of vapor intrusion, and the compound possibly exceeds the indoor air target level because of vapor intrusion. The potential for some background source of PCE in the residence remains a possibility without sub-slab analytical data. The outdoor PCE concentration was negligible relative to the soil gas and indoor air concentrations.

5.1.1.2. 720 3rd Avenue

Table 4 presents analytical results for air samples collected in February 2010 at 720 3rd Avenue. Figure 7 displays a subset of analytical results.

PCE was detected in the soil gas sample from SG-2, the indoor air sample, and the outdoor air sample. The soil gas concentration of PCE exceeded the ADEC soil gas target level by two orders of magnitude. The indoor air concentration of PCE exceeded the ADEC indoor air target level by one order of magnitude.

Given that PCE was detected in both the soil gas and indoor air samples at concentrations exceeding target levels, the evidence suggests that PCE is present in the residence at least partially because of vapor intrusion, and the compound possibly exceeds the indoor air target level because of vapor intrusion. The potential for some

background source of PCE in the residence remains a possibility without sub-slab analytical data. The outdoor PCE concentration was negligible relative to the soil gas and indoor air concentrations.

5.1.1.3. North Duplex

Table 5 presents analytical results for air samples collected in February 2010 from the north duplex located at 736 3rd Avenue. Figure 7 displays a subset of analytical results.

PCE was detected in the soil gas sample from SG-3 but at a concentration less than the ADEC soil gas target level. PCE and vinyl chloride were detected in the crawl space air sample from the duplex. The concentration of PCE exceeded the indoor air target level by an order of magnitude, but the vinyl chloride concentration was on order of magnitude less than the indoor air target level.

PCE was detected in both the soil gas and crawl space air samples, but the crawl space concentration was significantly greater than the soil gas sample. This could be because there is a background source of PCE in the crawl space, or it could be a result of natural variation that occurs when sampling near-slab soil gas. The data is too inconclusive at this point to effectively evaluate the vapor intrusion pathway. The outdoor PCE concentration was negligible relative to the soil gas and indoor air concentrations.

5.1.1.4. South Duplex

Table 6 presents analytical results for air samples collected in February 2010 from the south duplex located at 736 3rd Avenue. Figure 7 displays a subset of analytical results.

PCE was detected in the soil gas sample from SG-4 at a concentration approximately six times the soil gas target level. PCE also was detected in the crawl space air sample from the duplex, and the concentration exceeded the indoor air target level. PCE was detected in the outdoor air sample at a concentration that likely has minimal contribution to the measured crawl space air concentration for PCE.

Given that PCE was detected in both the soil gas and crawl space air samples at concentrations exceeding target levels, the evidence suggests that PCE is present in the crawl space at least partially because of vapor intrusion, and the compound possibly exceeds the indoor air target level because of vapor intrusion. There remains a potential for some background source of PCE in the crawl space or residence.

5.1.2. May 2010

Samples were collected on May 13 and 14, 2010. The barometric pressure increased during the first five hours of sample collection, followed by a downward trend during the remaining 19 hours of sample collection. The readings began at 29.95 inHg and ended at 29.75 inHg. The minimum pressure was 29.75 inHg, and the maximum was 29.98 inHg (see Figure 8). Temperatures ranged from 41°F to 53°F.

5.1.2.1. 710 3rd Avenue

Table 7 presents analytical results for air samples collected in May 2010 at 710 3rd Avenue. Figure 9 displays a subset of analytical results.

PCE was detected in the soil gas sample from SG-1, the indoor air sample, and the outdoor air sample. The soil gas concentration exceeded the ADEC soil gas target level, and the indoor air concentration exceeded the indoor air target level.

Given that PCE was detected in both the soil gas and indoor air samples, the evidence suggests that PCE is present in the residence at least partially because of vapor intrusion. The potential for some background source of PCE in the residence remains a possibility without sub-slab analytical data. The outdoor PCE concentration was negligible relative to the soil gas and indoor air concentrations.

5.1.2.2. 720 3rd Avenue

Table 8 presents analytical results for air samples collected in May 2010 at 720 3rd Avenue. Figure 9 displays a subset of analytical results.

PCE was detected in the soil gas sample from SG-2, the indoor air sample, and the outdoor air sample. The soil gas concentration was more than two orders of magnitude greater than the ADEC soil gas target level, and the indoor air concentration exceeded the indoor air target level.

Given that PCE was detected in both the soil gas and indoor air samples at concentrations exceeding target levels, the evidence suggests that PCE is present in the residence at least partially because of vapor intrusion, and the compound possibly exceeds the indoor air target level because of vapor intrusion. The potential for some background source of the PCE in the residence remains a possibility without sub-slab analytical data. The outdoor PCE concentration was negligible relative to the soil gas and indoor air concentrations.

5.1.2.3. North Duplex

Table 9 presents analytical results for air samples collected in May 2010 from the north duplex located at 736 3rd Avenue. Figure 9 displays a subset of analytical results.

PCE was detected in the soil gas sample from SG-3, the crawl space sample, and the outdoor air sample. Both the soil gas concentration and crawl space concentration exceeded the respective target levels by more than one order of magnitude.

Given that PCE was detected in both the soil gas and crawl space air samples at concentrations exceeding target levels, the evidence suggests that PCE is present in the crawl space at least partially because of vapor intrusion, and the compound possibly exceeds the indoor air target level because of vapor intrusion. The potential for some background source of PCE in the crawl space or residence remains a possibility. The outdoor PCE concentration was negligible relative to the soil gas and indoor air concentrations.

5.1.2.4. South Duplex

Table 10 presents analytical results for air samples collected in May 2010 from the south duplex located at 736 3rd Avenue. Figure 9 displays a subset of analytical results.

PCE was detected in the soil gas sample from SG-4 at a concentration more than one order of magnitude above the soil gas target level. PCE also was detected in the crawl space air sample from the duplex, and the concentration exceeded the indoor air target level. PCE was detected in the outdoor air sample at a concentration that likely has minimal contribution to the measured crawl space air concentration for PCE.

Given that PCE was detected in both the soil gas and crawl space air samples at concentrations exceeding screening levels, the evidence suggests that PCE is present in the crawl space at least partially because of vapor intrusion, and the compound possibly exceeds the indoor air target level because of vapor intrusion. The potential for some background source of PCE in the crawl space or residence remains a possibility. The outdoor PCE concentration was negligible relative to the soil gas and indoor air concentrations.

5.1.3. Cumulative Air Results

Table 11 presents cumulative analytical results from the four rounds of air sampling at the four buildings. The data appear to be showing seasonal trends. For instance, indoor air results in the two residences have been greater in the winter than in the spring, and soil gas results at the two residences and two duplexes have been greater in the spring than in the winter. The greater indoor air concentrations in winter may be a result of structures being more closed and increased heating demand. The greater soil gas concentrations in the spring likely are the result of a warmer source that increases vapor partitioning.

The crawl space results, however, have no apparent trend as the greater concentration has varied between seasons. A possibility for this lack of trend may be the minimal circulation that occurs in these spaces; therefore, dilution is based on random events and not seasonal patterns.

5.2. Passive Soil Gas Sampling

Passive soil gas sample modules were deployed on April 27 – 29, 2010, and recovered on May 12, 2010. Appendix D contains the analytical data as reported in mass (micrograms) and estimated concentrations using sampling durations. Appendix D also contains a color contour map of estimated soil gas concentrations. Based on this figure, the results indicate an area of elevated PCE concentrations (i.e., purple shading) around the former C&K Cleaners. The contamination appears to extend to the locations of the soil gas monitoring points and therefore provides explanation for the elevated PCE concentrations measured in the soil gas monitoring points. These results are assumed to represent contamination present in the vadose zone.

Additional coloration (i.e., yellow) occurs in a northeast direction from the source area near sample locations E-7, G-8, J-11, and K-12. Groundwater is documented as flowing

in a northeasterly direction; therefore, this color pattern likely represents a groundwater plume moving away from the source area.

More coloration (i.e., yellow) also is present along the eastern side of the fourth row of modules. At this time, there is no known reason to suspect a source in this area, although no Phase I assessment has been done as part of this investigation. It should be noted that the fourth row was installed along the north side of the alley. The alley has buried water, gas, and cable utilities. Therefore, it is possible that these utilities are providing a preferential pathway for the migration of contaminant vapors.

Finally, low-level detection of PCE occurred nearly throughout the investigation area as indicated by the blue shading on the figure in the appendix. It is assumed that this is a result of migrating soil vapors and groundwater contamination from the source area at the former C&K Cleaners.

TCE concentrations in the passive soil gas survey are limited to the main source area near the former C&K Cleaners. This result supports previous conclusions that PCE is the main release compound, and minimal biodegradation appears to be occurring.

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6. QUALITY ASSURANCE REVIEW

This section summarizes the results of a data review to determine data quality and to evaluate potential impact on the usability of the data. The review was performed using EPA Level II laboratory data reports that were provided by Air Toxics Ltd. Laboratory analytical reports are provided in Appendix C. ADEC data review checklists for air analysis are included in Appendix E.

6.1. February 2010

The following list provides a brief review of how data compared to data quality indicators:

- All work was performed by OASIS personnel who are qualified individuals as per 18 AAC 75.990(100).
- Completeness—100% of samples submitted were analyzed, thereby meeting the data quality objective of 95%.
- Accuracy—All percent recoveries for surrogates and laboratory control samples met control limits.
- Precision—A field duplicate sample was collected for both TO-15 and TO-15 SIM analysis. The laboratory also ran a laboratory duplicate for TO-15 and TO-15 SIM. Relative percent differences (RPDs) for the laboratory and field duplicates were all less than 25%.
- Comparability—Samples were analyzed by the same analytical methods. Laboratory reporting limits were less than ADEC indoor air target levels for contaminants of concern except where elevated concentrations of non-target analytes caused increased reporting limits for contaminants of concern, such as TCE. However, in these cases, such as for the crawl space sample at the south duplex, the PCE concentration, the primary contaminant, was sufficiently high to still be detected and determine exposure levels; therefore, the potential omission of TCE near the indoor air target level is minimized. The same field personnel performed all sampling and previous sampling events.
- Representativeness—Air sample collection rates were based on possible exposure scenarios. Sub-slab samples had leak detection performed prior to sampling to ensure that ambient indoor air was not infiltrating the sample train. A trip blank was analyzed to assess potential cross-contamination at the site. No compounds were detected.

6.2. May 2010

The following list provides a brief review of how data compared to data quality indicators:

- All work was performed by OASIS personnel who are qualified individuals as per 18 AAC 75.990(100).
- Completeness—100% of samples submitted were analyzed, thereby meeting the data quality objective of 95%.

- Accuracy—All percent recoveries for surrogates and laboratory control samples met control limits.
- Precision—A field duplicate sample was collected for TO-15 SIM analysis. The laboratory also ran a laboratory duplicate for TO-15 SIM. RPDs for the laboratory and field duplicates were all less than 25%.
- Comparability—Samples were analyzed by the same analytical methods. Laboratory reporting limits were less than ADEC indoor air target levels for contaminants of concern, except for TCE in the crawl space samples from the duplexes. The reason is that elevated concentrations of non-target analytes caused increased reporting limits. However, PCE was still detected above target levels, thereby providing the primary risk factor and minimizing the omission of TCE data. The same field personnel performed all sampling and previous sampling events.
- Representativeness—Air sample collection rates were based on possible exposure scenarios. Sub-slab samples had leak detection performed prior to sampling to ensure that ambient indoor air was not infiltrating the sample train. All canisters were received at the laboratory with remaining vacuum except samples 115AA (AA-2) and 117IA (IA-1); however, analytical results for these samples were comparable with past results, and therefore no qualification was made. A trip blank was analyzed to assess potential cross-contamination at the site. No compounds were detected.

7. EVALUATION

OASIS collected air samples at four residences north of the 4th and Gambell site in February and May 2010. During each event, soil gas samples were collected adjacent to each residence from permanent soil gas monitoring points. Indoor air samples were collected at the two western residences, while crawl space air samples were collected at the two eastern residences. Outdoor air samples also were collected. Passive soil gas samples were collected over a two-week period from the end of April to early May. The following subsections provide a summary of findings and recommendations.

7.1. Findings

PCE was the only compound that regularly exceeded indoor air target levels and also was regularly detected in soil gas samples for the February and May sampling events. The following list shows by building when PCE exceeded indoor air target levels presumably as a result of vapor intrusion:

- 710 E 3rd Ave – March and June 2009, February and May 2010
- 720 E 3rd Ave – March and June 2009, February and May 2010
- 736 E 3rd Ave (North Duplex) – March and June 2009, February and May 2010
- 736 E 3rd Ave (South Duplex) – March 2009, February and May 2010

The findings are based on near-building soil gas data combined with indoor or crawl space air data. It should be noted that near-building soil gas data are not as convincing a line of evidence as sub-slab data, but this also only applies to 710 E 3rd Ave and 720 E 3rd Ave because the duplexes have crawl spaces.

The four rounds of sampling appear to indicate seasonal trends in PCE concentrations:

- The indoor air concentrations are less in the spring than in the winter. Closed structures and increased heating demand are potential explanations for the increased winter concentrations.
- The soil gas concentrations are greater in the spring than in the winter. Warmer soil temperatures likely are increasing vapor migration by yielding more volatilization and providing less resistance (i.e., no frozen soil to impede mobility).

Passive soil gas sampling showed that elevated PCE concentrations occur around the former C&K Cleaners. The extent of the contamination approximately follows the arc of soil gas monitoring points SG-1, SG-2, SG-3, and SG-4. The elevated PCE concentrations represent the vadose-zone contamination. The passive soil gas data also appear to map a groundwater plume moving northeast from the source area and an area of increased PCE concentrations along the utility corridor in the alley. TCE was identified only in a small area near the former C&K Cleaners, which provides further evidence that PCE is the primary contaminant and that biodegradation is minimal.

7.2. Recommendations

The following recommendations are provided to further investigate and understand the pathways of exposure and risk to receptors at the 4th and Gambell site. The recommendations serve as options for ADEC to consider in future project planning. ADEC is not obligated to enact or implement any or all of the recommendations.

- Inform the residents of the recent results and the comparability to past results.
- Consult with the property owners about possible mitigation options for reducing indoor air and crawl space concentrations of PCE.
- Consider performing vapor intrusion assessments in the summer and fall to augment the winter and spring data that have been collected to date.
- Inform First Native Baptist Church and PIP Printing that elevated soil gas concentrations of PCE were detected near their buildings. Perform a building survey to understand occupancy patterns and determine if there are regular occupants potentially at risk for exposure to PCE from vapor intrusion.
- Review past EPA investigation reports on the former native hospital property to determine the extent to which the apparent groundwater plume of PCE has been characterized. If necessary, proceed with additional characterization of groundwater to understand potential risk to downgradient receptors near Ship Creek.
- Evaluate the feasibility of potential remedial options for the former C&K Cleaners property to address the source of contamination.

8. REFERENCES

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- . 2004b. *Lots 8A, 10, 11, and 12; Block 26A; East Addition, Anchorage, Alaska, Phase II Environmental Site Assessment*. September.
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- OASIS Environmental, Inc. (OASIS). 2008. *Site Characterization Report, 4th and Gambell Site*. prepared for ADEC. September.
- . 2009a. *Additional Site Characterization, Work Plan, 4th and Gambell Site*. prepared for ADEC. December.
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TABLES

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Table 2
Air Sample Summary
4th and Gambell Additional Site Characterization

Sample Location	Building	Sample Number	Date	Sample Type	Duration	Description	Comments
AA-1	720 3rd Avenue	104AG114AA	5/13/2010	Outdoor Air	24-hour	Southeast side of residence	
		104AG101AA	2/25/2010				
IA-1	710 3rd Avenue	104AG117IA 104AG118IA	5/13/2010	Indoor Air	24-hour	Living room	104AG117IA was measured at ambient air pressure in the field. 104AG118IA is a duplicate
		104AG103IA 104AG104IA	2/25/2010				104AG104IA is a duplicate
SG-1	710 3rd Avenue	104AG121SG	5/13/2010	Soil Gas	30-minute	South side of building	
		104AG109SG 104AG110SG	2/25/2010				104AG110SG is a duplicate
IA-2	720 3rd Avenue	104AG116IA	5/13/2010	Indoor Air	24-hour	Living room	Received with significant vacuum remaining in the canister which resulted in elevated reporting limits
		104AG102IA	2/25/2010				
SG-2	720 3rd Avenue	104AG122SG	5/13/2010	Soil Gas	30-minute	South side of building	
		104AG108SG	2/25/2010				
AA-2	Duplexes	104AG115AA	5/13/2010	Outdoor Air	24-hour	Between duplexes	Measured at ambient air pressure in the field.
		104AG105AA	2/25/2010				
CS-1	North Duplex	104AG119CS	5/13/2010	Crawl Space Air	24-hour	Center of crawl space/basement	Diluted due to high concentrations of non-target species
		104AG106CS	2/25/2010				
SG-3	North Duplex	104AG123SG	5/13/2010	Soil Gas	30-minute	Southwest side of building	
		104AG111SG	2/25/2010				
CS-2	South Duplex	104AG120CS	5/13/2010	Crawl Space Air	24-hour	East side of crawl space	Diluted due to high concentrations of non-target species
		104AG107CS	2/25/2010				
SG-4	South Duplex	104AG124SG	5/13/2010	Soil Gas	30-minute	West side of building	
		104AG112SG	2/25/2010				

Table 3
Analytical Results
710 E 3rd Avenue - February 2010
4th and Gambell Additional Site Characterization

Compound	Units	Indoor Target Level	Indoor Air		Outdoor Air	Soil Gas	
			IA-1		AA-1	SG-1	
			Primary	Duplicate		Primary	Duplicate
<i>Field Parameters</i>							
Total Volatile Hydrocarbons	ppm	---	---	---	---	90	---
Oxygen	%	---	---	---	---	20.9	---
Carbon dioxide	%	---	---	---	---	0.2	---
Helium	%	---	---	---	---	0	---
<i>Volatile Organic Compounds</i>							
PCE	µg/m ³	4.1	8.3	9.1	0.26	160	160

Notes: Bolded indoor air value exceeds ADEC indoor air target level.

Key:

% = Percent

ADEC = Alaska Department of Environmental Conservation

µg/m³ = Micrograms per cubic meter

PCE = Tetrachloroethene

ppm = Parts per million

Table 4
Analytical Results
720 E 3rd Avenue - February 2010
4th and Gambell Additional Site Characterization

Compound	Units	Indoor Target Level	Indoor Air	Outdoor Air	Soil Gas
			IA-2	AA-1	SG-2
<i>Field Parameters</i>					
Total Volatile Hydrocarbons	ppm	---	---	---	85
Oxygen	%	---	---	---	20.4
Carbon dioxide	%	---	---	---	0.6
Helium	%	---	---	---	0
<i>Volatile Organic Compounds</i>					
PCE	µg/m ³	4.1	51	0.26	6,800

Notes: Bolded indoor air value exceeds ADEC indoor air target level.

Key:

% = Percent

ADEC = Alaska Department of Environmental Conservation

µg/m³ = Micrograms per cubic meter

PCE = Tetrachloroethene

ppm = Parts per million

Table 5
Analytical Results
North Duplex - February 2010
4th and Gambell Additional Site Characterization

Compound	Units	Indoor Target Level	Crawl Space	Outdoor Air	Soil Gas
			CS-1	AA-2	SG-3
<i>Field Parameters</i>					
Total Volatile Hydrocarbons	ppm	---	---	---	45
Oxygen	%	---	---	---	20.9
Carbon dioxide	%	---	---	---	0.4
Helium	%	---	---	---	0
<i>Volatile Organic Compounds</i>					
PCE	µg/m ³	4.1	57	2.3	28
TCE	µg/m ³	0.22	ND (0.16)	0.50	ND (8.1)
Vinyl chloride	µg/m ³	0.81	0.055	ND (0.048)	ND (3.9)

Notes: Value in parentheses is laboratory reporting limit.

Bolded crawl space air value exceeds ADEC indoor air target level.

Key:

% = Percent

ADEC = Alaska Department of Environmental Conservation

µg/m³ = Micrograms per cubic meter

ND = Not detected

PCE = Tetrachloroethene

ppm = Parts per million

TCE = Trichloroethene

Table 6
Analytical Results
South Duplex - February 2010
4th and Gambell Additional Site Characterization

Compound	Units	Indoor Target Level	Crawl Space	Outdoor Air	Soil Gas
			CS-2	AA-2	SG-4
<i>Field Parameters</i>					
Total Volatile Hydrocarbons	ppm	---	---	---	100
Oxygen	%	---	---	---	20.9
Carbon dioxide	%	---	---	---	0.8
Helium	%	---	---	---	0
<i>Volatile Organic Compounds</i>					
PCE	µg/m ³	4.1	12	2.3	260
TCE	µg/m ³	0.22	ND (0.83)	0.50	ND (6.6)

Notes: Value in parentheses is laboratory reporting limit.

Bolded crawl space air value exceeds ADEC indoor air target level.

Key:

% = Percent

ADEC = Alaska Department of Environmental Conservation

µg/m³ = Micrograms per cubic meter

ND = Not detected

PCE = Tetrachloroethene

ppm = Parts per million

TCE = Trichloroethene

Table 7
Analytical Results
710 E 3rd Avenue - May 2010
4th and Gambell Additional Site Characterization

Compound	Units	Indoor Target Level	Indoor Air		Outdoor Air	Soil Gas
			IA-1		AA-1	SG-1
			Primary	Duplicate		
<i>Field Parameters</i>						
Total Volatile Hydrocarbons	ppm	---	---	---	---	110
Oxygen	%	---	---	---	---	20.9
Carbon dioxide	%	---	---	---	---	0.3
Helium	%	---	---	---	---	0
<i>Volatile Organic Compounds</i>						
PCE	µg/m ³	4.1	6.6	7.2	0.3	260

Notes: Bolded indoor air value exceeds ADEC indoor air target level.

Key:

% = Percent

ADEC = Alaska Department of Environmental Conservation

µg/m³ = Micrograms per cubic meter

PCE = Tetrachloroethene

ppm = Parts per million

Table 8
Analytical Results
720 E 3rd Avenue - May 2010
4th and Gambell Additional Site Characterization

Compound	Units	Indoor Target Level	Indoor Air	Outdoor Air	Soil Gas
			IA-2	AA-1	SG-2
<i>Field Parameters</i>					
Total Volatile Hydrocarbons	ppm	---	---	---	140
Oxygen	%	---	---	---	20.9
Carbon dioxide	%	---	---	---	0.6
Helium	%	---	---	---	0
<i>Volatile Organic Compounds</i>					
PCE	µg/m ³	4.1	25	0.3	10,000

Notes: Bolded indoor air value exceeds ADEC indoor air target level.

Key:

% = Percent

ADEC = Alaska Department of Environmental Conservation

µg/m³ = Micrograms per cubic meter

PCE = Tetrachloroethene

ppm = Parts per million

Table 9
Analytical Results
North Duplex - May 2010
4th and Gambell Additional Site Characterization

Compound	Units	Indoor Target Level	Crawl Space	Outdoor Air	Soil Gas
			CS-1	AA-2	SG-3
<i>Field Parameters</i>					
Total Volatile Hydrocarbons	ppm	---	---	---	110
Oxygen	%	---	---	---	20.9
Carbon dioxide	%	---	---	---	0.5
Helium	%	---	---	---	0
<i>Volatile Organic Compounds</i>					
PCE	µg/m ³	4.1	110	0.37	230

Notes: Bolded crawl space air value exceeds ADEC indoor air target level.

Key:

% = Percent

ADEC = Alaska Department of Environmental Conservation

µg/m³ = Micrograms per cubic meter

PCE = Tetrachloroethene

ppm = Parts per million

Table 10
Analytical Results
South Duplex - May 2010
4th and Gambell Additional Site Characterization

Compound	Units	Indoor Target Level	Crawl Space	Outdoor Air	Soil Gas
			CS-2	AA-2	SG-4
<i>Field Parameters</i>					
Total Volatile Hydrocarbons	ppm	---	---	---	150
Oxygen	%	---	---	---	20.9
Carbon dioxide	%	---	---	---	0.7
Helium	%	---	---	---	0
<i>Volatile Organic Compounds</i>					
PCE	µg/m ³	4.1	16	0.37	630

Notes: Value in parentheses is laboratory reporting limit.

Bolded crawl space air value exceeds ADEC indoor air target level.

Key:

% = Percent

ADEC = Alaska Department of Environmental Conservation

µg/m³ = Micrograms per cubic meter

PCE = Tetrachloroethene

ppm = Parts per million

Table 11
Cumulative Air Sample Analytical Results
4th and Gambell Additional Site Characterization

Building	Compound	Sample Date	Heating System On	Temperature Range (°F)	Barometric Pressure	Sample Location			
						Indoor Air (µg/m ³)	Crawl Space (µg/m ³)	Outdoor Air (µg/m ³)	Soil Gas (µg/m ³)
710 E 3rd Ave	PCE	5/13/2010	Yes	22-34	Falling	6.6	NA	0.3	260
		2/25/2010	Yes	18 - 30	Rising	8.3	NA	0.26	160
		6/12/2009	No	49 - 61	Falling	2.3	NA	ND (4.5)	300
		3/2/2009	Yes	3 - 20	Rising	8.0	NA	ND (0.84)	45
720 E 3rd Ave	PCE	5/13/2010	Yes	22-34	Falling	25	NA	0.3	10,000
		2/25/2010	Yes	18 - 30	Rising	51	NA	0.26	6,800
		6/12/2009	No	49 - 61	Falling	15	NA	ND (4.5)	13,000
		3/3/2009	Yes	13 - 19	Rising	58	NA	ND (0.84)	2,100
North Duplex	PCE	5/13/2010	Yes	22-34	Falling	NS	110	0.37	230
		2/25/2010	Yes	18 - 30	Rising	NS	57	2.3	28
		6/12/2009	No	49 - 61	Falling	NS	74	ND (5.0)	86
		3/2/2009	Yes	3 - 20	Rising	NS	170	0.95	17
South Duplex	PCE	5/13/2010	Yes	22-34	Falling	NS	16	0.37	630
		2/25/2010	Yes	18 - 30	Rising	NS	12	2.3	260
		6/12/2009	No	49 - 61	Falling	NS	ND (1.1)	ND (5.0)	560
		3/2/2009	Yes	3 - 20	Rising	NS	14	0.95	89

Notes: Value in parentheses is laboratory reporting limit.

Bolded indoor air values exceed ADEC indoor air target level.

Key:

°F = Degrees Fahrenheit

µg/m³ = Micrograms per cubic meter

NA = Not applicable

ND = Not detected

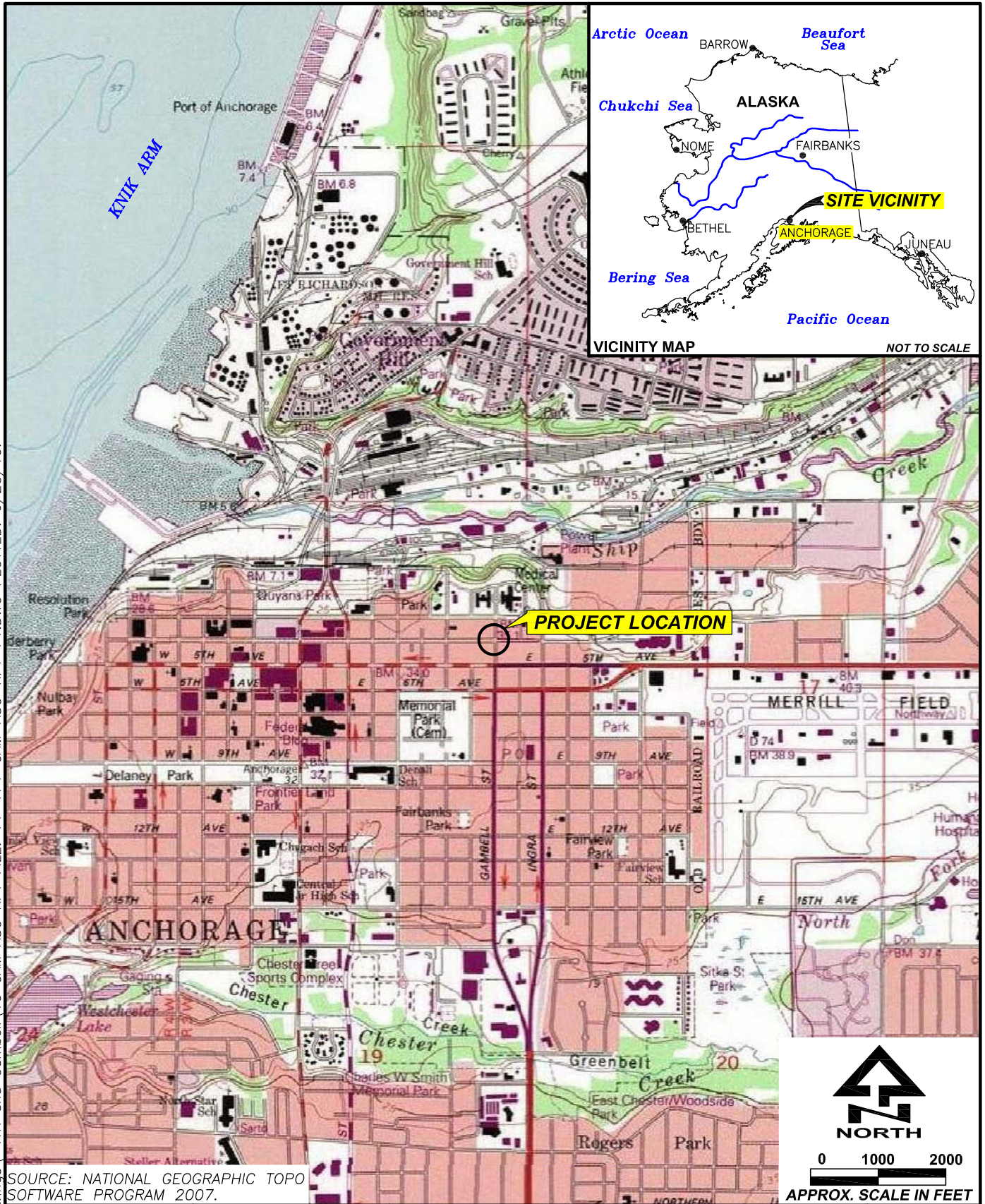
NS = Not sampled

PCE = Tetrachloroethene

FIGURES

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SOURCE: NATIONAL GEOGRAPHIC TOPO SOFTWARE PROGRAM 2007.



DATE: JUNE 2010
 CHKD: B.J.M.
 DRAWN: C.E.H.
 PROJ. No.: 14-174
 825 W. 8th Ave., Anchorage,
 AK 99501, (907) 258-4880

SITE LOCATION MAP

4TH AND GAMBELL
 ADDITIONAL SITE CHARACTERIZATION
 Anchorage, Alaska

FIGURE

1

PATH: V:\Project Drawings\ 4TH and Gambell\10 GAM ASC RPT FILE: 14-174-GAM-ASC-RPT-F2.DWG PLOTTED: 6/25/10.



EXPLANATION	
MW11	MONITORING WELL LOCATION
SB-1	2008 SOIL BORING LOCATION
A	2007 SOIL BORING LOCATION

SOURCE: AERIAL PHOTO PROVIDED BY GOOGLE EARTH PRO. 2008.

FIGURE
2

PREVIOUS SAMPLE LOCATIONS

4TH AND GAMBELL
ADDITIONAL SITE CHARACTERIZATION
Anchorage, Alaska

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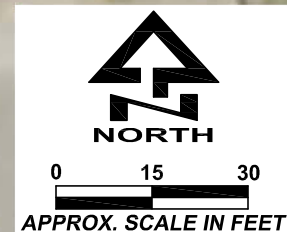




EXPLANATION

- ✕ SOIL GAS SAMPLE LOCATION
- ▣ CRAWL SPACE AIR SAMPLE LOCATION
- ▲ INDOOR AIR SAMPLE LOCATION
- OUTDOOR AIR SAMPLE LOCATION

SOURCE: AERIAL PHOTO PROVIDED BY GOOGLE EARTH PRO. 2008.



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AIR SAMPLE LOCATIONS

4TH AND GAMBELL
 ADDITIONAL SITE CHARACTERIZATION
 Anchorage, Alaska

FIGURE

3

PATH: V:\Project Drawings\ 4TH and Gambell\10 GAM ASC RPT FILE: 14-174-GAM-ASC-RPT-F4.DWG PLOTTED: 6/25/10.




EXPLANATION
 PASSIVE SOIL GAS SAMPLE LOCATION
 SOURCE: AERIAL PHOTO PROVIDED BY GOOGLE EARTH PRO. 2008.

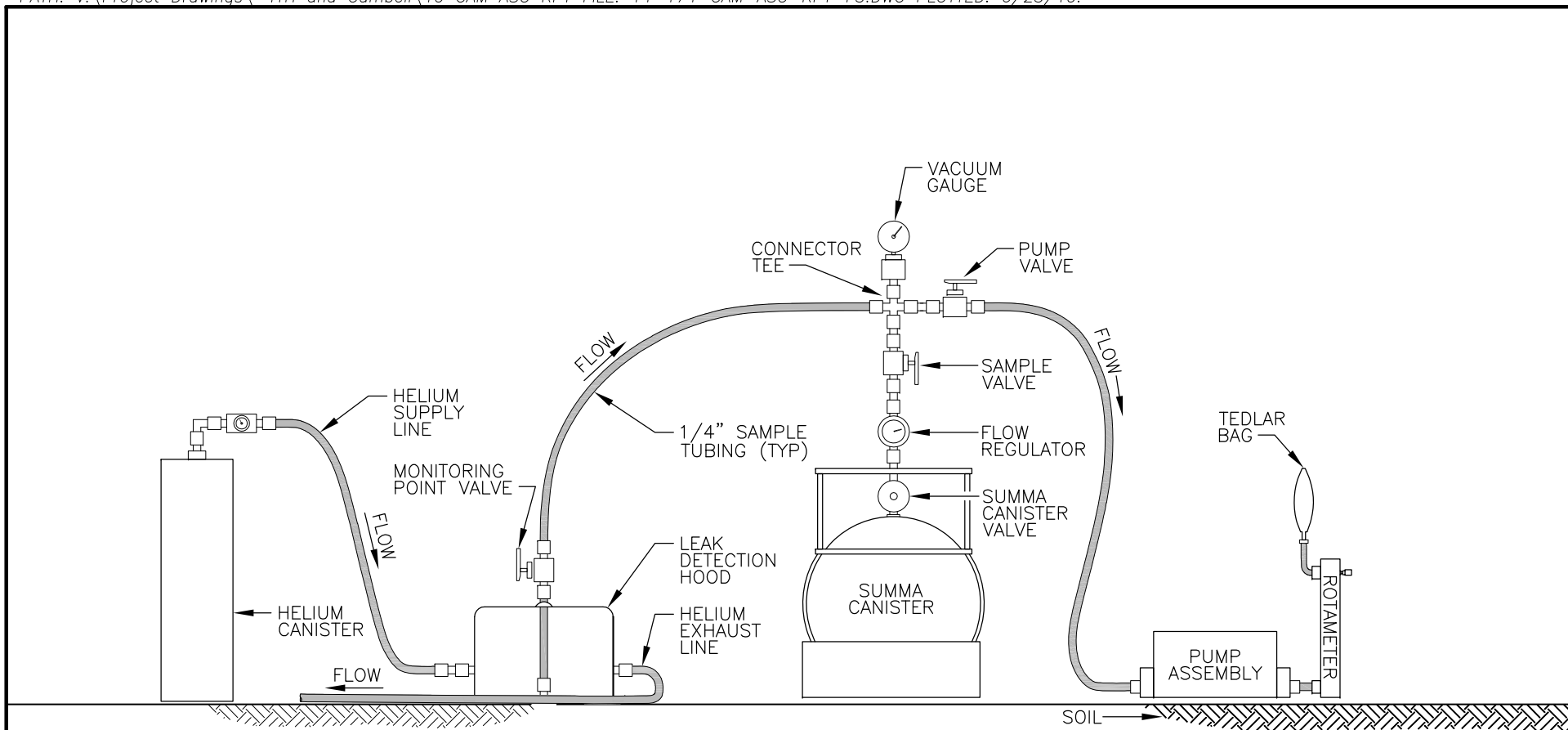
FIGURE
4

PASSIVE SOIL GAS SAMPLE LOCATIONS

4TH AND GAMBELL
 ADDITIONAL SITE CHARACTERIZATION
 Anchorage, Alaska

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NOT TO SCALE



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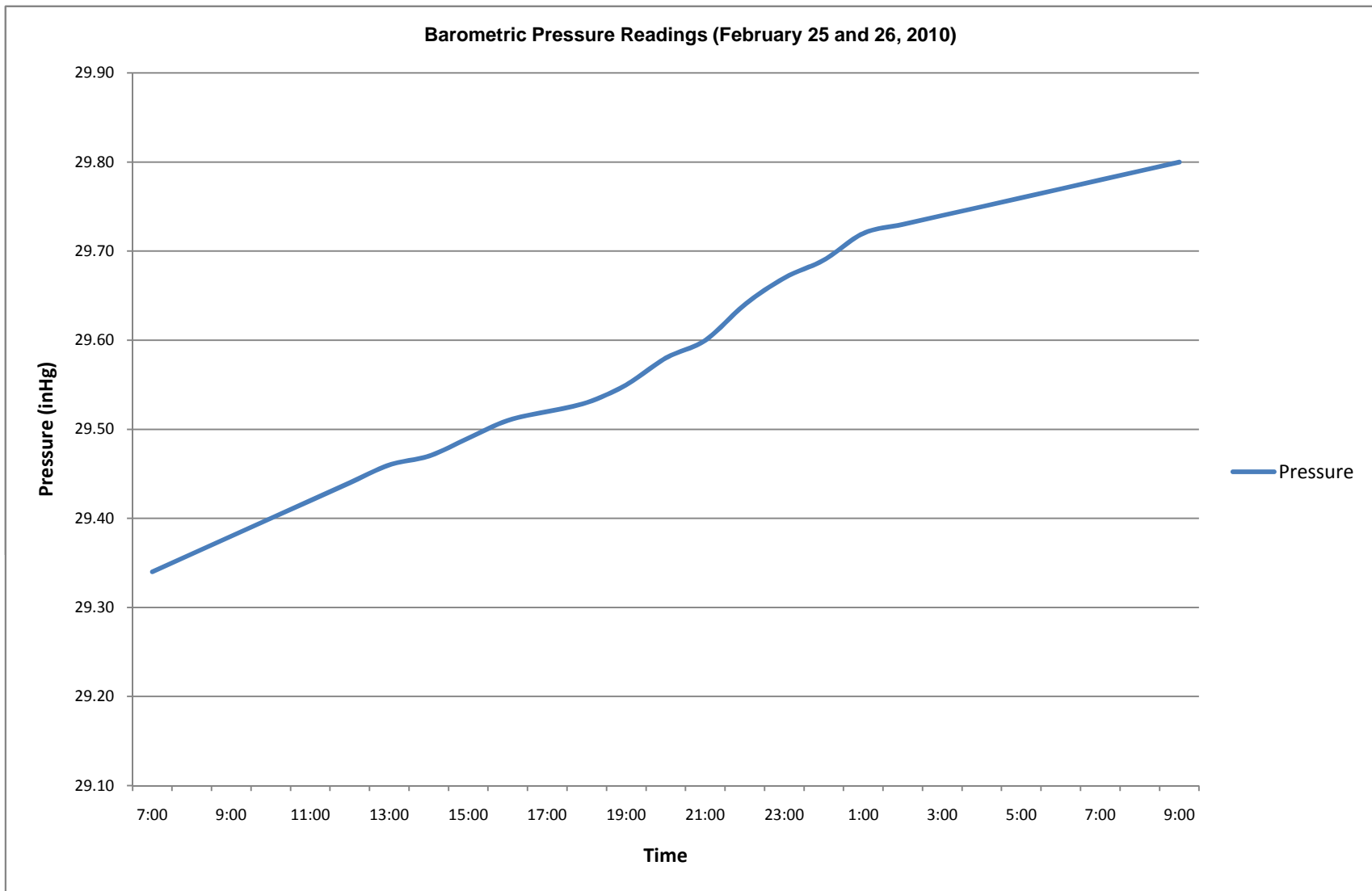
LEAK DETECTION SCHEMATIC

4TH AND GAMBELL
 ADDITIONAL SITE CHARACTERIZATION
 Anchorage, Alaska

FIGURE

5

Figure 6. Barometric Pressure Readings - February 2010
4th and Gambell Additional Site Characterization



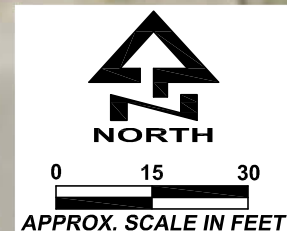


EXPLANATION

- ✕ SOIL GAS SAMPLE LOCATION
- ▣ CRAWL SPACE AIR SAMPLE LOCATION
- ▲ INDOOR AIR SAMPLE LOCATION
- OUTDOOR AIR SAMPLE LOCATION
- PCE TETRACHLOROETHYLENE ($\mu\text{g}/\text{m}^3$)

**NOTE:
BOLD/RED VALUES EXCEED EPA'S TARGET
INDOOR AIR CONCENTRATIONS.**

SOURCE: AERIAL PHOTO PROVIDED BY GOOGLE EARTH PRO. 2008.



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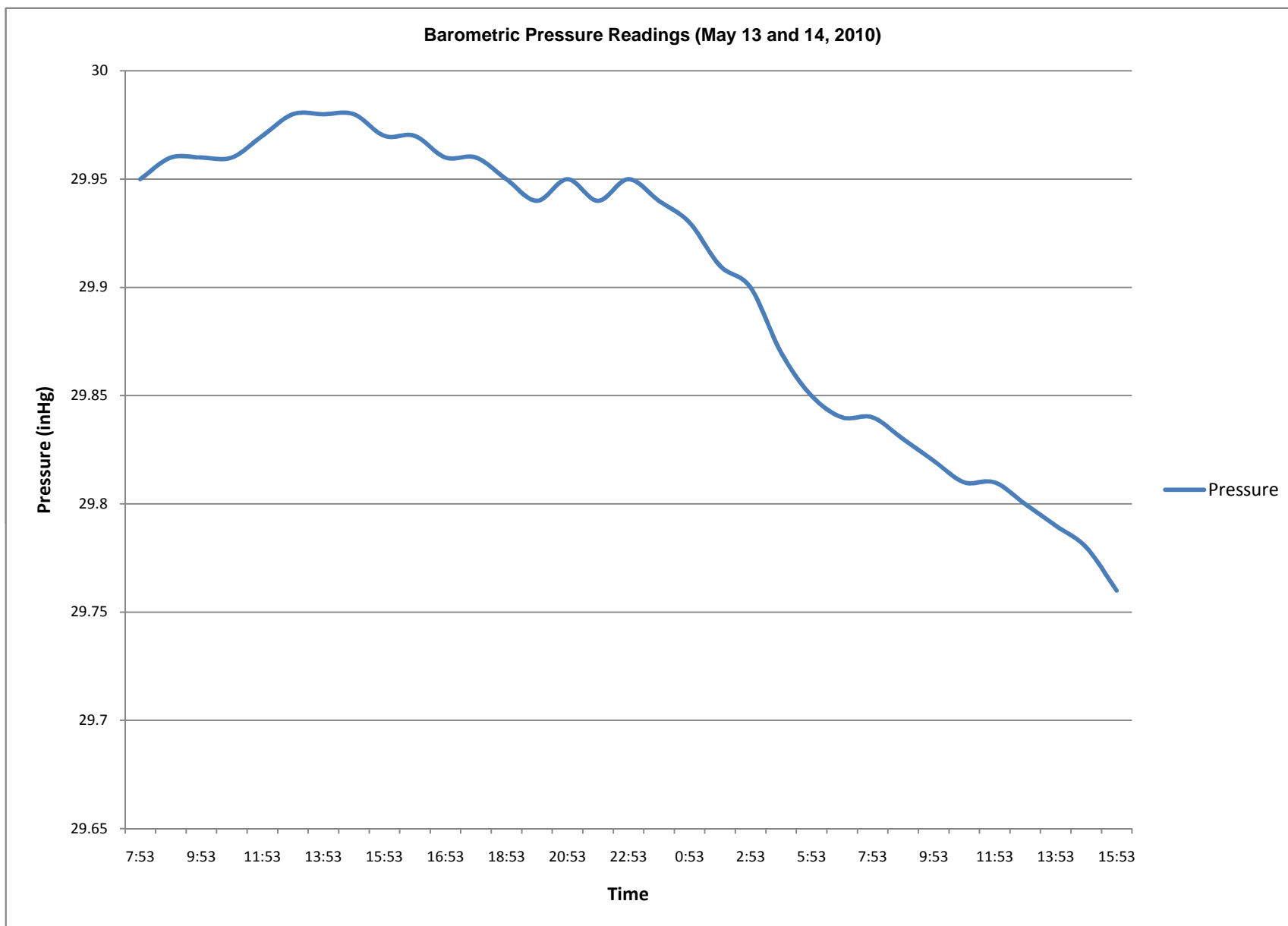
ANALYTICAL RESULTS (FEBRUARY 2010)

4TH AND GAMBELL
 ADDITIONAL SITE CHARACTERIZATION
 Anchorage, Alaska

FIGURE

7

Figure 8. Barometric Pressure Readings - May 2010
4th and Gambell Additional Site Characterization





EXPLANATION

- ✕ SOIL GAS SAMPLE LOCATION
- ▣ CRAWL SPACE AIR SAMPLE LOCATION
- ▲ INDOOR AIR SAMPLE LOCATION
- OUTDOOR AIR SAMPLE LOCATION
- PCE TETRACHLOROETHYLENE (ug/m³)

NOTE:
BOLD/RED VALUES EXCEED EPA'S TARGET
INDOOR AIR CONCENTRATIONS.

SOURCE: AERIAL PHOTO PROVIDED BY GOOGLE EARTH PRO. 2008.



DATE: JUNE 2010
 CHKD: B.J.M.
 DRAWN: C.E.H.
 PROJ. No.: 14-174
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ANALYTICAL RESULTS (MAY 2010)

4TH AND GAMBELL
 ADDITIONAL SITE CHARACTERIZATION
 Anchorage, Alaska

FIGURE

9

APPENDIX A

Field Notes

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CONTENTS

PAGE	REFERENCE	DATE
	Jenelle at Northland. Mexicoville has keys to basement of 736 8rd Ave (North Duplex): 1330 2 nd Ave	

14-174	4AG	2/25/10
0800	OASIB Ben Metchik + Ryan Burrell. at the site. Review HSE plan and djs's sample program	
0805	Set out ambient air sample 104AG101AA at AA-1. Canister 10.1 5551. 24-hr sample	
0810	Set out indoor air sample 104AG102IA at IA-2. Canister 10.3 02327. 24-hr sample	
0825	Set out indoor air sample 104AG103IA at IA-1. Canister 10 is 34035. 24-hr sample. Also deploy duplicate sample 104AG104IA at IA-1. Time listed as 0830.	
0845	Set out cool space sample 104AG106CS at CS-1 in North Duplex. Canister 10 is 34722.	
Let Entry:	At 0840 deployed outdoor air sample 104AG105AA at A+2. Canister 10.1 is 25238.	
0850	Set out cool space sample 104AG107CS at CS-2 in south duplex. Canister ID is 5655.	

Ben Metchik 2/25/10

2/25/10

4AG

14-174

1230 Sample location: SG-2

- manifold leak check - OK (-15 in. Hg for 1 minute)
- soil gas monitoring point leak check - OK (10 min. purge @ 200 ml/min)
- He in hood $> 60\%$
- Tedlar bag
- He = 0 ppm
- Hex = 85 ppm
- O₂ = 20.4 %
- CO₂ = 0.6 %
- Collect sample in Summa canister w/30 min. flow controller from 1240-1310.

Summa # 37292 (SG-2)
Sample: 104AG108SG

1320

Sample location: SG-1

- manifold leak check - OK (-15 in. Hg for 1 minute)
- soil gas monitoring point leak check - OK (10 min. purge @ 200 ml/min)
- He in hood $> 70\%$
- Tedlar bag
- He = 0 ppm
- Hex = 90 ppm
- O₂ = 20.9 %
- CO₂ = 0.2 %
- Collect samples in Summa canisters w/30 min. flow controllers from 1410-1440

Summa # 12325 (SG-1)
30824 (T)
Samples: 104AG109SG (T)
104AG105SG (T)

3

2/25/10

4AG

14-174

1540 Sample location: SG-3

- manifold leak check - OK (-15 in. Hg for 1 min)
- soil gas monitoring point leak check - OK (10 min. purge @ 200 ml/min)
- He in hood $> 60\%$
- Tedlar bag
- He = 0 ppm
- Hex = 45 ppm
- O₂ = 20.9 %
- CO₂ = 0.4 %
- Collect sample in Summa canister w/30 min. flow controller from 1555-1625

- Sample 104AG111SG

- Summa # 36464

1640 Sample location: SG-4

- manifold leak check - OK (-15 in. Hg for 1 min.)
- soil gas monitoring point leak check - OK (10 min. purge @ 200 ml/min)
- He in hood $> 60\%$
- Tedlar bag - He = 0 ppm
- Hex = 100 ppm
- O₂ = 20.9 %
- CO₂ = 0.8 %
- Collect sample in Summa canister w/30 min. flow controller from 1655-1725

- Sample 104AG112SG

- Summa # 31768

Pyar-Bail

2/25/10

④

2/26/10 4AG 14-174

0800 OASIS PVAN BURICH arrived @ site and retrieve summa canister 55S1 (sample 104AG101AA)

0805 Retrieve summa canister 02327 (sample 104AG102IA)

0810 Retrieve summa canister 34025 (sample 104AG103IA) and canister 21073 (104AG104IA), the field duplicate.

0815 Retrieve summa canister ~~34727~~ ³⁴⁷²⁷ ~~212610~~ (sample 104AG106 CS)

0817 Retrieve summa canister 25238 (sample 104AG105AA)

0820 Retrieve summa canister 5654 (sample 104AG107CS)

~~2/26/10
PVAN BURICH~~

⑤

2/26/10 4AG 14-174

Sample Summary

ID	YAG	DATE	TIME	Location	Analysis	Canister
101	AA	2/26	0800	4th AA-1	TO-15 SUM	55S1
102	IA	2/26	0805	1A-2	TO-15 SUM	02327
103	IA	2/26	0810	1A-1"	TO-15 SUM	34025
104	IA	2/26	0812	1A-1" (Dup)	TO-15 SUM	21073
106	CS	2/26	0815	CS-1"	TO-15 SUM	34722
105	AA	2/26	0817	AA-2"	TO-15 SUM	25238
107	CS	2/26	0820	CS-2"	TO-15 SUM	5655
108	SG	2/25	1310	SG-2"	TO-15	37292
109	SG	2/25	1440	SG-1"	TO-15	12375
110	SG	2/25	1445	SG-1" (Dup)	TO-15	30824
111	SG	2/25	1625	SG-3"	TO-15	36464
112	SG	2/25	1725	SG-4"	TO-15	31768

~~2/26/10
PVAN BURICH~~

6

3/13/10

11AG

14174

Date	Time	Temp	Pass	Wether	Date	Time	Temp	Pass
2/25	0700	26.6	29.3	14.9	2/26	0800	19.0	Less
	0800	26.1	29.3	19.0		0600	19.0	29.77
	0900	26.1	29.3	19.0		0700	19.0	29.78
	1000	26.1	29.4	15.0		0800	15.0	29.79
	1100	26.6	29.4	16.0		0900	16.0	29.80
	1200	28.0	29.4					
	1300	28.9	29.4					
	1400	28.9	29.4					
	1500	28.9	29.4					
	1600	30.0	29.5					
	1700	28.9	29.5					
	1800	28.9	29.5					
	1900	28.0	29.5					
	2000	26.1	29.5					
	2100	28.0	29.6					
	2200	25.0	29.6					
	2300	23.0	29.6					
	2400	21.9	29.6					
	0100	21.0	29.7					
	0200	19.4	29.7					
	0300	19.9	29.7					
	0400	19.9	29.7					

4/27/10

Passive soil Gas Sampling
 0830 Ashley Hansen and David
 Hammons site

Location	Mat. ID	Time	Comments
A-1	623883	0909	
B-1	623889	0915	
C-1	623844	0920	
D-1	623880		didn't get down far enough + could not start.
D-1	623850	0930	
E-1	623862	0940	
F-1	623868	0947	
G-1	623869	0950	
G-1	623863	0950	Duplicate
G-2	623857	0958	
G-3	623851	1000	
G-3 F-2	623845	1009	
E-2	623190	1010	
D-2	623184	1021	
G-2	623178	1030	
B-2	623860	1405	
A-2	623179	1035	

→

4/27/10

Location	Module ID	Time	Comments
A-3	623185	1045	
B-3	623191	1050	
C-3	623846	1100	
C-3	623852	1100	Duplicate
D-3	623858	1110	
F-3	623864	1115	
E-3	623870	1125	
G-5	623871	1140	
G-6	623865	1148	
G-7	623859	1153	
F-5	623853	1200	
F-6	623847	1204	
E-5	623192	1205	
E-6	623186	1210	
E-6	623180	1210	Duplicate
E-7	623181	1222	
F-7	623187	1225	
D-7	623193	1245	
D-7	623848	1247	
D-5	623854	1250	
C-5	623866	1410	
C-6	623872	1415	
C-7	623873	1420	

4/27/10

Location	Module ID	Time	Comments
B-5	623867	1433	
B-5	623861	1433	Duplicate
B-6	623855	1437	
B-7	623849	1440	
A-7	623843	1445	
A-5	623188	1450	
A-6	623182	1454	
H-3	623874	1504	
H-2	623880	1508	
H-1	623886	1510	
I-1	623892	1514	
J-1	623898	1517	
J-1	623904	1517	Duplicate
K-1	623910	1523	
I-2	623916	1528	
I-3	623917	1545	
J-2	623911	1547	
J-3	623905	1550	
K-2	623899	1555	
L-1	623893	1602	
M-1	623887	1607	
M-2	623881	1615	
M-3	623875	1620	
M-3	623876	1620	Duplicate

moved to the 50m 2ft



4/27/10 Location	medic ID	Time	Comments
M-5	623882	1630	
M-6	623888	1640	
M-7	623894	1645	
L-5	623900	1647	
L-6	623906	1650	
L-7	623912	1702	
K-6	623918	1705	
K-7	623919	1708	
K-5	623913	1710	
H-5	623907	1720	
H-5	623901	1720	Duplicate
H-6	623895	1725	
H-7	623889	1730	MOVED 23.0ft + (gas to time)
I-7	623883	1735	
Left	81K @	1745	

4/28/10
Day 2 of Passive Soil Gas Sampling
0830 Ashley Hansen and Ben March on site

Location	medic ID	Time	Comments
A-8	623877	0850	
A-9	623878	0855	
A-10	623884	0900	
A-11	623890	0905	
A-12	623896	0908	
A-13	623902	0910	
B-13	623908	0915	
B-13	623914	0915	Duplicate
B-12	623920	0917	
B-11	623921	0920	
B-10	623915	0930	MOVED 23ft to the SE
B-9	623909	0932	
B-8	623903	0934	
C-8	623897	0935	
C-9	623891	0937	
C-10	623885	0948	MOVED 23ft to E
C-11	623879	0952	Shallow

4/27/10
Ashley Hansen

4/28/10 @ 200 Zack Kirk replaced Ben

Location	modul ID	Time	Comments	Location	modul ID	Time	Comments
C-N12	623968	0957	(shallow)	G-9	623971	1120	shallow
C-N12	623958	0957	↓ Duplicate	G-10	623961	1123	
C-13	623952	1000		G-11	623955	1133	shallow
P-13	623946	1004		G-12	623949	1135	
D-12	623940	1008		G-13	623943	1137	
D-11	623934	1010		H-13	623937	1255	
D-10	623928	1015		H-12	623931	1257	
P-9	623922	1020		H-11	623925	1307	
D-8	623923	1022		H-10	623972	1320	shallow
E-8	623929	1025		H-9	623962	1330	
E-9	623935	1030		H-9	623956	1330	Duplicate
E-9	623941			H-8	623950	1333	
E-10	623941	1035	Duplicate	I-8	623944	1352	
E-10	623947	1035	Duplicate	I-9	623938	1400	
E-11	623953	1037		J-9	623932	1405	shallow
E-12	623959	1040		J-8	623926	1407	
E-13	623969	1045		I-10	623973	1410	
F-13	623970	1050	Wet	I-11	623963	1420	
F-12	623960	1055	shallow	I-12	623957	1430	
F-11	623954	1100	shallow	J-13	623951	1445	
F-10	623948	1103	shallow	J-13	623945	1452	
F-9	623944	1110	shallow	J-13	623939	1452	Duplicate
F-8	623936	1112		J-12	623933	1455	
G-18	623930	1110		J-11	623927	1505	
G-18	623924	1110	Duplicate				

4/28/10

4AG

14-174

Location	modmic ID	Time	Comment
K-10	624010	1510	
K-8	624010	1512	
K-9	624004	1515	
K-10	623998	1520	
K-11	623992	1524	
K-12	623986	1530	
K-13	623980	1533	
L-13	623974	1535	
L-13	623975	1535	dup.
L-12	623981	1540	
L-11	623987	1542	
L-10	623993	1545	
L-9	623999	1547	
L-8	624005	1550	
M-8	624011	1554	
M-9	624017	1556	
M-10	624018	1600	
M-11	624012	1604	INLET
M-12	624006	1606	
M-13	624000	1610	

Left site @ 1630

4/28/10
Hansen

4/29/10

4AG

14-174

0830 Jan L-M and Ashley Hansen
ON-site. Hand digging tree row
4/

Location	modmic ID	Time	Comment
A-4	623994	0902	
B-4	623988	0915	
C-4	623982	1010	
D-4	623976	1037	
E-4	623977	1110	
F-4	623983	1130	
G-4	623989	1430	
H-4	623995	1430	Duplicate
I-4	624001	1440	
J-4	624007	1455	
K-4	624013	1530	
L-4	624019	1535	
M-4	623984	1706	
M-4	623978	1640	

Left site @ 1715

4/29/10
Hansen

Timed duplicates 30 min later than
primary sample on C-4 address. 1 on the number

14174

4AG

5/12/10

Collecting passive soil gas samples
0900 Bake Delaney and Ashby
Hansen on site

Location	module ID	Time	comment
A-1	623183	0910	
B-1	623189	0912	
C-1	623844	0914	
D-1	623856	0915	
E-1	623862	0916	
F-1	623868	0918	
G-1	623869	0920	
G-1	623863	0920	Duplicate
G-2	623857	0923	
F-2	623845	0925	
E-2	623190	0934	
D-2	623184	0936	
C-2	623178	0940	
B-2	623860		
A-2	623179	0942	
A-3	623185	0945	
B-3	623891	0947	
C-3	623846	0950	
D-3	623852	0950	Duplicate
			5/12/10
			Agitation

5/12/10

4AG

141-174

Location	module ID	Time	Comment
E-3	623870	1000	
D-3	623858	1015	
F-3	623864		whisker has moved coil, not final probe
G-3	623851	1016	
G-5	623871	1017	
G-6	623865	1020	
G-7	623859	1023	
F-7	623187	1025	
E-7	623181	1027	
D-7	623193	1028	
C-7	623873	1030	
B-7	623849	1034	
A-7	623843	1035	
A-6	623182	1037	
A-5	623188	1038	
B-6	623855	17:00/5/12/10	cont. not final for ind
B-5	623861	1040	Dupl
B-5	623867	1040	Duplicate
C-5	623866	1045	
C-6	623872	1046	
D-6	623848	1050	
D-5	623854	1051	
E-5	623192	1054	
E-6	623186	1055	
E-6	623180	1055	Duplicate
	Agitation	5/12/10	

Location	ST/2NO	4AG1	Module IP	Time	14-174	Comment
F-6	623847			1055		
F-5	623853			1100		
H-3	623874			1102		
H-2	623880		→	—		String broke w/ pulling out
H-1	623886			1110		
F-1	623892			1112		
J-1	623898			1114		
J-1	623904			1114		
K-1	623940			1115		
K-2	623899			1120		
J-2	623911			1121		
J-3	623905			1122		
F-3	623917			1123		
I-2	623916			1124		
L-1	623893			1130		
M-1	623887			1131		
M-2	623881			1132		
M-3	623875			1134		
M-3	623876			1134		Dup
M-5	623882			1136		
M-6	623888			1140		
M-7	623894			1143		
L-7	623912			1145		
L-6	623906			1147		
L-5	623900			1150		
		AS/My Ham		5/12/10		

Location	S/12/10	4AG1	Module IP	Time	14-174	Comment
K-5			623913	1151		
K-6			623918	1152		
K-7			623919	1154		
F-7			623883	1157		
H-7			623889	1200		
H-6			623895	1202		
H-5			623901	1206		duplicate
H-5			623907	1206		
A-8			623877	1310		
A-9			623878	1312		
A-10			623884	1314		
A-11			623890	1316		
A-12			623896	1320		
A-13			623902	1321		
B-13			623908	1322		
B-13			623914	1322		Duplicate
B-12			623920	1325		
B-11			623921	1327		
B-10			623915	1330		
B-9			623909	1331		
B-8			623903	1332		
C-8			623897	1335		
C-9			623891	1337		
C-10			623885	1340		
C-11			623879	1341		
		AS/My Ham		5/12/10		

Location	UAG	Time	Comments
C-12	623908	1342	
C-12	623958	1342	Dup
C-13	623952	1345	
D-13	623946	1358	
D-NR	623940	1400	
D-11	623934	1401	
D-10	623928	1403	
D-9	623922	1405	
D-8	623923	1406	
E-8	623929	1407	
E-9	623935	1408	
E-10	623941	1410	
E-10	623947	1410	Duplicate
E-11	623953	1412	
E-12	623959	1414	
E-13	623969	1416	
F-13	623970	1420	
F-12	623960	1421	
F-11	623954	1422	
F-10	623948	1425	
F-9	623947	1426	
F-8	623936	1430	
G-8	623930	1435	
G-8	623924	1435	Dup
G-9	623971	1437	

Location	UAG	Time	Comments
G-10	623961	1440	
G-11	623955	1442	
G-12	623949	1443	
G-13	623943	1445	
H-13	623937		Probe broke when pulling string
H-12	623931	1453	
H-11	623925	1455	
H-10	623972	1457	
H-9	623962	1500	
H-9	623956	1500	Dup
H-8	623950	1501	
I-8	623944	1506	
I-9	623938	1505	
J-9	623932	1508	
J-8	623926	1507	
I-10	623973	1509	
I-11	623963	1512	
I-12	623957	1516	
I-13	623951	1517	
J-13	623945	1520	
J-13	623939	1520	Dup
J-12	623933	1522	
J-11	623927	1524	
J-10	624016	1525	

Assumption 512/10

512/10

Assumption

4461
14-17-24
Comment

4461
Time

Module ID

Location

K-8	624010	1527	
K-9	624004	1530	
K-10	623998	1531	
K-11	623992	1532	
K-12	623986	1534	
K-13	623980	1535	
L-13	623974	1537	
L-13	623975	1537	Dup
L-12	623981	1540	
L-11	623987	1541	
L-10	623993	1545	
L-9	623999	1546	
L-8	624005	1547	
M-8	624011	1548	
M-9	624017	1549	
M-10	624018	1550	
M-11	624012	1552	
M-12	624006	1553	
M-13	624000	154	
M-4	623978	1604	
L-4	623984	1605	
L-4	6239624019	1606	
J-4	624013	1607	
I-4	624007	1610	
H-4	624001	1611	

512110
14/12/15
ASMM/Han

512110

Location

Module ID

Time

4461
14-17-24

Comments

G-4	623989	1612	
G-4	623995	1612	Dup
F-4	623983	1615	
E-4	623977	1616	
D-4	623976	1617	
C-4	623982	1619	
B-4	623988	1620	
A-4	623994	1622	

Left site @ 1645 to pick up
sampling equipment at Alaska
Airlines Air Cargo.
Returned to the office @ 1730
and unpacked truck.

ASMM/Han
5/12/10

5/13/10

UAG

14-174

0935 OASIS Ben Merbach, Ashley Hansen, Zack Kirk
 name of the site. Plan for today is
 to set out indoor/outdoor formal space
 air samples and also collect soil gasses
 samples. Tom reviews HSE plan &
 activities for the day. Weather is
 550 and mostly cloudy.

0945 Set out outdoor air at AA-1.

Canister ID is 34181.

24-hour flow regulator

Analyzed TO-15 SIM

Sample ID is 1044G114AA

0950 Set out outdoor air sample at AA-2.

Canister ID is 34748

24-hour flow regulator

Analysis for TO-15 SIM.

Sample ID is 1044G115AA

1000 Set out indoor air sample at IA-2

Canister ID is 25267

Analysis for TO-15 SIM

Sample ID is 1044G116AA

1005 Set out indoor air sample at DA-1

Canister ID is 11879

Analysis for TO-15 SIM, Sample ID

is 1044G117AA

Run shells

14-174

4AG

5/13/10

Also set out duplicate sample

Canister ID is 33888

Analysis for TO-15 SIM

Sample ID is 1044G118AA

Time noted as 1010

1020 Set out crawl space sample of CS-1

Canister ID is 34011

Analysis for TO-15 SIM

Sample ID is 1044G119CS

1025 Set out crawl space sample of CS-2

Canister ID is 10661

Analysis for TO-15 SIM

Sample ID is 1044G120CS.

1050 Set at SG-1.

Pass manifold leak check.

Begin monitoring point leak check

Helium = 0 ppm

O₂ = 20.9%

CO₂ = 0.2%

TVH = 110 ppm

1220 Begin collecting sample 1044G121SG

30 minute flow controller.

Canister ID is 12808

21
 5/13/10

5/13/10 4AG 14174
 1420 Set @ SG-4
 manifold leak test - PASS
 Began monitoring point leak check
 Helium = 0 ppm
 $O_2 = 20.9\%$
 $CO_2 = 0.7\%$
 TVH = 150 ppm
 1445 Began collecting sample
 final vac = 8" Hg
 canister ID = 13389
 30 minute flow controller
 1515 Stopped sample
 1525 Handed back to office to unload equipment.

5/13/10 4AG 14-174
 1250 End Sample collection
 Final vac 8" Hg
 1300 Set @ SG-2
 manifold leak test - PASS
 Began monitoring test point leak check
 Helium = 0 ppm
 $O_2 = 20.9\%$
 $CO_2 = 0.6\%$
 TVH = 140 ppm
 1340 Began collecting sample
 104AG1225G
 30 minute flow controller
 final vac -12" Hg
 canister ID 1536480
 1310 End Sample collection @ SG-2
 1345 Set @ SG-3
 manifold leak test - PASS
 Began monitoring point leak check
 Helium = 0 ppm
 $O_2 = 20.9\%$
 $CO_2 = 0.5\%$
 TVH = 110 ppm
 1415 Began collecting sample 104G1235G
 30 minute flow controller
 canister ID = 364105

AGM Hm 5/13/10

AGM Hm

5/14/10	4AG	14-174
1115	preparing the samples for shipment.	
	Trip Blanks	
	Box 1 - 624100Z	
	Box 2 - 623990	
	Box 3 - 623996	
	Box 4 - 624008	
1400	Delivered package to FedEx	

5/14/10	4AG	14-174
Back Kirk and Ashby Hansen		
arrived onsite @ 0930		
Summa canisters (24 hours samples)		
0920	collected AA1	
	sample ID = 104AG114AA	
	final vac = 5.0" mg	
0925	collected AA2	
	sample ID = 104AG115AA	
	final vac = 0	
0927	collected CS-2	
	sample ID = 10AG120CS	
	final vac = 5" mg	
0928	collected CS-1	
	sample ID = 10AG119CS	
	final vac = 2.5" mg	
1060	collected IA-2	
	sample ID = 10AG116IA	
	final vac = 1.9" mg	
1005	collected IA-1	
	sample ID = 10AG117IA	
	duplicate ID = 10AG118IA	
	final vac (117) = 0	
	final vac (118) = 4" mg	
0940	properties of Ke v @ 15362 nd	
	Summa can. 5/14/10	

Summa can. 5/14/10

May 2010

Sample Summary

ID	Site	Time	Location	Counter	FA	Final Vnc	Analysis
1154A	513	0945	AA-1	34181	285	0	TO-15 SIM
1154A		0950	AA-2	34748	295	0	↓
1167A		1000	IA-2	25267	28	185	
1177A		1005	IA-1	11879	275	0	↓
1187A		1010	IA-1	33888	37	3	
1190S		1020	CS-1	34011	29	2	
1200S		1025	CS-2	10661	29	4.5	
1215G		1220	SG-1	12808	30	8	
1225G		1340	SG-2	36480	30	12	
1235G		1415	SG-3	36405	30	8	
1245G		1445	SG-4	13389	30	6	
1257B		-	-	9559	-	-	Trip Blank

~~SMATA 5/17/10~~

APPENDIX B

Photographs

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Photographs
4th and Gambell Additional Characterization



Photograph 1. February ambient air sample AA-2.



Photograph 2. February crawl space air sample CS-1.

Photographs 4th and Gambell Additional Characterization



Photograph 3. February soil gas sample SG-3.



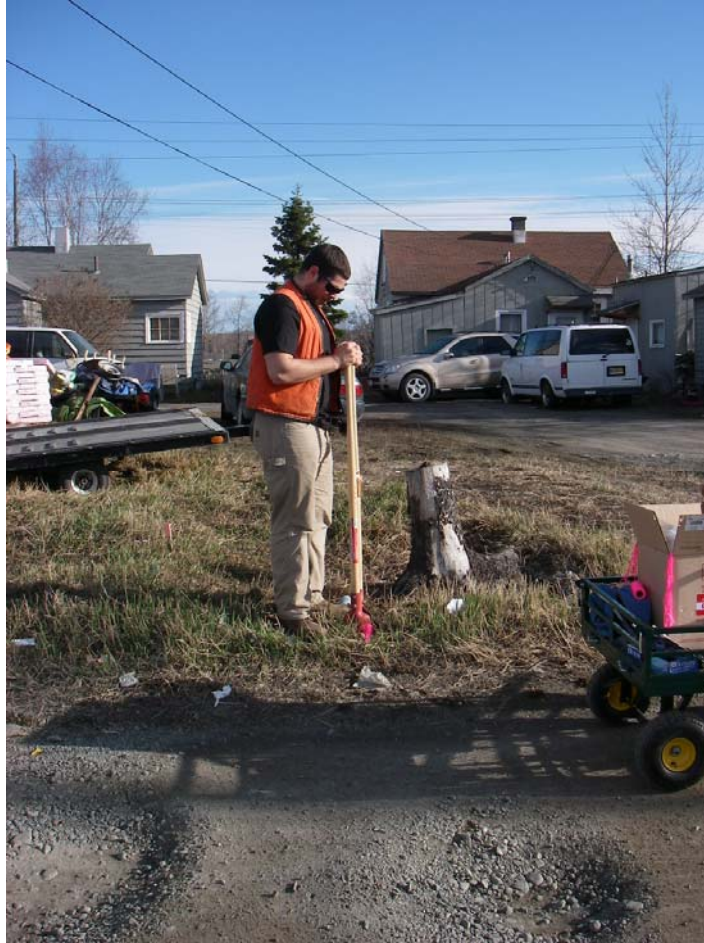
Photograph 4. Drilling passive soil gas monitoring points in April.

Photographs
4th and Gambell Additional Characterization



Photograph 5. Drilling passive soil gas monitoring points in April.

Photographs
4th and Gambell Vapor Intrusion Assessment



Photograph 6. Hand digging module boring at B-4 because of nearby utilities.

Photographs 4th and Gambell Vapor Intrusion Assessment



Photograph 7. Preparing to insert passive soil gas sampling module.



Photograph 9. Inserting passive soil gas sampling module.

APPENDIX C

Laboratory Analytical Reports

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3/15/2010

Mr. Ben Martich
Oasis Environmental, Inc.
825 W. 8th Avenue
Suite 200
Anchorage AK 99501

Project Name: 4th and Gambell
Project #: 14-174-2
Workorder #: 1003039A

Dear Mr. Ben Martich

The following report includes the data for the above referenced project for sample(s) received on 3/2/2010 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 SIM are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Karen Lopez at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Karen Lopez
Project Manager

WORK ORDER #: 1003039A

Work Order Summary

CLIENT:	Mr. Ben Martich Oasis Environmental, Inc. 825 W. 8th Avenue Suite 200 Anchorage, AK 99501	BILL TO:	Mr. Ben Martich Oasis Environmental, Inc. 825 W. 8th Avenue Suite 200 Anchorage, AK 99501
PHONE:	907-258-4880	P.O. #	
FAX:		PROJECT #	14-174-2 4th and Gambell
DATE RECEIVED:	03/02/2010	CONTACT:	Karen Lopez
DATE COMPLETED:	03/15/2010		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	104AG101AA	Modified TO-15 SIM	3.5 "Hg	5 psi
01AA	104AG101AA Lab Duplicate	Modified TO-15 SIM	3.5 "Hg	5 psi
02A	104AG102IA	Modified TO-15 SIM	9.0 "Hg	5 psi
03A	104AG103IA	Modified TO-15 SIM	6.0 "Hg	5 psi
04A	104AG104IA	Modified TO-15 SIM	7.0 "Hg	5 psi
05A	104AG105AA	Modified TO-15 SIM	8.5 "Hg	5 psi
06A	104AG106CS	Modified TO-15 SIM	3.5 "Hg	5 psi
07A	104AG107CS	Modified TO-15 SIM	4.0 "Hg	5 psi
13A	104AG113TB	Modified TO-15 SIM	28.5 "Hg	5 psi
14A	Lab Blank	Modified TO-15 SIM	NA	NA
15A	CCV	Modified TO-15 SIM	NA	NA
16A	LCS	Modified TO-15 SIM	NA	NA

CERTIFIED BY: 

DATE: 03/15/10

Laboratory Director

Certification numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763,
NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719

Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/09, Expiration date: 06/30/10

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

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

**LABORATORY NARRATIVE
Modified TO-15 SIM
Oasis Environmental, Inc.
Workorder# 1003039A**

Eight 6 Liter Summa Canister (SIM Certified) samples were received on March 02, 2010. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the SIM acquisition mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

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

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
ICAL %RSD acceptance criteria	$\leq 30\%$ RSD with 2 compounds allowed out to <math>< 40\%</math> RSD	Project specific; default criteria is $\leq 30\%$ RSD with 10% of compounds allowed out to <math>< 40\%</math> RSD
Daily Calibration	+/- 30% Difference	Project specific; default criteria is $\leq 30\%$ Difference with 10% of compounds allowed out up to $\leq 40\%$. ; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
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

There were no receiving discrepancies.

Analytical Notes

Dilution was performed on sample 104AG107CS 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 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 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 SIM**

Client Sample ID: 104AG101AA

Lab ID#: 1003039A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.030	0.038	0.21	0.26

Client Sample ID: 104AG101AA Lab Duplicate

Lab ID#: 1003039A-01AA

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.030	0.034	0.21	0.23

Client Sample ID: 104AG102IA

Lab ID#: 1003039A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.038	7.6	0.26	51

Client Sample ID: 104AG103IA

Lab ID#: 1003039A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.034	1.2	0.23	8.3

Client Sample ID: 104AG104IA

Lab ID#: 1003039A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.035	1.3	0.24	9.1

Client Sample ID: 104AG105AA

Lab ID#: 1003039A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.037	0.43	0.20	2.3
Tetrachloroethene	0.037	0.074	0.25	0.50

**Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM**

Client Sample ID: 104AG106CS

Lab ID#: 1003039A-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.015	0.022	0.039	0.055
Tetrachloroethene	0.030	8.5	0.21	57

Client Sample ID: 104AG107CS

Lab ID#: 1003039A-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.16	1.8	1.0	12

Client Sample ID: 104AG113TB

Lab ID#: 1003039A-13A

No Detections Were Found.

Client Sample ID: 104AG101AA

Lab ID#: 1003039A-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	e030612sim	Date of Collection: 2/26/10 8:00:00 AM
Dil. Factor:	1.52	Date of Analysis: 3/6/10 03:04 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.015	Not Detected	0.039	Not Detected
cis-1,2-Dichloroethene	0.030	Not Detected	0.12	Not Detected
Trichloroethene	0.030	Not Detected	0.16	Not Detected
Tetrachloroethene	0.030	0.038	0.21	0.26
trans-1,2-Dichloroethene	0.15	Not Detected	0.60	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	99	70-130

Client Sample ID: 104AG101AA Lab Duplicate

Lab ID#: 1003039A-01AA

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	e030613sim	Date of Collection: 2/26/10 8:00:00 AM
Dil. Factor:	1.52	Date of Analysis: 3/6/10 03:47 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.015	Not Detected	0.039	Not Detected
cis-1,2-Dichloroethene	0.030	Not Detected	0.12	Not Detected
Trichloroethene	0.030	Not Detected	0.16	Not Detected
Tetrachloroethene	0.030	0.034	0.21	0.23
trans-1,2-Dichloroethene	0.15	Not Detected	0.60	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: 104AG102IA

Lab ID#: 1003039A-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	e030614sim	Date of Collection: 2/26/10 8:05:00 AM
Dil. Factor:	1.91	Date of Analysis: 3/6/10 04:24 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.019	Not Detected	0.049	Not Detected
cis-1,2-Dichloroethene	0.038	Not Detected	0.15	Not Detected
Trichloroethene	0.038	Not Detected	0.20	Not Detected
Tetrachloroethene	0.038	7.6	0.26	51
trans-1,2-Dichloroethene	0.19	Not Detected	0.76	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	99	70-130

Client Sample ID: 104AG103IA

Lab ID#: 1003039A-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	e030615sim	Date of Collection: 2/26/10 8:10:00 AM
Dil. Factor:	1.68	Date of Analysis: 3/6/10 05:12 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.13	Not Detected
Trichloroethene	0.034	Not Detected	0.18	Not Detected
Tetrachloroethene	0.034	1.2	0.23	8.3
trans-1,2-Dichloroethene	0.17	Not Detected	0.67	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: 104AG104IA

Lab ID#: 1003039A-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	e030616sim	Date of Collection: 2/26/10 8:30:00 AM
Dil. Factor:	1.75	Date of Analysis: 3/6/10 05:49 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.018	Not Detected	0.045	Not Detected
cis-1,2-Dichloroethene	0.035	Not Detected	0.14	Not Detected
Trichloroethene	0.035	Not Detected	0.19	Not Detected
Tetrachloroethene	0.035	1.3	0.24	9.1
trans-1,2-Dichloroethene	0.18	Not Detected	0.69	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	99	70-130

Client Sample ID: 104AG105AA

Lab ID#: 1003039A-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	e030617sim	Date of Collection: 2/26/10 8:17:00 AM
Dil. Factor:	1.87	Date of Analysis: 3/6/10 06:26 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.019	Not Detected	0.048	Not Detected
cis-1,2-Dichloroethene	0.037	Not Detected	0.15	Not Detected
Trichloroethene	0.037	0.43	0.20	2.3
Tetrachloroethene	0.037	0.074	0.25	0.50
trans-1,2-Dichloroethene	0.19	Not Detected	0.74	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: 104AG106CS

Lab ID#: 1003039A-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	e030618sim	Date of Collection: 2/26/10 8:15:00 AM
Dil. Factor:	1.52	Date of Analysis: 3/6/10 07:02 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.015	0.022	0.039	0.055
cis-1,2-Dichloroethene	0.030	Not Detected	0.12	Not Detected
Trichloroethene	0.030	Not Detected	0.16	Not Detected
Tetrachloroethene	0.030	8.5	0.21	57
trans-1,2-Dichloroethene	0.15	Not Detected	0.60	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: 104AG107CS

Lab ID#: 1003039A-07A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	e030619sim	Date of Collection: 2/26/10 8:20:00 AM
Dil. Factor:	7.75	Date of Analysis: 3/6/10 07:38 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.078	Not Detected	0.20	Not Detected
cis-1,2-Dichloroethene	0.16	Not Detected	0.61	Not Detected
Trichloroethene	0.16	Not Detected	0.83	Not Detected
Tetrachloroethene	0.16	1.8	1.0	12
trans-1,2-Dichloroethene	0.78	Not Detected	3.1	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: 104AG113TB

Lab ID#: 1003039A-13A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	e030620sim	Date of Collection: 2/26/10
Dil. Factor:	1.00	Date of Analysis: 3/6/10 08:17 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	99	70-130

Client Sample ID: Lab Blank

Lab ID#: 1003039A-14A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	e030605sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/6/10 09:51 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: CCV

Lab ID#: 1003039A-15A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	e030602sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/6/10 07:47 AM

Compound	%Recovery
Vinyl Chloride	103
cis-1,2-Dichloroethene	100
Trichloroethene	99
Tetrachloroethene	96
trans-1,2-Dichloroethene	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: LCS

Lab ID#: 1003039A-16A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	e030603sim	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/6/10 08:28 AM

Compound	%Recovery
Vinyl Chloride	96
cis-1,2-Dichloroethene	91
Trichloroethene	90
Tetrachloroethene	87
trans-1,2-Dichloroethene	91

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	103	70-130



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 jurisdiction. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing 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.C.T. Hotline (800) 487-4922

180 BLUE RAVINE ROAD, SUITE B
 FOLSOM, CA 95630-4719
 (916) 985-1000 FAX (916) 985-1020

Page 1 of 2

Project Manager Bern Martich

Collected by: (Print and Sign) Ryan Burck / Ryan B...

Company OASIS Environmental Email Bernard.Cossentino@oasis.com

Address 825 W. 6th Ave City Anchorage State AK Zip 99501

Phone 907-258-4880 Fax _____

Project Info:

FO. # _____

Project # 14-174-2

Project Name 4th and Gambel II

Turn Around Time: Normal Rush

Lab Use Only: Pressurized by: _____ Date: _____

Pressurization Gas: _____

specify N₂ He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum		
						Initial	Final	Receipt / Final (psi)
01A	104YAG101AA	5551	2/24/10	0800	TD-15 SIM	-30	-7	
02A	104YAG102AA	02327	2/24/10	0805	TD-15 SIM	-30	-8	
03A	104YAG103IA	34025	2/26/10	0810	TD-15 SIM	-30	-7	
04A	104YAG104IA	21073	2/26/10	0830	TD-15 SIM	-30	-7.5	
05A	104YAG105AA	25238	2/26/10	0817	TD-15 SIM	-30	-10.5	
06A	104YAG106CS	34722	2/26/10	0815	TD-15 SIM	-30	-4	
07A	104YAG107CS	5655	2/26/10	0820	TD-15 SIM	-30	-4.5	
	104YAG108SG	37292	2/25/10	1310	TD-15	-30	-4	
	104YAG109SG	12375	2/25/10	1440	TD-15	-30	-10	
	104YAG110SG	30824	2/25/10	1445	TD-15	-30	-10	

Relinquished by: (signature) _____ Date/Time _____

Received by: (signature) Mona Date/Time 3/2/10 9:00

Relinquished by: (signature) Bern Martich Date/Time 3/1/10 11:00

Received by: (signature) _____ Date/Time _____

Relinquished by: (signature) _____ Date/Time _____

Received by: (signature) _____ Date/Time _____

Lab Shipper Name Red Ex Air Bill # _____ Temp (°C) NA Condition Good Custody Seals Intact? Yes No None Work Order # 1008038



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. Relinquishing 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. Hot line (800) 457-4922

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 FOLSOM, CA 95630-4719
 (916) 985-1000 FAX (916) 985-1020

Page 2 of 2

Project Manager: Ben Martich

Collected by: (Print and Sign) Ryan Burch / Ben Ric

Company: CASIS Environmental Email: ben.martich@casisenvironmental.com

Address: 825 W. 8th Ave City: Anchorage State: AK Zip: 99501

Phone: 907-258-4880 Fax: _____

Project Info:

P.O. # _____

Project # 14-174-2

Project Name: 4th & Gambell

Turn Around Time: Normal Rush

Lab Use Only: Pressurized by: _____ Date: _____

Pressurization Gas: _____

specify _____

N₂ He

Lab ID	Field Sample ID (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum		
						Initial	Final	Receipt (cell)
	184AG115G	36464	2/25/10	1625	TD-15	-30	-10	
	184AG112SG	31768	2/25/10	1725	TO-15	-30	-5	
	13A 184AG113TB	36043	2/26/10	---	TO-15 SIM	-30	---	

Notes: Canister 36046 and associated flow controller was not used.

Relinquished by: (signature) Ben Martich Date/Time: 3/1/10 11:00

Received by: (signature) Monica Brown Date/Time: 3/1/10 9:00

Relinquished by: (signature) _____ Date/Time: _____

Received by: (signature) _____ Date/Time: _____

Lab Shipper Name: _____

Air Bill # _____

Temp. (C) _____

Condition: Good

Custody Seals Intact? Yes No None

Work Order # 1009039

Lab Use Only: PCB

3/15/2010

Mr. Ben Martich
Oasis Environmental, Inc.
825 W. 8th Avenue
Suite 200
Anchorage AK 99501

Project Name: 4th and Gambell
Project #: 14-174-2
Workorder #: 1003039B

Dear Mr. Ben Martich

The following report includes the data for the above referenced project for sample(s) received on 3/2/2010 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Karen Lopez at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Karen Lopez
Project Manager

WORK ORDER #: 1003039B

Work Order Summary

CLIENT:	Mr. Ben Martich Oasis Environmental, Inc. 825 W. 8th Avenue Suite 200 Anchorage, AK 99501	BILL TO:	Mr. Ben Martich Oasis Environmental, Inc. 825 W. 8th Avenue Suite 200 Anchorage, AK 99501
PHONE:	907-258-4880	P.O. #	
FAX:		PROJECT #	14-174-2 4th and Gambell
DATE RECEIVED:	03/02/2010	CONTACT:	Karen Lopez
DATE COMPLETED:	03/15/2010		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
08A	104AG108SG	Modified TO-15	5.2 "Hg	15 psi
09A	104AG109SG	Modified TO-15	10.4 "Hg	15 psi
10A	104AG110SG	Modified TO-15	10.4 "Hg	15 psi
11A	104AG111SG	Modified TO-15	10.0 "Hg	15 psi
12A	104AG112SG	Modified TO-15	5.4 "Hg	15 psi
13A	Lab Blank	Modified TO-15	NA	NA
14A	CCV	Modified TO-15	NA	NA
15A	LCS	Modified TO-15	NA	NA

CERTIFIED BY: 

DATE: 03/15/10

Laboratory Director

Certification numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763,
NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719

Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/09, Expiration date: 06/30/10

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

**LABORATORY NARRATIVE
Modified TO-15
Oasis Environmental, Inc.
Workorder# 1003039B**

Five 1 Liter Summa Canister samples were received on March 02, 2010. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

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

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
Daily CCV	<= 30% Difference	<= 30% Difference; Compounds exceeding this criterion and associated data are flagged and narrated.
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

There were no receiving discrepancies.

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 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 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: 104AG108SG

Lab ID#: 1003039B-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	4.9	1000	33	6800

Client Sample ID: 104AG109SG

Lab ID#: 1003039B-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.5	24	10	160

Client Sample ID: 104AG110SG

Lab ID#: 1003039B-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.5	24	10	160

Client Sample ID: 104AG111SG

Lab ID#: 1003039B-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.5	4.1	10	28

Client Sample ID: 104AG112SG

Lab ID#: 1003039B-12A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.2	39	8.3	260

Client Sample ID: 104AG108SG

Lab ID#: 1003039B-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p030421	Date of Collection: 2/25/10 1:10:00 PM
Dil. Factor:	9.76	Date of Analysis: 3/4/10 06:37 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	4.9	Not Detected	12	Not Detected
Tetrachloroethene	4.9	1000	33	6800
Trichloroethene	4.9	Not Detected	26	Not Detected
1,2-Dichloroethene (Total of cis/trans)	4.9	Not Detected	19	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	91	70-130

Client Sample ID: 104AG109SG

Lab ID#: 1003039B-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p030422	Date of Collection: 2/25/10 2:40:00 PM
Dil. Factor:	3.09	Date of Analysis: 3/4/10 07:05 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.5	Not Detected	3.9	Not Detected
Tetrachloroethene	1.5	24	10	160
Trichloroethene	1.5	Not Detected	8.3	Not Detected
1,2-Dichloroethene (Total of cis/trans)	1.5	Not Detected	6.1	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	93	70-130

Client Sample ID: 104AG110SG

Lab ID#: 1003039B-10A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p030423	Date of Collection: 2/25/10 2:45:00 PM
Dil. Factor:	3.09	Date of Analysis: 3/4/10 07:25 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.5	Not Detected	3.9	Not Detected
Tetrachloroethene	1.5	24	10	160
Trichloroethene	1.5	Not Detected	8.3	Not Detected
1,2-Dichloroethene (Total of cis/trans)	1.5	Not Detected	6.1	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: 104AG111SG

Lab ID#: 1003039B-11A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p030424	Date of Collection: 2/25/10 4:25:00 PM
Dil. Factor:	3.03	Date of Analysis: 3/4/10 07:42 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.5	Not Detected	3.9	Not Detected
Tetrachloroethene	1.5	4.1	10	28
Trichloroethene	1.5	Not Detected	8.1	Not Detected
1,2-Dichloroethene (Total of cis/trans)	1.5	Not Detected	6.0	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: 104AG112SG

Lab ID#: 1003039B-12A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p030425	Date of Collection: 2/25/10 5:25:00 PM
Dil. Factor:	2.46	Date of Analysis: 3/4/10 08:16 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
Tetrachloroethene	1.2	39	8.3	260
Trichloroethene	1.2	Not Detected	6.6	Not Detected
1,2-Dichloroethene (Total of cis/trans)	1.2	Not Detected	4.9	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	93	70-130

Client Sample ID: Lab Blank

Lab ID#: 1003039B-13A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p030407	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/4/10 11:28 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloroethene (Total of cis/trans)	0.50	Not Detected	2.0	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	93	70-130

Client Sample ID: CCV

Lab ID#: 1003039B-14A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p030402	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/4/10 08:53 AM

Compound	%Recovery
Vinyl Chloride	121
Tetrachloroethene	101
Trichloroethene	107
1,2-Dichloroethene (Total of cis/trans)	101

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	101	70-130

Client Sample ID: LCS

Lab ID#: 1003039B-15A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	p030403	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 3/4/10 09:27 AM

Compound	%Recovery
Vinyl Chloride	122
Tetrachloroethene	93
Trichloroethene	98
1,2-Dichloroethene (Total of cis/trans)	97

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	102	70-130



CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice

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FOLSOM, CA 95630-4719
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Page 1 of 2

Project Manager Ben Martich

Collected by: (FTR and Sign) Ryan Burich / Ryan B.

Company OASIS Environmental Email b.martich@oasisenviro.com

Address 825 W. 8th Ave City Anchorage State AK zip 99501

Phone 907-258-4880 Fax _____

Project Info:

PO # _____

Project # 14-174-2

Project Name 4th and Gowbe 11

Turn Around Time:

Normal

Rush

Lead Use Only

Pressurized by: _____

Date: _____

Pressurization Gas: _____

specify N₂ He

Canister Pressure/Vacuum

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Initial			Final		
						Initial	Final	Receipt	Final (psi)	Receipt	Final (psi)
	1044G101AA	5551	2/26/10	0800	TD-15 SIM	-30	-7				
	1044G102IA	02327	2/26/10	0805	TD-15 SIM	-30	-8				
	1044G103IA	34025	2/26/10	0810	TD-15 SIM	-30	-7				
	1044G104IA	21073	2/26/10	0830	TD-15 SIM	-30	-7.5				
	1044G105AA	25238	2/26/10	0817	TD-15 SIM	-30	-10.5				
	1044G106CS	34722	2/26/10	0815	TD-15 SIM	-30	-4				
	1044G107CS	5655	2/26/10	0820	TD-15 SIM	-30	-4.5				
	08A 1044G108SG	37292	2/25/10	1310	TD-15	-30	-4				
	08A 1044G109SG	12375	2/25/10	1440	TD-15	-30	-10				
	10A 1044G110SG	30824	2/25/10	1445	TD-15	-30	-10				

Relinquished by: (signature) _____ Date/Time _____

Received by: (signature) _____ Date/Time _____

Relinquished by: (signature) Ben Martich Date/Time 3/11/10 11:00

Received by: (signature) MORRIS Date/Time 3/11/10 9:00

Relinquished by: (signature) _____ Date/Time _____

Received by: (signature) _____ Date/Time _____

Relinquished by: (signature) _____ Date/Time _____

Received by: (signature) _____ Date/Time _____

Lab Use Only

Stripper Name

Temp (°C)

Condition

Custody Seals Intact?

Work Order #

Ben Martich

NA

Good

Yes No None

1003038



CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice

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FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Page 2 of 2

Project Manager Ben Martich

Collected by: (Standard Sign) Ryan Burich / Ryan Ric

Company OASIS Environmental Email: benmartich@oasisenv.com

Address 825W, 8th Ave City Anchorage State AK Zip 99501

Phone 907-258-4880 Fax

Project Info:
PO #
Project # 14-174-2
Project Name 4th & Gambell

Turn Around Time:
Normal
Push

Lab Use Only:
Pressurized by:
Date:
Pressurization Gas:
No He

Table with columns: Lab ID, Field Sample I.D. (Location), Can #, Date of Collection, Time of Collection, Analyses Requested, Canister Pressure/Vacuum (Initial, Final, Receipt, Final), Relinquished by (signature), Date/Time, Received by (signature), Date/Time, Notes.

Lab Shipper Name: PA BK, Air Bill #: NA, Temp (C): 500, Condition: F200, Custody Seal(s) Intact? No, Work Order #: 1003033

6/1/2010
Mr. Ben Martich
Oasis Environmental, Inc.
825 W. 8th Avenue
Suite 200
Anchorage AK 99501

Project Name: 4th + Gambell
Project #: 14-174
Workorder #: 1005429A

Dear Mr. Ben Martich

The following report includes the data for the above referenced project for sample(s) received on 5/18/2010 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 SIM are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Karen Lopez at 916-985-1000 if you have any questions regarding the data in this report.

Regards,




Karen Lopez
Project Manager

WORK ORDER #: 1005429A

Work Order Summary

CLIENT:	Mr. Ben Martich Oasis Environmental, Inc. 825 W. 8th Avenue Suite 200 Anchorage, AK 99501	BILL TO:	Mr. Ben Martich Oasis Environmental, Inc. 825 W. 8th Avenue Suite 200 Anchorage, AK 99501
PHONE:	907-258-4880	P.O. #	
FAX:		PROJECT #	14-174 4th + Gambell
DATE RECEIVED:	05/18/2010	CONTACT:	Karen Lopez
DATE COMPLETED:	06/01/2010		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	104AG114AA	Modified TO-15 SIM	0.6 "Hg	5 psi
02A	104AG115AA	Modified TO-15 SIM	0.6psi	5 psi
02AA	104AG115AA Lab Duplicate	Modified TO-15 SIM	0.6psi	5 psi
03A	104AG116IA	Modified TO-15 SIM	19.0 "Hg	5 psi
04A	104AG117IA	Modified TO-15 SIM	0.0 "Hg	5 psi
05A	104AG118IA	Modified TO-15 SIM	3.8 "Hg	5 psi
06A	104AG119CS	Modified TO-15 SIM	2.5 "Hg	5 psi
07A	104AG120CS	Modified TO-15 SIM	5.0 "Hg	5 psi
12A	104AG125TB	Modified TO-15 SIM	28.0 "Hg	5 psi
13A	Lab Blank	Modified TO-15 SIM	NA	NA
14A	CCV	Modified TO-15 SIM	NA	NA
15A	LCS	Modified TO-15 SIM	NA	NA

CERTIFIED BY: 
Laboratory Director

DATE: 06/01/10

Certification numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763,
 NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719
 Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
 Accreditation number: E87680, Effective date: 07/01/09, Expiration date: 06/30/10
 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-15 SIM
Oasis Environmental, Inc.
Workorder# 1005429A**

Eight 6 Liter Summa Canister (SIM Certified) samples were received on May 18, 2010. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the SIM acquisition mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

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

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
ICAL %RSD acceptance criteria	<=30% RSD with 2 compounds allowed out to < 40% RSD	Project specific; default criteria is <=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+/- 30% Difference	Project specific; default criteria is <= 30% Difference with 10% of compounds allowed out up to <=40%.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
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

Sample 104AG116IA was received with significant vacuum remaining in the canister. The residual canister vacuum resulted in elevated reporting limits.

Despite the use of flow controllers for sample collection, the final canister vacuums for samples 104AG115AA and 104AG117IA were measured at ambient pressure in the field. These ambient pressure readings were confirmed by the laboratory upon sample receipt.

Analytical Notes

Dilution was performed on samples 104AG119CS and 104AG120CS 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)

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 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 SIM**

Client Sample ID: 104AG114AA

Lab ID#: 1005429A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.027	0.044	0.18	0.30

Client Sample ID: 104AG115AA

Lab ID#: 1005429A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.026	0.054	0.18	0.37

Client Sample ID: 104AG115AA Lab Duplicate

Lab ID#: 1005429A-02AA

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.026	0.055	0.18	0.37

Client Sample ID: 104AG116IA

Lab ID#: 1005429A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.073	3.7	0.50	25

Client Sample ID: 104AG117IA

Lab ID#: 1005429A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.027	0.98	0.18	6.6

Client Sample ID: 104AG118IA

Lab ID#: 1005429A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.031	1.1	0.21	7.2

**Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM**

Client Sample ID: 104AG119CS

Lab ID#: 1005429A-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.11	16	0.76	110

Client Sample ID: 104AG120CS

Lab ID#: 1005429A-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.27	2.4	1.8	16

Client Sample ID: 104AG125TB

Lab ID#: 1005429A-12A

No Detections Were Found.

Client Sample ID: 104AG114AA

Lab ID#: 1005429A-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c052406	Date of Collection: 5/13/10 9:45:00 AM
Dil. Factor:	1.37	Date of Analysis: 5/24/10 10:40 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.014	Not Detected	0.035	Not Detected
cis-1,2-Dichloroethene	0.027	Not Detected	0.11	Not Detected
Trichloroethene	0.027	Not Detected	0.15	Not Detected
Tetrachloroethene	0.027	0.044	0.18	0.30
trans-1,2-Dichloroethene	0.14	Not Detected	0.54	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	87	70-130

Client Sample ID: 104AG115AA

Lab ID#: 1005429A-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c052407	Date of Collection: 5/13/10 9:50:00 AM
Dil. Factor:	1.29	Date of Analysis: 5/24/10 11:31 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.013	Not Detected	0.033	Not Detected
cis-1,2-Dichloroethene	0.026	Not Detected	0.10	Not Detected
Trichloroethene	0.026	Not Detected	0.14	Not Detected
Tetrachloroethene	0.026	0.054	0.18	0.37
trans-1,2-Dichloroethene	0.13	Not Detected	0.51	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	93	70-130

Client Sample ID: 104AG115AA Lab Duplicate

Lab ID#: 1005429A-02AA

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c052408	Date of Collection: 5/13/10 9:50:00 AM
Dil. Factor:	1.29	Date of Analysis: 5/24/10 12:16 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.013	Not Detected	0.033	Not Detected
cis-1,2-Dichloroethene	0.026	Not Detected	0.10	Not Detected
Trichloroethene	0.026	Not Detected	0.14	Not Detected
Tetrachloroethene	0.026	0.055	0.18	0.37
trans-1,2-Dichloroethene	0.13	Not Detected	0.51	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: 104AG116IA

Lab ID#: 1005429A-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c052409	Date of Collection: 5/13/10 10:00:00 AM
Dil. Factor:	3.65	Date of Analysis: 5/24/10 01:06 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.036	Not Detected	0.093	Not Detected
cis-1,2-Dichloroethene	0.073	Not Detected	0.29	Not Detected
Trichloroethene	0.073	Not Detected	0.39	Not Detected
Tetrachloroethene	0.073	3.7	0.50	25
trans-1,2-Dichloroethene	0.36	Not Detected	1.4	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	93	70-130

Client Sample ID: 104AG117IA

Lab ID#: 1005429A-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c052410	Date of Collection: 5/13/10 10:05:00 AM
Dil. Factor:	1.34	Date of Analysis: 5/24/10 02:04 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.013	Not Detected	0.034	Not Detected
cis-1,2-Dichloroethene	0.027	Not Detected	0.11	Not Detected
Trichloroethene	0.027	Not Detected	0.14	Not Detected
Tetrachloroethene	0.027	0.98	0.18	6.6
trans-1,2-Dichloroethene	0.13	Not Detected	0.53	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: 104AG118IA

Lab ID#: 1005429A-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c052411	Date of Collection: 5/13/10 10:10:00 AM
Dil. Factor:	1.53	Date of Analysis: 5/24/10 02:38 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.015	Not Detected	0.039	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Trichloroethene	0.031	Not Detected	0.16	Not Detected
Tetrachloroethene	0.031	1.1	0.21	7.2
trans-1,2-Dichloroethene	0.15	Not Detected	0.61	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: 104AG119CS

Lab ID#: 1005429A-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c052413	Date of Collection: 5/13/10 10:20:00 AM
Dil. Factor:	5.62	Date of Analysis: 5/24/10 03:13 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.056	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.11	Not Detected	0.44	Not Detected
Trichloroethene	0.11	Not Detected	0.60	Not Detected
Tetrachloroethene	0.11	16	0.76	110
trans-1,2-Dichloroethene	0.56	Not Detected	2.2	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: 104AG120CS

Lab ID#: 1005429A-07A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c052414	Date of Collection: 5/13/10 10:25:00 AM
Dil. Factor:	13.4	Date of Analysis: 5/24/10 03:47 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.13	Not Detected	0.34	Not Detected
cis-1,2-Dichloroethene	0.27	Not Detected	1.1	Not Detected
Trichloroethene	0.27	Not Detected	1.4	Not Detected
Tetrachloroethene	0.27	2.4	1.8	16
trans-1,2-Dichloroethene	1.3	Not Detected	5.3	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: 104AG125TB

Lab ID#: 1005429A-12A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c052415	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/24/10 04:31 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	89	70-130

Client Sample ID: Lab Blank

Lab ID#: 1005429A-13A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c052405	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/24/10 09:53 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	94	70-130

Client Sample ID: CCV

Lab ID#: 1005429A-14A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c052402	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/24/10 07:45 AM

Compound	%Recovery
Vinyl Chloride	102
cis-1,2-Dichloroethene	101
Trichloroethene	99
Tetrachloroethene	98
trans-1,2-Dichloroethene	104

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	100	70-130

Client Sample ID: LCS

Lab ID#: 1005429A-15A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c052403	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/24/10 08:45 AM

Compound	%Recovery
Vinyl Chloride	106
cis-1,2-Dichloroethene	100
Trichloroethene	100
Tetrachloroethene	96
trans-1,2-Dichloroethene	105

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	104	70-130



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. Relinquishing 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

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Page 1 of 2

Project Manager Ben Metrick

Collected by: (Print and Sign) Zek Kirk + Ashley Hansen

Company 04515 Environmental Email benmetrick@airtoxics.com

Address 325 W 82 City Anchorage State AK Zip 99501

Phone 907-264-6146 Fax _____

Project Info:
 P.O. # _____
 Project # 14-174
 Project Name 4th + Green St

Turn Around Time:
 Normal
 Rush
 specify _____

Lab Use Only
 Pressurized by: _____
 Date: _____
 Pressurization Gas: _____
 N₂ He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum		
						Initial	Final	Receipt Final (ps)
01A	104AG114AA	34181	5/13/10	0945	To-15 SW (Subst. 1st)	28.5	0	
02A	104AG115AA	34748	5/13/10	0950		24.5	0	
03A	104AG116TA	35367	5/13/10	1000		28	18.5	
04A	104AG117TA	11879	5/13/10	1005		27.5	0	
05A	104AG118TA	33888	5/13/10	1010		29	3	
06A	104AG119CS	34011	5/13/10	1020		29	2	
07A	104AG120CS	10661	5/13/10	1025		29	4.5	
	104AG121SG	12808	5/13/10	1220	To-15 (Subst. 1st)	30	8	
	104AG122SG	36480	5/13/10	1340		30	12	
	104AG123SG	36405	5/13/10	1415		30	8	

Relinquished by: (signature) [Signature] Date/Time 5/17/10 1100
 Received by: (signature) [Signature] Date/Time 5/18/10 0900

Relinquished by: (signature) _____ Date/Time _____
 Received by: (signature) _____ Date/Time _____

Relinquished by: (signature) _____ Date/Time _____
 Received by: (signature) _____ Date/Time _____

Shipper Name Fed Ex Air Bill # _____ Temp (°C) NA Condition Good Custody Seals Intact? Yes No None Work Order # 1005429



CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
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Page 2 of 2

Project Manager Ben Metchel

Collected by: (Print and Sign) Zak Kirk & Ashley Heaton

Company DAB Environmental Email bsmetchel@desireair.com

Address 835 W 8th City Anderson State AK Zip 99581

Phone 907-264-4469 Fax

Project Info:

P.O. #

Project # 14-174

Project Name 4th & Grady St

Turn Around Time:
Normal
Rush

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N2 He

Lab I.D. Field Sample I.D. (Location)

104AG1245G

104AG125TB

Can #

13389

9559

Date of Collection

5/13/10

Time of Collection

1445

Analyses Requested

To-15 (collected last)

To-15 SIM (collected last)

Canister Pressure/Vacuum

Initial Final Receipt Final (ps)

30 6

Relinquished by: (signature) Date/Time

Ben Metchel 5/17/10 11:00

Received by: (signature) Date/Time

MENNER 5/18/10 9:00

Notes:

PCE, TCE, COBE, HDE, VC

Relinquished by: (signature) Date/Time

Relinquished by: (signature) Date/Time

Received by: (signature) Date/Time

Shipper Name

Air Bill #

Temp (°C)

Condition

Custody Seals Intact?

Work Order #

Lab Use Only

Fed Ex

NA

Good

Yes No None

1005429

6/1/2010

Mr. Ben Martich

Oasis Environmental, Inc.

825 W. 8th Avenue

Suite 200

Anchorage AK 99501

Project Name: 4th + Gambell

Project #: 14-174

Workorder #: 1005429B

Dear Mr. Ben Martich

The following report includes the data for the above referenced project for sample(s) received on 5/18/2010 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Karen Lopez at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Karen Lopez

Project Manager

WORK ORDER #: 1005429B

Work Order Summary

CLIENT:	Mr. Ben Martich Oasis Environmental, Inc. 825 W. 8th Avenue Suite 200 Anchorage, AK 99501	BILL TO:	Mr. Ben Martich Oasis Environmental, Inc. 825 W. 8th Avenue Suite 200 Anchorage, AK 99501
PHONE:	907-258-4880	P.O. #	
FAX:		PROJECT #	14-174 4th + Gambell
DATE RECEIVED:	05/18/2010	CONTACT:	Karen Lopez
DATE COMPLETED:	06/01/2010		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
08A	104AG121SG	Modified TO-15	0.5 "Hg	15 psi
09A	104AG122SG	Modified TO-15	10.5 "Hg	15 psi
10A	104AG123SG	Modified TO-15	6.5 "Hg	15 psi
11A	104AG124SG	Modified TO-15	5.5 "Hg	15 psi
12A	Lab Blank	Modified TO-15	NA	NA
13A	CCV	Modified TO-15	NA	NA
14A	LCS	Modified TO-15	NA	NA

CERTIFIED BY: 

DATE: 06/01/10

Laboratory Director

Certification numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763,
NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719

Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/09, Expiration date: 06/30/10

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-15
Oasis Environmental, Inc.
Workorder# 1005429B**

Four 1 Liter Summa Canister samples were received on May 18, 2010. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

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

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
Daily CCV	<= 30% Difference	<= 30% Difference; Compounds exceeding this criterion and associated data are flagged and narrated.
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

There was a significant difference (greater than 5.0" Hg) between the measured canister receipt vacuum and that which was reported on the Chain of Custody (COC) for sample 104AG121SG. A leak test indicated that the valve was functioning properly.

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 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 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: 104AG121SG

Lab ID#: 1005429B-08A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.0	38	7.0	260

Client Sample ID: 104AG122SG

Lab ID#: 1005429B-09A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	5.2	1500	35	10000

Client Sample ID: 104AG123SG

Lab ID#: 1005429B-10A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.3	33	8.8	230

Client Sample ID: 104AG124SG

Lab ID#: 1005429B-11A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.2	92	8.4	630

Client Sample ID: 104AG121SG

Lab ID#: 1005429B-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	x052523	Date of Collection: 5/13/10 12:20:00 PM
Dil. Factor:	2.05	Date of Analysis: 5/26/10 12:11 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
Tetrachloroethene	1.0	38	7.0	260
Trichloroethene	1.0	Not Detected	5.5	Not Detected
1,2-Dichloroethene (Total of cis/trans)	1.0	Not Detected	4.1	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	114	70-130

Client Sample ID: 104AG122SG

Lab ID#: 1005429B-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	x052524	Date of Collection: 5/13/10 1:40:00 PM
Dil. Factor:	10.4	Date of Analysis: 5/26/10 12:48 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	5.2	Not Detected	13	Not Detected
Tetrachloroethene	5.2	1500	35	10000
Trichloroethene	5.2	Not Detected	28	Not Detected
1,2-Dichloroethene (Total of cis/trans)	5.2	Not Detected	21	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	110	70-130

Client Sample ID: 104AG123SG

Lab ID#: 1005429B-10A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	x052525	Date of Collection: 5/13/10 2:15:00 PM
Dil. Factor:	2.58	Date of Analysis: 5/26/10 01:40 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.3	Not Detected
Tetrachloroethene	1.3	33	8.8	230
Trichloroethene	1.3	Not Detected	6.9	Not Detected
1,2-Dichloroethene (Total of cis/trans)	1.3	Not Detected	5.1	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	113	70-130

Client Sample ID: 104AG124SG

Lab ID#: 1005429B-11A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	x052526	Date of Collection: 5/13/10 2:45:00 PM
Dil. Factor:	2.47	Date of Analysis: 5/26/10 02:20 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
Tetrachloroethene	1.2	92	8.4	630
Trichloroethene	1.2	Not Detected	6.6	Not Detected
1,2-Dichloroethene (Total of cis/trans)	1.2	Not Detected	4.9	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	94	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	113	70-130

Client Sample ID: Lab Blank

Lab ID#: 1005429B-12A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	x052510	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/25/10 01:08 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloroethene (Total of cis/trans)	0.50	Not Detected	2.0	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	111	70-130

Client Sample ID: CCV

Lab ID#: 1005429B-13A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	x052507	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/25/10 10:43 AM

Compound	%Recovery
Vinyl Chloride	92
Tetrachloroethene	100
Trichloroethene	98
1,2-Dichloroethene (Total of cis/trans)	95

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	124	70-130

Client Sample ID: LCS

Lab ID#: 1005429B-14A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	x052508	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 5/25/10 11:31 AM

Compound	%Recovery
Vinyl Chloride	93
Tetrachloroethene	103
Trichloroethene	100
1,2-Dichloroethene (Total of cis/trans)	98

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	125	70-130



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. Relinquishing 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

180 BLUE RAVINE ROAD, SUITE B
 FOLSOM, CA 95630-4719
 (916) 985-1000 FAX (916) 985-1020

Page 1 of 2

Project Manager Bon Mathis

Collected by: (Print and Sign) Zak Kirk + Ashley Hansen

Company OASIS Environmental Email bm@oasisenv.com

Address 825 W SE City Anchorage State AK Zip 99501

Phone 907-264-4469 Fax _____

Project Info:

P.O. # _____

Project # 14-174

Project Name 4th + Grand

Turn Around Time:

Normal

Rush

Lab Use Only

Pressurized by: _____

Date: _____

Pressurization Gas: _____

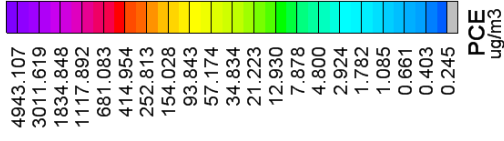
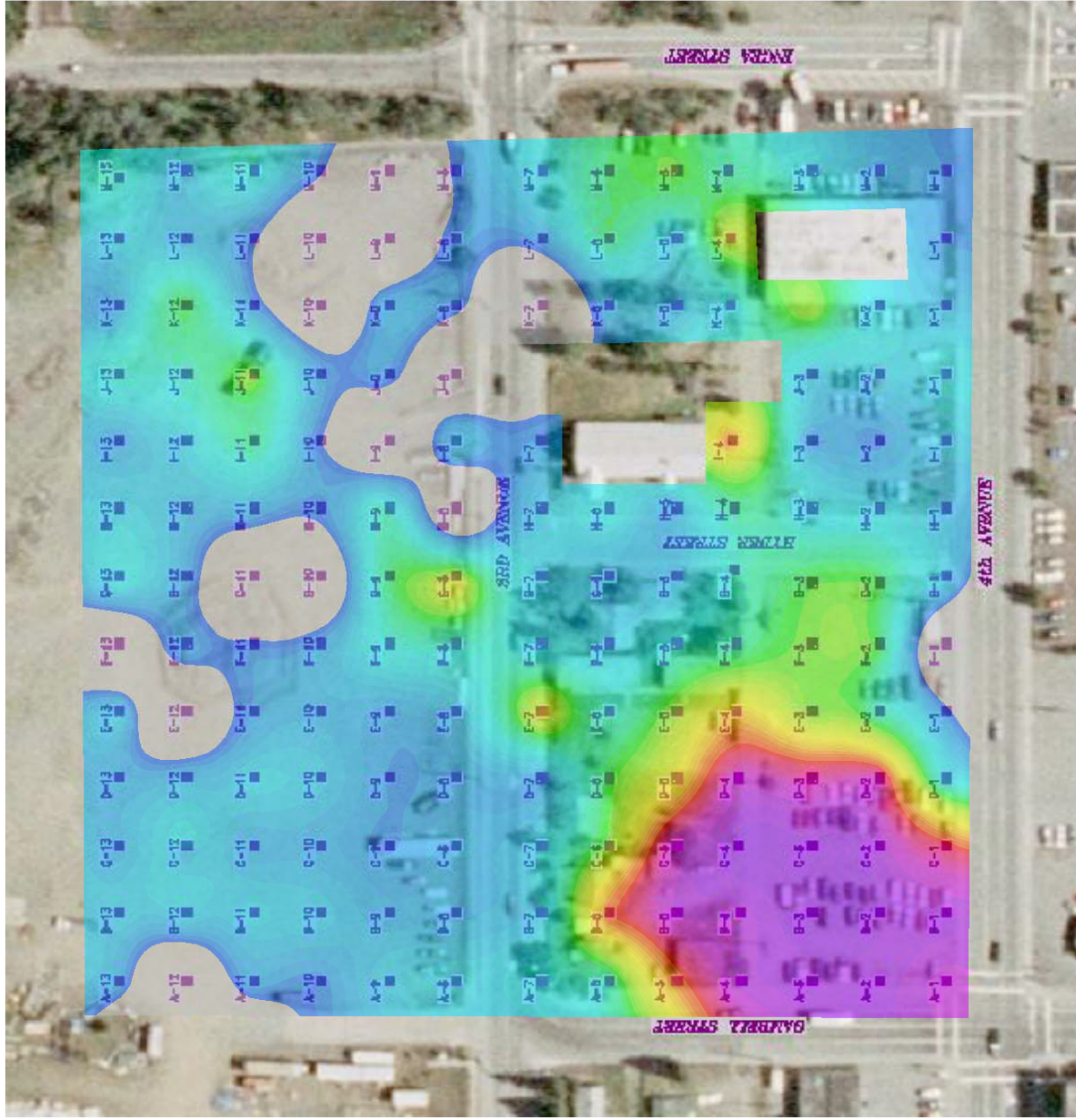
specify: N₂ He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum			
						Initial	Final	Receipt (psf)	
	104AG114AA	34181	5/13/10	0945	TO15 SIM (collected)	28.5	0		
	104AG115AA	34748	5/13/10	0950		24.5	0		
	104AG116IA	25867	5/13/10	1000		28	18.5		
	104AG117IA	11879	5/13/10	1005		27.5	0		
	104AG118IA	33888	5/13/10	1010		29	3		
	104AG119CS	34011	5/13/10	1020		29	2		
	104AG120CS	10661	5/13/10	1025		29	4.5		
	08A	104AG121SC	5/13/10	1220	TO15 (collected)	30	8		
	09A	104AG122SC	5/13/10	1340		30	12		
	10A	104AG123SC	5/13/10	1415		30	8		
Relinquished by: (signature) <u>Bon Mathis</u>			Date/Time <u>5/17/10 1100</u>		Received by: (signature) <u>MORRIS</u>		Date/Time <u>5/18/10 0900</u>		Notes: <u>PCE, TCE, COX5, TOX5, VC</u>
Relinquished by: (signature) _____			Date/Time _____		Received by: (signature) _____		Date/Time _____		
Relinquished by: (signature) _____			Date/Time _____		Received by: (signature) _____		Date/Time _____		
Lab Use Only		Shipper Name <u>Fed Ex</u>	Air Bill # _____	Temp (°C) <u>NA</u>	Condition <u>Good</u>	Custody Seals Intact? <u>Yes</u> <u>No</u> <u>None</u>	Work Order # <u>1005429</u>		

APPENDIX D

Passive Soil Gas Sampling Results

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GORE™ Surveys for Environmental Site Assessment



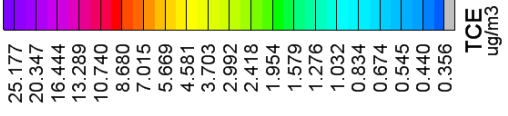
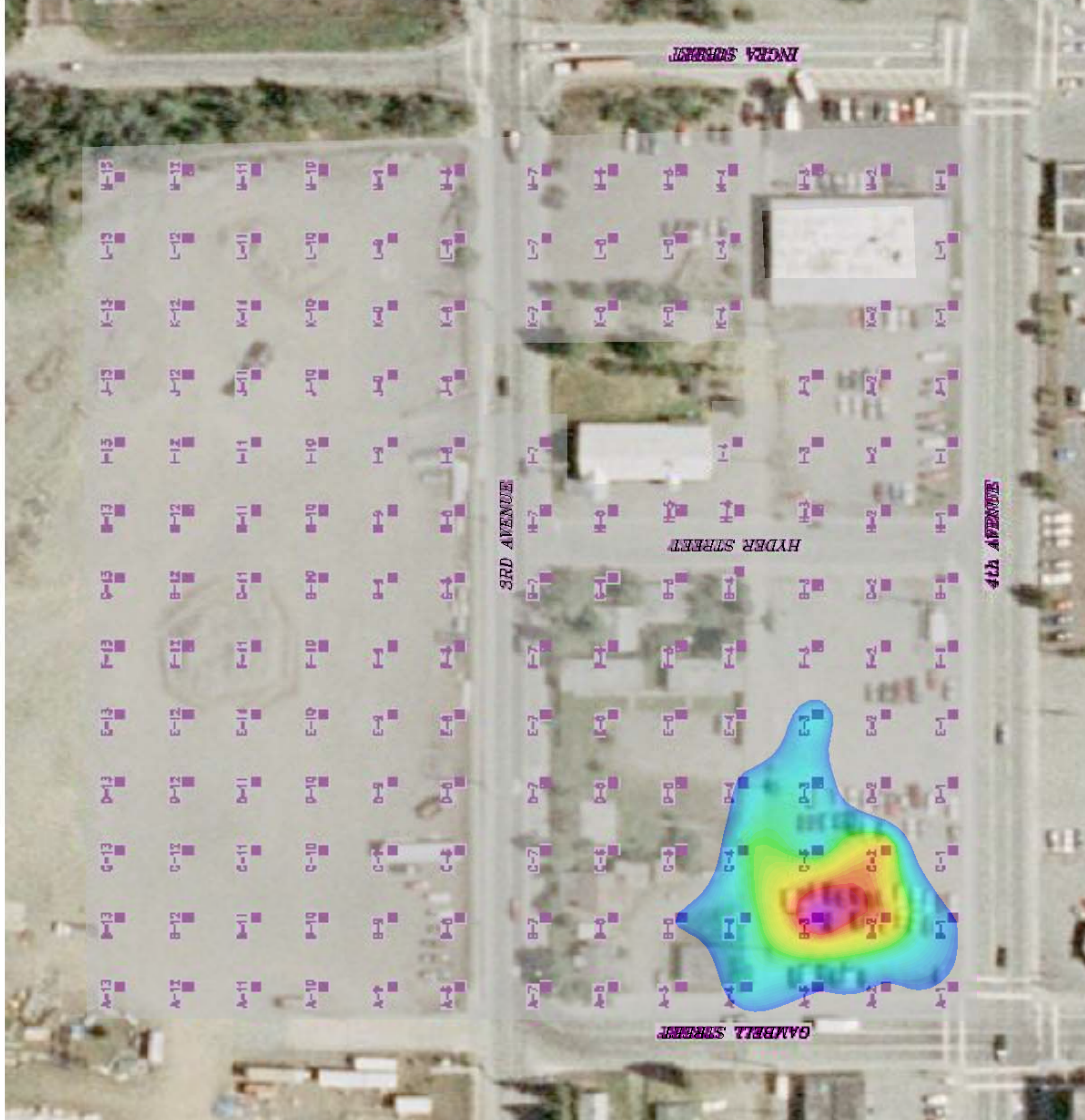
W.L. GORE & ASSOCIATES, INC.
100 CHESAPEAKE BOULEVARD
ELKTON, MD, USA 21821
USA
(410) 392-7600

Oasis Environmental, Anchorage, AK
4th & Gambell
Tetrachloroethene
Estimated Soil Gas Concentrations



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REV. DATE:	REV. #:	PROJECT NUMBER: 2049055	



GORE™ Surveys for Environmental Site Assessment

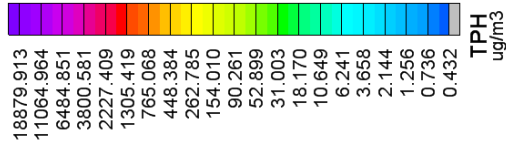
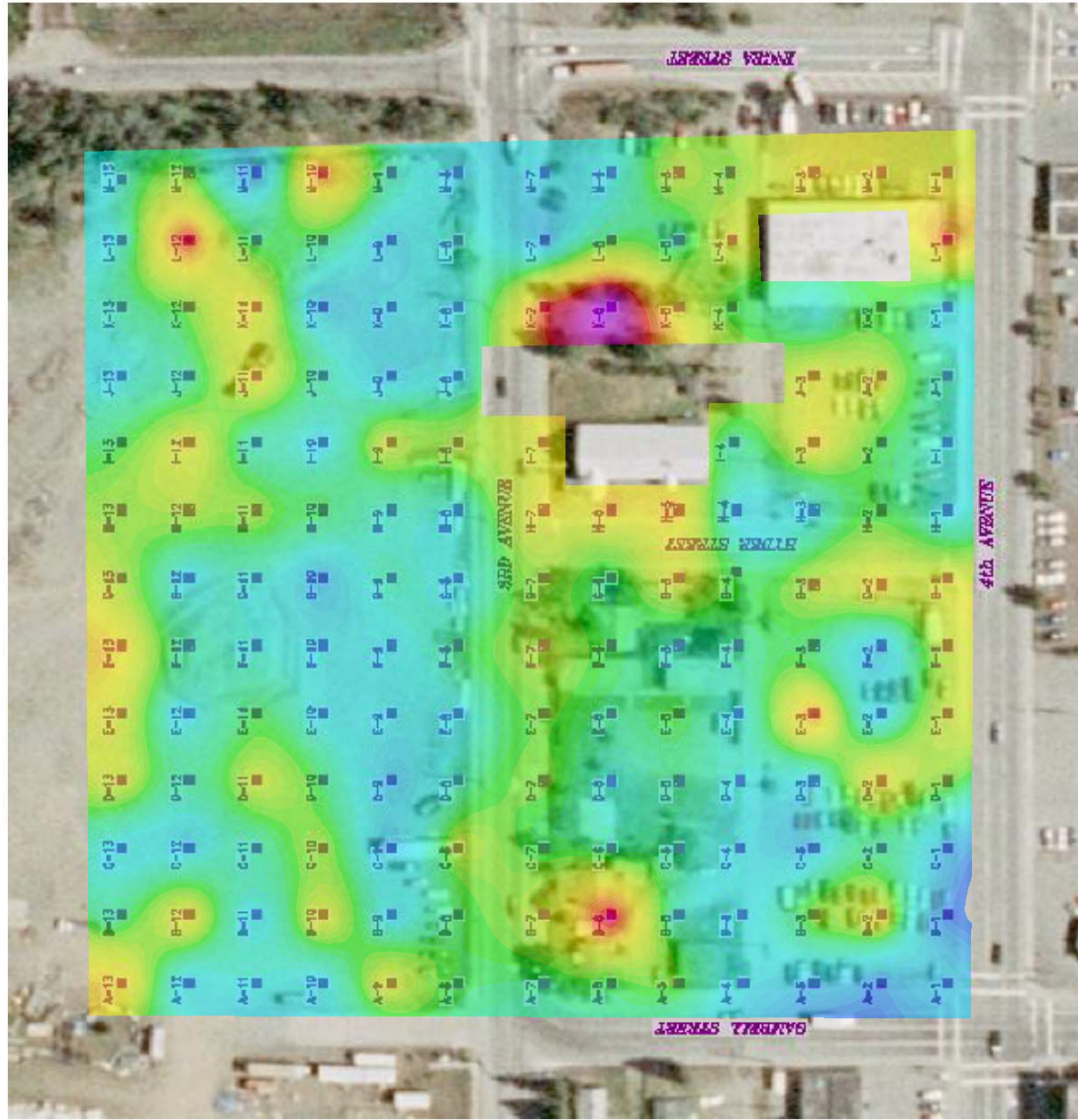


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 USA
 (410) 392-7600

Oasis Environmental, Anchorage, AK
 4th & Gambell
 Trichloroethene
 Estimated Soil Gas Concentrations

DATE DRAWN: 22 June 2010	DRAWN BY: JW	ORIG. CAD: FOURTH.DWG	SITE CODE: FJ1
REV. DATE:	REV. #:	PROJECT NUMBER: 20-09055	

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ELKTON, MD, USA 21821
USA
(410) 392-7600

**Oasis Environmental, Anchorage, AK
4th & Gambell
Total Petroleum Hydrocarbons
Estimated Soil Gas Concentrations**

DATE DRAWN: 22 June 2010	DRAWN BY: JW	ORIG. CAD: FOURTH.DWG	SITE CODE: FJ1
REV. DATE:	REV. #:	PROJECT NUMBER: 2049055	

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GORE(TM) SURVEYS ANALYTICAL RESULTS
 OASIS ENVIRONMENTAL, INC., ANCHORAGE AK
 GORE CHLORINATED HYDROCARBONS (A10)
 4TH AND GAMBELL ANCHORAGE, AK
 SITE FUJ - PRODUCTION ORDER #20495055

DATE ANALYZED	FIELD ID	SAMPLE NAME	TPH ug	CIBENZ ug	chl2DCE ug	h12DCE ug	chl2DCE ug	11DCA ug	CHCl3 ug	111TCA ug	12DCA ug	TCE ug	PCE ug	14DCB ug	CO14 ug	112TCA ug	1112TetCA ug	1122TetCA ug	13DCB ug	12DCB ug
5/25/10	C2	MDL=	0.02	nd	0.04	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02
5/29/10	A2	623178	1.33	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	E5-1	623179	0.07	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	E7	623180	1.23	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	A6	623181	3.62	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	A1	623182	2.06	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	D2	623183	0.21	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	A3	623184	21.06	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	E6	623185	0.16	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	F7	623186	1.60	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	A5	623187	8.24	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	B1	623188	3.21	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	E2	623189	0.06	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	B3	623190	0.52	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	E5	623191	4.66	nd	0.04	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.53
5/25/10	D7	623192	2.95	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	A7	623193	4.46	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	C1	623843	1.48	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	F2	623844	0.10	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	C3	623845	0.17	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	D6	623846	0.23	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	F6	623847	2.31	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	D8	623848	0.58	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	B7	623849	9.53	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	G3	623851	8.44	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	C3-1	623852	0.14	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	F5	623853	0.81	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	D5	623854	1.45	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	D1	623856	3.83	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	G2	623857	29.13	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.02
5/25/10	D3	623858	0.39	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	G7	623859	4.47	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	B2	623860	23.28	nd	nd	nd	nd	nd	nd	0.04	0.04	0.04	0.04	0.08	0.08	0.04	0.04	0.04	nd	nd
5/25/10	B5-1	623861	1.97	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	G1-1	623862	10.21	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	G1-1	623863	20.03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	G6	623865	1.57	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	C5	623866	1.29	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	B6	623867	0.34	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	F1	623868	9.66	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	G1	623869	18.11	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	E3	623870	100.78	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	G5	623871	18.00	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	C6	623872	1.17	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	C7	623873	1.95	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	H3	623874	0.45	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	M3	623875	18.11	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	M3-1	623876	35.79	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	A8	623877	1.96	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	A9	623878	14.85	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	C11	623879	0.90	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	M2	623881	20.52	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	M5	623882	9.00	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	I7	623883	16.37	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	A10	623884	0.33	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	C10	623885	5.97	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	H1	623886	0.35	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	M1	623887	13.28	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	M6	623888	0.49	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	H7	623889	27.13	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	A11	623890	0.53	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	C9	623891	0.12	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.03

No ndt is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 OASIS ENVIRONMENTAL, INC., ANCHORAGE AK
 GORE CHLORINATED HYDROCARBONS (A10)
 4TH AND GAMBELL, ANCHORAGE, AK
 SITE FUJ - PRODUCTION ORDER #20496055

DATE ANALYZED	FIELD ID	SAMPLE NAME	TPH, ug	CIBENZ, ug	chl2DCE, ug	h12DCE, ug	e12DCE, ug	11DCA, ug	CHCl3, ug	111TCA, ug	12DCA, ug	TCE, ug	PCE, ug	14DCB, ug	CO14, ug	112TCA, ug	1112TtCA, ug	1122TtCA, ug	13DCB, ug	12DCB, ug
		MDL=	0.02	0.02	0.04	0.03	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02
5/29/10	L1	623892	0.54	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	L1	623893	106.86	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	M7	623894	0.33	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	H6	623895	46.70	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	A12	623896	0.30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	C8	623897	7.61	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	J1	623898	0.40	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	K2	623899	2.38	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	L5	623900	1.18	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	H5-1	623901	54.45	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	A13	623902	39.93	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	B8	623903	2.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	J1-1	623904	2.58	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	J3	623905	15.50	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	L6	623906	2.24	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	H5	623907	42.29	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	B13	623908	1.71	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	B9	623909	0.32	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	K1	623910	0.32	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	J2	623911	10.51	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	L7	623912	0.11	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	K5	623913	15.87	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	B13-1	623914	1.07	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	B10	623915	19.59	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	I2	623916	2.37	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	I3	623917	27.34	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	K6	623918	1885.48	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	K7	623919	160.34	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	B12	623920	26.21	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	B11	623921	0.27	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	D9	623922	0.13	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	D8	623923	0.95	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	G8-1	623924	0.68	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	H11	623925	5.54	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	J8	623926	0.30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	J11	623927	22.24	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	D10	623928	2.13	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	E8	623929	0.34	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	G8	623930	0.26	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	H12	623931	5.96	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	J9	623932	0.19	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	J12	623933	0.97	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	D11	623934	9.43	nd	nd	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	E9	623935	0.33	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	F8	623936	1.76	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	I9	623938	11.62	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	J13-1	623939	0.28	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	D12	623940	1.22	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	E10	623941	0.55	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	F9	623942	0.32	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	G13	623943	6.12	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	I8	623944	5.95	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	J13	623945	0.55	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	D13	623946	12.69	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	E10-1	623947	0.24	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	F10	623948	0.33	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	G12	623949	0.33	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	H8	623950	0.50	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	I13	623951	2.22	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	C13	623952	0.33	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	E11	623953	2.46	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	F11	623954	0.64	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 OASIS ENVIRONMENTAL, INC., ANCHORAGE AK
 GORE CHLORINATED HYDROCARBONS (A10)
 4TH AND GAMBELL, ANCHORAGE, AK
 SITE FUJ - PRODUCTION ORDER #20496055

DATE ANALYZED	FIELD ID	SAMPLE NAME	TPH, ug	CIBENZ, ug	chl2DCE, ug	h12DCE, ug	e12DCE, ug	11DCA, ug	CHCl3, ug	111TCA, ug	12DCA, ug	TCE, ug	PCE, ug	14DCB, ug	CO14, ug	112TCA, ug	1112TetCA, ug	1122TetCA, ug	13DCB, ug	12DCB, ug
		MDL=	0.02	0.02	0.02	0.03	0.04	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02
5/28/10	G11	623955	0.66	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	H9-1	623956	0.67	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	I12	623957	16.06	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	C12-1	623958	0.18	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	E12	623959	0.32	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	F12	623960	1.17	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	G10	623961	0.09	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	H9-1	623962	0.72	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	I11	623963	0.75	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	C12-1	623968	0.39	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	E13	623969	11.37	nd	nd	nd	nd	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	F13	623970	33.31	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	G9	623971	1.35	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	H10	623972	2.28	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	I10	623973	0.33	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	L13	623974	1.32	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	L13-1	623975	0.24	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	D4	623976	0.51	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.05	nd	nd	nd
5/26/10	E4	623977	0.38	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	M4	623978	3.06	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	K13	623980	1.17	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	L12	623981	206.94	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	C4	623982	0.30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.12	nd	nd	nd
5/27/10	F4	623983	1.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	L4	623984	16.59	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	K12	623986	2.52	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	L11	623987	1.78	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	B4	623988	0.33	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	G4	623989	1.98	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	K11	623992	25.38	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	L10	623993	1.79	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	A4	623994	0.27	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	A4-1	623995	1.90	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	K10	623998	0.13	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	L9	623999	0.16	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	M13	624000	0.66	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	H4	624001	0.22	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	K9	624004	0.31	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	L8	624005	0.92	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	M12	624006	3.90	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	I4	624007	0.97	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	K8	624010	0.44	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	M8	624011	0.29	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	M11	624012	0.07	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	J4	624013	0.36	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	J10	624016	1.14	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	M9	624017	1.25	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	M10	624018	106.67	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	K4	624019	1.94	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10		623990	bdl	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10		623996	0.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10		624002	0.03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10		624008	0.03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10		method blank	0.04	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10		method blank	bdl	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10		method blank	0.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10		method blank	0.03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10		method blank	0.03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE(TM) SURVEYS ANALYTICAL RESULTS
 OASIS ENVIRONMENTAL, INC., ANCHORAGE AK
 GORE CHLORINATED HYDROCARBONS (A10)
 4TH AND GAMBELL, ANCHORAGE, AK
 SITE FJI - PRODUCTION ORDER #20496055

DATE ANALYZED	FIELD ID	SAMPLE NAME	TPH, ug	CIBENZ, ug	ct12DCE, ug	t12DCE, ug	c12DCE, ug	11DCA, ug	CHCl3, ug	111TCA, ug	12DCA, ug	TCE, ug	PCE, ug	14DCB, ug	CCl4, ug	112TCA, ug	1112TetCA, ug	1122TetCA, ug	13DCB, ug	12DCB, ug
		MDL=	0.02	0.02	0.04	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.02
		Maximum	1885.48	0.00	0.04	0.04	0.10	0.05	0.05	1.47	402.61	0.09	0.13	0.08	0.08	0.00	0.00	0.00	0.01	0.53
		Standard Dev.	146.99	0.00	0.00	0.01	0.01	0.00	0.01	0.12	81.04	0.01	0.02	0.01	0.05	0.00	0.00	0.00	0.00	0.04
		Mean	22.41	0.00	0.00	0.00	0.00	0.00	0.00	0.02	26.93	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORETMI SURVEYS ANALYTICAL RESULTS
 OASIS ENVIRONMENTAL, INC., ANCHORAGE AK
 1000 W. 12TH AVENUE, SUITE 100
 ANCHORAGE, ALASKA 99501
 ESTIMATED SOIL GAS CONCENTRATION
 8TH AND GAMBELL, ANCHORAGE, AK
 SITE F-1 - PRODUCTION ORDER #20495065

DATE ANALYZED	FIELD ID	SAMPLE NAME	TPH, ug/m ³	CBENZ, ug/m ³	ct12DCE, ug/m ³	12DCE, ug/m ³	ct12DCE, ug/m ³	11DCE, ug/m ³	CHCl3, ug/m ³	11T1CA, ug/m ³	12DCA, ug/m ³	TCE, ug/m ³	PCE, ug/m ³	14DOB, ug/m ³	CO4, ug/m ³	112TCA, ug/m ³	112TCA, ug/m ³	112TMeCA, ug/m ³	19DOB, ug/m ³	12DOB, ug/m ³
5/25/10	A1	523196	0.21	0.21	3.23	1.16	0.73	1.31	0.44	0.36	0.17	1.28	0.24	0.32	0.18	0.17	nd	nd	nd	nd
5/25/10	A2	623179	0.69	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	E6-1	623181	12.16	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	A6	623192	35.86	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	A1	623183	20.52	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	A3	623185	20.77	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	A3	623185	1.41	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	E6	623186	15.79	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	F7	623187	81.70	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	A5	623188	32.04	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	B1	623189	0.56	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	E2	623190	14.46	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	E5	623191	46.54	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	E5	623192	29.23	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	D7	623193	44.31	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	A7	623943	14.41	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	C1	623944	0.98	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	C2	623946	3.76	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	C2	623946	1.32	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	FR	623947	22.67	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	D6	623948	5.76	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	B7	623949	95.08	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	G3	623951	83.20	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	C3-1	623952	1.41	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	C3	623953	1.38	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	D6	623954	14.34	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	B6	623955	>315.73	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	D1	623956	37.62	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	G2	623957	287.72	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	D3	623958	3.88	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	B2	623959	4.4	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	B2	623960	232.38	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	B5-1	623961	19.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	E1	623962	100.77	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	G1-1	623963	197.76	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	G8	623965	15.56	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	G8	623965	1.58	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	B5	623967	1.38	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	F1	623968	95.35	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	G1	623969	178.79	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	E3	623970	>997.77	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	G5	623971	178.20	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	C5	623972	11.03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	H3	623974	4.48	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	M3	623975	180.99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	M5-1	623976	357.09	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	A8	623977	20.43	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	A3	623978	154.36	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	M4	623979	1.32	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	M2	623981	205.04	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	M5	623982	89.95	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	I7	623983	163.95	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	A10	623984	3.43	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	C10	623985	62.37	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	M1	623986	11.03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	M1	623987	132.64	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	M6	623988	4.91	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	H7	623989	271.70	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	A11	623990	5.88	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	C9	623991	1.26	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	L1	623992	>1067.34	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	M7	623994	3.34	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	H6	623995	467.97	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	A12	623996	3.09	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	C8	623997	79.49	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	C1	623998	3.69	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	C2	623999	21.49	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	L5	623990	11.94	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	H5-1	623901	>544.83	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	A13	623902	389.28	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	B8	623903	21.37	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	J1-1	623904	25.76	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	L6	623905	22.45	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	H5	623907	423.15	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	B13	623908	17.77	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

No nrl is available for summed combinations of analytes. In summed columns (eg. BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORETMI SURVEYS ANALYTICAL RESULTS
 OASIS ENVIRONMENTAL, INC., ANCHORAGE AK
 1000 W. 11TH AVENUE, SUITE 100
 ANCHORAGE, ALASKA 99501
 ESTIMATED SOIL GAS CONCENTRATION
 4TH AND GAMBELL, ANCHORAGE, AK
 SITE FJ1 - PRODUCTION ORDER #20495065

DATE ANALYZED	FIELD ID	SAMPLE NAME	TPH, ug/m ³	CIBENZ, ug/m ³	ct12DCE, ug/m ³	112DCE, ug/m ³	ct12DCE, ug/m ³	112DCE, ug/m ³	CHOB, ug/m ³	111TCA, ug/m ³	12DCA, ug/m ³	TCE, ug/m ³	PCE, ug/m ³	14DOB, ug/m ³	CO4, ug/m ³	112TCA, ug/m ³	112TCA, ug/m ³	1122TeCA, ug/m ³	13DOB, ug/m ³	12DOB, ug/m ³
5/26/10	B9	623910	0.21	0.20	3.23	1.16	0.73	0.44	0.36	0.25	0.17	0.24	0.24	0.18	0.17	nd	nd	nd	nd	nd
5/26/10	K1	623910	3.19	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	K2	623911	104.36	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	L7	623912	1.07	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	K5	623913	159.83	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	B15-1	623914	11.21	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	F10	623915	23.32	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	F1	623916	33.26	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	F5	623917	272.88	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	K6	623918	>18866.09	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	K7	623919	>1694.52	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	B12	623920	273.60	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	B11	623921	2.98	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	B13	623922	1.26	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	D8	623923	9.92	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	G5-1	623924	6.95	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	H1	623925	58.25	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	J8	623926	3.13	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	J11	623927	294.76	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	J12	623928	2.58	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	E9	623929	4.59	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	G8	623930	2.76	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	H2	623931	62.64	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	J9	623932	2.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	J12	623933	10.26	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	E11	623934	1.38	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	E1	623935	3.47	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	F3	623936	18.40	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	I8	623938	122.76	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	D12	623939	2.93	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	D12	623940	12.73	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	F1	623941	3.13	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	G13	623943	64.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	I8	623944	62.68	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	J13	623945	5.85	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	D13	623946	192.49	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	E10-1	623947	2.52	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	E10-2	623948	2.92	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	G12	623949	3.43	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	H8	623950	5.28	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	I13	623951	23.44	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	C13	623952	3.46	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	E11	623953	25.72	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	G11	623954	6.34	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	H9-1	623956	7.06	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	I12	623957	189.27	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	C12-1	623958	1.67	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	E12	623959	3.30	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	G16	623960	1.99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	G16	623960	1.99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	H9-1	623962	7.63	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	I11	623963	7.90	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	C12-1	623968	4.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10	E13	623969	118.86	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	F13	623970	348.37	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	G3	623971	18.74	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	H10	623972	24.00	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10	I10	623973	3.48	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	L13	623974	13.99	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	D4	623975	2.52	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	D4	623976	5.74	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	M4	623977	34.54	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	M4	623978	34.54	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	K13	623980	12.26	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	L12	623981	>2186.46	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	C4	623982	3.31	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	F4	623983	11.72	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	F4	623983	18.74	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/29/10	K12	623986	26.66	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	L11	623987	18.76	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	B4	623988	3.73	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	G4	623989	22.39	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	K11	623992	288.03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10	L10	623993	2.96	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	A4	623994	2.96	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10	A4-1	623995	21.50	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

No nrl is available for summed combinations of analytes. In summed columns (eg. BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORETMI SURVEYS ANALYTICAL RESULTS
 OASIS ENVIRONMENTAL, INC., ANCHORAGE AK
 675 EAST 10TH AVENUE (M10)
 ANCHORAGE, ALASKA 99501
 ESTIMATED SOIL GAS CONCENTRATION
 8TH AND GAMBELL, ANCHORAGE, AK
 SITE FJ1 - PRODUCTION ORDER #20495065

DATE ANALYZED	FIELD ID	SAMPLE NAME	TPH, ug/m ³	CIBENZ, ug/m ³	ct12DCE, ug/m ³	112DCE, ug/m ³	ct12DCE, ug/m ³	112DCE, ug/m ³	CHCl3, ug/m ³	111TCA, ug/m ³	12DCA, ug/m ³	TCE, ug/m ³	14DDB, ug/m ³	CO4, ug/m ³	112TCA, ug/m ³	112TCA, ug/m ³	1122TeCA, ug/m ³	130CB, ug/m ³	120CB, ug/m ³
5/25/10	K0	MDS	0.21	nd	3.23	nd	nd	0.73	nd	0.44	0.36	0.25	0.17	1.26	0.24	0.52	0.22	0.18	0.17
5/25/10	K1	623990	1.74	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	L1	623990	1.74	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10	M3	624000	7.00	nd	nd	nd	nd	nd	nd	nd	nd	5.05	nd	nd	nd	nd	nd	nd	nd
5/25/10	H4	624001	2.53	nd	nd	nd	nd	nd	nd	nd	nd	5.79	nd	nd	nd	nd	nd	nd	nd
5/27/10	K9	624004	3.50	nd	nd	nd	nd	nd	nd	nd	nd	0.89	nd	nd	nd	nd	nd	nd	nd
5/25/10	L9	624005	9.69	nd	nd	nd	nd	nd	nd	nd	nd	0.43	nd	nd	nd	nd	nd	nd	nd
5/25/10	M2	624006	11.08	nd	nd	nd	nd	nd	nd	nd	nd	3.44	nd	nd	nd	nd	nd	nd	nd
5/25/10	M1	624007	11.08	nd	nd	nd	nd	nd	nd	nd	nd	3.44	nd	nd	nd	nd	nd	nd	nd
5/27/10	K3	624010	4.65	nd	nd	nd	nd	nd	nd	nd	nd	0.48	nd	nd	nd	nd	nd	nd	nd
5/26/10	M8	624011	3.04	nd	nd	nd	nd	nd	nd	nd	nd	0.30	nd	nd	nd	nd	nd	nd	nd
5/27/10	M11	624012	0.79	nd	nd	nd	nd	nd	nd	nd	nd	3.99	nd	nd	nd	nd	nd	nd	nd
5/27/10	J4	624013	4.07	nd	nd	nd	nd	nd	nd	nd	nd	29.77	nd	nd	nd	nd	nd	nd	nd
5/27/10	J10	624016	12.04	nd	nd	nd	nd	nd	nd	1.10	nd	0.48	nd	nd	nd	nd	nd	nd	nd
5/27/10	M10	624018	>1127.82	nd	nd	nd	nd	nd	nd	nd	nd	0.34	nd	nd	nd	nd	nd	nd	nd
5/25/10	K4	624019	22.06	nd	nd	nd	nd	nd	nd	nd	nd	1.48	nd	nd	nd	nd	nd	nd	nd
5/25/10		623990	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10		623996	0.24	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10		624008	0.36	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/24/10		method blank	0.43	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/25/10		method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/26/10		method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10		method blank	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/27/10		method blank	0.31	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5/28/10		method blank	0.26	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
		Maximum	18866.88	0.00	1.48	0.00	3.44	0.00	0.00	2.40	25.18	4845.41	0.78	5.22	0.97	6.79	0.00	0.10	4.46
		Standard Dev.	1489.01	0.00	0.11	0.00	0.30	0.00	0.00	0.22	2.07	381.33	0.08	0.66	0.07	0.53	0.00	0.01	0.34
		Mean	224.77	0.00	0.01	0.00	0.03	0.00	0.00	0.02	0.30	328.40	0.01	0.15	0.01	0.96	0.00	0.00	0.03

No mdl is available for summed combinations of analytes. In summed columns (eg., BTEX), the reported values should be considered ESTIMATED if any of the individual compounds were reported as bdl.

GORE™ Surveys

KEY TO DATA TABLE 4th and Gambell, Anchorage, AK

UNITS

µg	micrograms, relative mass value
µg/m ³	micrograms per cubic meter, estimated soil gas concentration
MDL	method detection limit
bdl	below detection limit
nd	non-detect
>	indicates concentration value biased low due to high mass level on sorbent

ANALYTES

TPH	total petroleum hydrocarbons
ct12DCE	cis- & trans-1,2-dichloroethene
t12DCE	trans-1,2-dichloroethene
c12DCE	cis-1,2-dichloroethene
VC	vinyl chloride
11DCA	1,1-dichloroethane
CHC13	chloroform
111TCA	1,1,1-trichloroethane
12DCA	1,2-dichloroethane
CC14	carbon tetrachloride
TCE	trichloroethene
PCE	tetrachloroethene
CIBENZ	chlorobenzene
14DCB	1,4-dichlorobenzene
11DCE	1,1-dichloroethene
112TCA	1,1,2-trichloroethane
1112TetCA	1,1,1,2-tetrachloroethane
1122TetCA	1,1,2,2-tetrachloroethane
13DCB	1,3-dichlorobenzene
12DCB	1,2-dichlorobenzene

BLANKS

method blank	QA/QC module, documents analytical conditions during analysis
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APPENDIX E

ADEC Data Review Checklists

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Laboratory Data Review Checklist for Air Samples

Completed By:

Title:

Date:

CS Report Name:

Report Date:

Consultant Firm:

Laboratory Name:

Laboratory Report Number:

ADEC File Number:

ADEC Hazard ID:

1. Laboratory

a. Did a NELAP certified laboratory receive and perform all of the submitted sample analyses?

Yes No

Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses NELAP approved?

Yes No

Comments:

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes No

Comments:

b. Correct analyses requested?

Yes No

Comments:

Laboratory Data Review Checklist for Air Samples

3. Laboratory Sample Receipt Documentation

a. Sample condition documented- Samples collected in gas tight, opaque/dark Summa canisters or other ADEC approved container? Canister vacuum/pressure checked, recorded upon receipt and contained no open valves?

Yes No

Comments:

b. If there were any discrepancies, were they documented? For example, incorrect sample containers, sample holding times outside of acceptable range, insufficient of missing samples, canister not holding a vacuum, etc.?

Yes No

Comments:

NA

c. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

4. Case Narrative

a. Present and understandable?

Yes No

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No

Comments:

Sample 104AG107CS had elevated reporting limits because of high level non-target species

c. Were all corrective actions documented?

Yes No

Comments:

None necessary

d. What is the effect on data quality/usability according to the case narrative?

Yes No

Comments:

PCE still detected. Other COCs had elevated reporting limits. No effect on data quality since primary COC, PCE.

5. Sample Results

a. Correct analyses performed/reported as requested on COC?

Yes No

Comments:

Laboratory Data Review Checklist for Air Samples

b. Samples analyzed within 30 days of collection or within the time required by the method?

Yes No

Comments:

c. Is the data reported in micrograms per meter cube volume ($\mu\text{g}/\text{m}^3$)?

Yes No

Comments:

d. Are the reported PQLs less than the Target Screening Level or the minimum required detection level for the project?

Yes No

Comments:

See 4d above

e. Data quality or usability affected? Please explain.

Yes No

Comments:

See 4d above

6. QC Samples

a. Method Blank

i. One method blank reported per analysis and 20 samples?

Yes No

Comments:

ii. All method blank results less than PQL?

Yes No

Comments:

iii. If above PQL, what samples are affected?

Yes No

Comments:

NA

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

v. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

Laboratory Data Review Checklist for Air Samples

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD or one LCS and a sample/sample duplicate pair reported per analysis and 20 samples?

Yes No

Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable.

Yes No

Comments:

iii. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable.

Yes No

Comments:

NA

iv. If % R or RPD is outside of acceptable limits, what samples are affected?

Yes No

Comments:

NA

v. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

vi. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - QC and laboratory samples?

Yes No

Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits?

Yes No

Comments:

Laboratory Data Review Checklist for Air Samples

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

iv. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

d. Field Duplicate

i. One field duplicate submitted per analysis and 10 soil gas or indoor air samples?

Yes No

Comments:

ii. Submitted blind to lab?

Yes No

Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 25%)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No

Comments:

iv. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

7. Other Data Flags/Qualifiers

a. Defined and appropriate?

Yes No

Comments:

NA

Laboratory Data Review Checklist for Air Samples

Completed By:

Title:

Date:

CS Report Name:

Report Date:

Consultant Firm:

Laboratory Name:

Laboratory Report Number:

ADEC File Number:

ADEC Hazard ID:

1. Laboratory

a. Did a NELAP certified laboratory receive and perform all of the submitted sample analyses?

Yes No

Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses NELAP approved?

Yes No

Comments:

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes No

Comments:

b. Correct analyses requested?

Yes No

Comments:

Laboratory Data Review Checklist for Air Samples

3. Laboratory Sample Receipt Documentation

a. Sample condition documented- Samples collected in gas tight, opaque/dark Summa canisters or other ADEC approved container? Canister vacuum/pressure checked, recorded upon receipt and contained no open valves?

Yes No

Comments:

b. If there were any discrepancies, were they documented? For example, incorrect sample containers, sample holding times outside of acceptable range, insufficient of missing samples, canister not holding a vacuum, etc.?

Yes No

Comments:

NA

c. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

4. Case Narrative

a. Present and understandable?

Yes No

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No

Comments:

NA

c. Were all corrective actions documented?

Yes No

Comments:

NA

d. What is the effect on data quality/usability according to the case narrative?

Yes No

Comments:

NA

5. Sample Results

a. Correct analyses performed/reported as requested on COC?

Yes No

Comments:

Laboratory Data Review Checklist for Air Samples

b. Samples analyzed within 30 days of collection or within the time required by the method?

Yes No

Comments:

c. Is the data reported in micrograms per meter cube volume ($\mu\text{g}/\text{m}^3$)?

Yes No

Comments:

d. Are the reported PQLs less than the Target Screening Level or the minimum required detection level for the project?

Yes No

Comments:

NA

e. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

6. QC Samples

a. Method Blank

i. One method blank reported per analysis and 20 samples?

Yes No

Comments:

ii. All method blank results less than PQL?

Yes No

Comments:

iii. If above PQL, what samples are affected?

Yes No

Comments:

NA

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

v. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

Laboratory Data Review Checklist for Air Samples

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD or one LCS and a sample/sample duplicate pair reported per analysis and 20 samples?

Yes No

Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable.

Yes No

Comments:

iii. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable.

Yes No

Comments:

NA

iv. If % R or RPD is outside of acceptable limits, what samples are affected?

Yes No

Comments:

NA

v. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

vi. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - QC and laboratory samples?

Yes No

Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits?

Yes No

Comments:

Laboratory Data Review Checklist for Air Samples

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

iv. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

d. Field Duplicate

i. One field duplicate submitted per analysis and 10 soil gas or indoor air samples?

Yes No

Comments:

ii. Submitted blind to lab?

Yes No

Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 25%)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No

Comments:

iv. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

7. Other Data Flags/Qualifiers

a. Defined and appropriate?

Yes No

Comments:

NA

Laboratory Data Review Checklist for Air Samples

Completed By:	B Martich
Title:	Envt Scientist
Date:	June 24, 2010
CS Report Name:	4th and Gambell Additional Characterization
Report Date:	June 2010
Consultant Firm:	OASIS Environmental
Laboratory Name:	Air Toxics
Laboratory Report Number:	1005429A
ADEC File Number:	2100.38.434
ADEC Hazard ID:	4084

1. Laboratorya. Did a NELAP certified laboratory receive and perform all of the submitted sample analyses?
 Yes No

Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses NELAP approved?

 Yes No

Comments:

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

 Yes No

Comments:

b. Correct analyses requested?

 Yes No

Comments:

Laboratory Data Review Checklist for Air Samples

3. Laboratory Sample Receipt Documentation

a. Sample condition documented- Samples collected in gas tight, opaque/dark Summa canisters or other ADEC approved container? Canister vacuum/pressure checked, recorded upon receipt and contained no open valves?

Yes No

Comments:

b. If there were any discrepancies, were they documented? For example, incorrect sample containers, sample holding times outside of acceptable range, insufficient of missing samples, canister not holding a vacuum, etc.?

Yes No

Comments:

Sample from IA-2 (116IA) had high remaining vacuum

c. Data quality or usability affected? Please explain.

Yes No

Comments:

No - PCE still detected. TCE detection limit above target level but PCE is primary risk factor

4. Case Narrative

a. Present and understandable?

Yes No

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No

Comments:

dilution required for CS-1 (119CS) and CS-2 (120CS) because of elevated non-target analytes in samples

c. Were all corrective actions documented?

Yes No

Comments:

None necessary

d. What is the effect on data quality/usability according to the case narrative?

Yes No

Comments:

TCE detection limits above target level, but PCE is primary risk factor and it was detected in both samples

5. Sample Results

a. Correct analyses performed/reported as requested on COC?

Yes No

Comments:

Laboratory Data Review Checklist for Air Samples

b. Samples analyzed within 30 days of collection or within the time required by the method?

Yes No

Comments:

c. Is the data reported in micrograms per meter cube volume ($\mu\text{g}/\text{m}^3$)?

Yes No

Comments:

d. Are the reported PQLs less than the Target Screening Level or the minimum required detection level for the project?

Yes No

Comments:

Elevated TCE PQLs for reasons described above

e. Data quality or usability affected? Please explain.

Yes No

Comments:

PCE detected in all affected samples, and it is the primary risk factor

6. QC Samples

a. Method Blank

i. One method blank reported per analysis and 20 samples?

Yes No

Comments:

ii. All method blank results less than PQL?

Yes No

Comments:

iii. If above PQL, what samples are affected?

Yes No

Comments:

NA

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

v. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

Laboratory Data Review Checklist for Air Samples

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD or one LCS and a sample/sample duplicate pair reported per analysis and 20 samples?

Yes No

Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable.

Yes No

Comments:

iii. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable.

Yes No

Comments:

iv. If % R or RPD is outside of acceptable limits, what samples are affected?

Yes No

Comments:

NA

v. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

vi. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - QC and laboratory samples?

Yes No

Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits?

Yes No

Comments:

Laboratory Data Review Checklist for Air Samples

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

iv. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

d. Field Duplicate

i. One field duplicate submitted per analysis and 10 soil gas or indoor air samples?

Yes No

Comments:

ii. Submitted blind to lab?

Yes No

Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 25%)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No

Comments:

iv. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

7. Other Data Flags/Qualifiers

a. Defined and appropriate?

Yes No

Comments:

NA

Laboratory Data Review Checklist for Air Samples

Completed By:	B Martich
Title:	Envt Scientist
Date:	June 24, 2010
CS Report Name:	4th and Gambell Additional Characterization
Report Date:	June 2010
Consultant Firm:	OASIS Environmental
Laboratory Name:	Air Toxics
Laboratory Report Number:	1005429B
ADEC File Number:	2100.38.434
ADEC Hazard ID:	4084

1. Laboratory

a. Did a NELAP certified laboratory receive and perform all of the submitted sample analyses?

Yes No

Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses NELAP approved?

Yes No

Comments:

NA

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

Yes No

Comments:

b. Correct analyses requested?

Yes No

Comments:

Laboratory Data Review Checklist for Air Samples

3. Laboratory Sample Receipt Documentation

a. Sample condition documented- Samples collected in gas tight, opaque/dark Summa canisters or other ADEC approved container? Canister vacuum/pressure checked, recorded upon receipt and contained no open valves?

Yes No

Comments:

b. If there were any discrepancies, were they documented? For example, incorrect sample containers, sample holding times outside of acceptable range, insufficient of missing samples, canister not holding a vacuum, etc.?

Yes No

Comments:

Sample 121SG reported vacuum and lab measurement greater than 5inHg; leak test confirmed tightness of valve

c. Data quality or usability affected? Please explain.

Yes No

Comments:

4. Case Narrative

a. Present and understandable?

Yes No

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No

Comments:

NA

c. Were all corrective actions documented?

Yes No

Comments:

NA

d. What is the effect on data quality/usability according to the case narrative?

Yes No

Comments:

NA

5. Sample Results

a. Correct analyses performed/reported as requested on COC?

Yes No

Comments:

Laboratory Data Review Checklist for Air Samples

b. Samples analyzed within 30 days of collection or within the time required by the method?

Yes No

Comments:

c. Is the data reported in micrograms per meter cube volume ($\mu\text{g}/\text{m}^3$)?

Yes No

Comments:

d. Are the reported PQLs less than the Target Screening Level or the minimum required detection level for the project?

Yes No

Comments:

e. Data quality or usability affected? Please explain.

Yes No

Comments:

6. QC Samples

a. Method Blank

i. One method blank reported per analysis and 20 samples?

Yes No

Comments:

ii. All method blank results less than PQL?

Yes No

Comments:

iii. If above PQL, what samples are affected?

Yes No

Comments:

NA

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

v. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

Laboratory Data Review Checklist for Air Samples

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD or one LCS and a sample/sample duplicate pair reported per analysis and 20 samples?

Yes No

Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable.

Yes No

Comments:

iii. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable.

Yes No

Comments:

iv. If % R or RPD is outside of acceptable limits, what samples are affected?

Yes No

Comments:

NA

v. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

vi. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - QC and laboratory samples?

Yes No

Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits?

Yes No

Comments:

Laboratory Data Review Checklist for Air Samples

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No

Comments:

NA

iv. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

d. Field Duplicate

i. One field duplicate submitted per analysis and 10 soil gas or indoor air samples?

Yes No

Comments:

ii. Submitted blind to lab?

Yes No

Comments:

iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 25%)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No

Comments:

iv. Data quality or usability affected? Please explain.

Yes No

Comments:

NA

7. Other Data Flags/Qualifiers

a. Defined and appropriate?

Yes No

Comments:

NA