



Final Remedial Action Report for
Building 986 POL Laboratory

Soil Vapor Extraction and Bio-Venting
Operations and Maintenance
Fort Richardson, Alaska
Contract No. DACA85-01-P-0080

PREPARED FOR

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LIST OF ACRONYMS

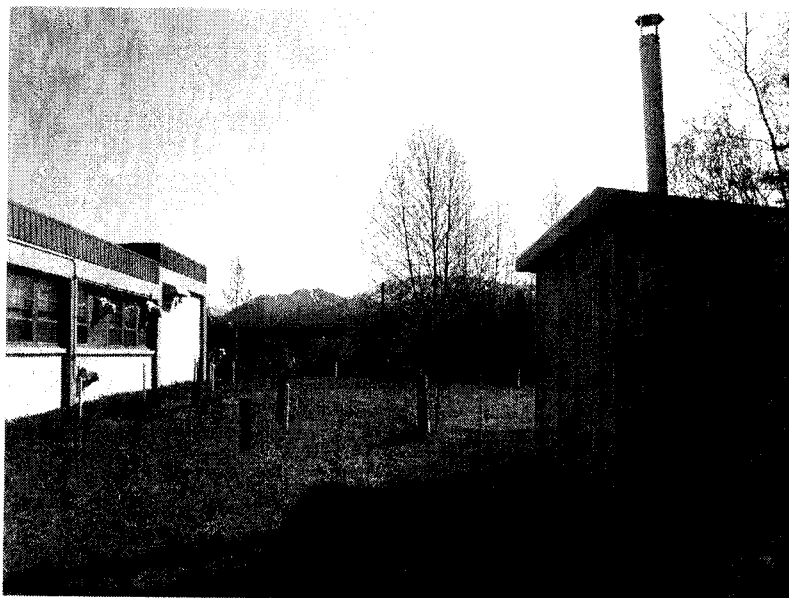
AAC	Alaska Administrative Code
ACL	Alternate Cleanup Level
ADEC	Alaska Department of Environmental Conservation
AOC	Area of Concern
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
BV	Bioventing
bgs	Below ground surface
DQO	Data Quality Objective
DRO	Diesel Range Organics
EPA	U.S. Environmental Protection Agency
GRO	Gasoline Range Organics
HSP	Health and Safety Plan
µg/Kg	Microgram Per Kilogram
mg/Kg	Milligram Per Kilogram
PID	Photoionization Detector
POL	Petroleum Oil & Lubricants
ppm	Parts Per Million
QA/QC	Quality Assurance/Quality Control
RRO	Residual Range Organics
SVE	Soil Vapor Extraction
USACE	U.S. Army Corps of Engineers

1.0 INTRODUCTION

This Remedial Action Report documents the remedial activities and operations/maintenance conducted at the POL Laboratory Building 986 on Fort Richardson, Alaska. These activities were completed in December 2003 to remediate petroleum hydrocarbon impacted soils as part of a remedial action program, which has the following objectives:

- Operate and maintain a soil vapor extraction / bioventing (SVE/BV) system to reduce soil contaminant levels to ADEC cleanup standards
- Measure and report in-situ soil gases and petroleum vapor concentrations removed from the soil
- Analytical testing and analysis of air exhausted from the SVE/BV process
- Advancement of soil borings and collection of soil samples to assess progress of treatment of petroleum hydrocarbon
- Calculation of Alternate Cleanup Levels per ADEC Method Three Calculator, and
- Decommissioning of the SVE/BV system

All work was conducted by AGVIQ, LLC (AGVIQ) for the U.S. Army Corps of Engineers (USACE) under Contract Number DACA85-01-P-0080.



Building 986 POL Laboratory and SVE/BV System, 2003

2.0 BACKGROUND

The POL Laboratory (Building 986) was located at the intersection of Warehouse Street and Loop Road on Fort Richardson, Alaska (Appendix A, Figure 1). Building 986 was used for the testing of petroleum fuels, oils and lubricants (POL) used by the Army. Historical activities included the disposal of the products tested into an onsite dry well. The subsurface disposal of petroleum hydrocarbons was halted in 1995. The dry well and its contents were removed along with heavily impacted soils in 1998. Initially, a soil vapor extraction system was installed to remove volatile organic vapors from the soil. Bioventing wells were installed to enhance the oxygen content in the soil that would promote the destruction of petroleum hydrocarbons by in-situ micro-organisms.

The entire site was the only area of concern (AOC) identified for remedial action under this contract (see Appendix A, Figure 2). AGVIQ was contracted to operate the system for one year (January 2002 to January 2003) while performing monthly monitoring and quarterly system testing and analysis (Appendix B, Respirometer Tests). Five respirometer test were performed; one at the beginning of the site activities and one during each quarter thereafter. The (remaining) primary contaminants of concern in the effluent (air exhausted from the system) were gasoline range organics (GRO) and the components of BTEX (benzene, ethylbenzene, toluene, and total xylenes). Additionally, methane, carbon dioxide, and nitrogen were analyzed to measure biological activity within the soil at the site. The following analytical methods were used for effluent sample analysis:

- AK 101 for gasoline range organics (GRO)
- EPA 8021B for BTEX (benzene, ethylbenzene, toluene, and total xylenes)
- ASTM 1945M for methane, carbon dioxide, oxygen, and nitrogen

At the end of one year of SVE/BV system operation, soil borings were advanced and samples collected to determine if cleanup levels had been achieved. Soil boring logs and analytical reports are presented in Appendices C and D, respectively. The following analytical methods were used for soil boring sample analysis:

- AK 101 for gasoline range organics (GRO)
- AK 102 for diesel range organics (DRO)
- EPA 8260B for volatile organic compounds as listed in Appendix D
- EPA 8270SIM for polynuclear aromatic hydrocarbons (PAH) as listed in Appendix D

3.0 PROJECT ACTIVITIES

AGVIQ conducted activities at Building 986 that consisted of SVE/BV system operation and maintenance, monthly monitoring, quarterly monitoring, groundwater sampling, soil sampling, and calculation of alternate cleanup levels.

3.1 SVE/BV System O&M

AGVIQ mobilized materials, equipment, and personnel from Anchorage to Fort Richardson to conduct site activities. Operation and maintenance included the activities to ensure continual system operation by checking installed systems, clearing obstructions in the SVE process piping and blower, and assessing conditions that could have altered operational settings. The system consisted of three vapor extraction or vent wells through which soil gases were removed. The vapors were extracted through piping that was manifolded into an exhaust duct after individual sampling ports within the SVE/BV shed. A blower housed in the shed extracted the vapors and exhausted them onsite. Oxygen was pulled from the surface through the bioventing wells and the soil. A Toxguard™ vapor monitor installed on the system monitored the vapor concentrations within the exhaust and in the shed and was set to shutdown the system in the event that vapor concentrations in the exhaust duct exceeded allowable levels. Allowable levels were not exceeded and the system did not shutdown during the project. Utilities at the site include the underground electrical power and telephone lines that terminated on a pole and pedestal northwest of the blower shed.

3.2 Monthly Monitoring

Monitoring was completed monthly from January 2002 to January 2003. Additional monitoring was requested by the Corps and completed in February, July, and August of 2003. Monthly monitoring was completed to assess the SVE system performance. The airflow rates (CFM) and vacuum (inches of H₂O) were measured from each vapor extraction well at the manifold. Concentrations of volatiles (ppm) were measured with a calibrated photo-ionization detector (PID) at each vapor extraction well and at the exhaust stack. Airflow rates were measured at the SVE blower on installed gauges. Using a Combustible Gas Indicator (CGI), soil gas concentrations were collected from each of the monitoring points (MP-1, MP-2, and MP-3 – Figure 2). Each monitoring point was installed with a soil gas diffuser and color tubing. The monitoring point terminated at 10-foot bgs was installed with blue tubing and the monitoring point at 20-foot bgs with green tubing. The CGI analyzed the oxygen and carbon dioxide content pumped from 10 and 20-foot depths below ground surface (bgs) in each of the monitoring points. The results are presented in Tables 2 through 4 of each of five respirometer reports attached in Appendix B.

3.3 Quarterly Monitoring

Quarterly monitoring immediately followed the monthly monitoring each third month. It consisted of effluent air sampling to assess vapor removal, soil gas monitoring to assess biological activity, and system configuration to obtain the highest productivity of the SVE/BV process. The effluent air was collected and transported to SGS Environmental Services, a USACE certified lab, for analysis. Following the effluent sampling, an 8-day respirometer test began with measuring the soil gases (carbon dioxide and oxygen) at the monitoring points. After the first set of soil gas data was collected the system was shutdown. Soil gas data was collected every 30-minutes for the first four hours of the test then daily for the remainder of the 8-day test. The data from each test was presented in Appendix B in each of the respirometer test reports and in Appendix B of this report.

3.4 Groundwater Sampling

On August 22, 2003 the groundwater was sampled to assess whether or not the petroleum hydrocarbons in the soil had impacted the groundwater. Three groundwater monitoring wells existed at the site (AP-3022, AP-3020, and AP-3648 – Figure 2). Exploration logs of the wells AP-3022 and AP-3020 indicate they were terminated 20.5-ft bgs and 24.1-ft bgs, respectively. The wells had been installed by others to sample groundwater from a perched aquifer. No groundwater was in either shallow well at the time of sampling. At the time of sampling, groundwater was present only in AP-3648 at 121.27-ft bgs. AP-3648 was reported to terminate at 172.9-ft bgs. With groundwater present in only one well there was insufficient data available to calculate the groundwater gradient at the site.

3.5 Soil Sampling

Soil sampling was conducted by the advancement of soil borings to assess the petroleum hydrocarbon concentrations in the soil. Five soil borings (CB-11 through CB-15 – Figure 3) were advanced by Discovery Drilling during October 6-8, 2003. Six soil samples were collected from each boring. Soil samples for laboratory analyses were collected at or near 10, 15, 20, 30, 40, and 50-ft bgs. One additional soil sample was collected from 82-ft bgs in soil boring FRPOLCB-15. Sampling depths were recorded on the boring logs and in the sample description in Table 3. CB-15 was placed in the area of the former dry well location. The borings and sampling performed on October 6, 7, and 8, 2003 were near soil boring locations previously used to assess treatment progress. Logs of the soil borings were completed and are presented in Appendix C. The borings were identified with location, site, and bore hole designators. For example, the boring on Fort Richardson at the POL lab that was the eleventh boring advanced at the site was identified with the name FRPOLCB-11. The letters CB were used to indicate a soil boring.

3.6 Calculation of Alternate Cleanup Levels

Following the soil boring activities and reporting of the analytical data, AGVIQ used the online Method Three Calculator provided by the ADEC to evaluate soil analytical results with respect to published Method Two Cleanup Levels. Results from remedial activities conducted at the site were used to apply site-specific data to the calculation. The calculator was accessed at:

<http://www.dec.state.ak.us/spar/cs/webcalc>

3.7 SVE/BV System Decommissioning

Due to the timing of the remedial activities and the analysis, calculation, and reporting of data obtained by the remedial effort, the decommissioning of the SVE/BV system including piping and utilities has been postponed to the spring of 2004. The documentation of the activities will be addressed in a letter report following the completion of the activity.

4.0 SAMPLING & ANALYSIS

AGVIQ conducted air, groundwater, and soil sampling at the site in support of O&M activities and for the assessment of remedial progress by the SVE/BV system.

4.1 Methods, Procedures, and Equipment

Effluent air samples were collected as grab samples from the VE system exhaust stack, prior to shutdown, to estimate hydrocarbon removal rates as configured. The air samples were collected from the exhaust stack using two laboratory-prepared 1-liter stainless steel canisters. A brass sample port was used at the collection point on the exhaust piping. The steel canisters had been prepared to hold a vacuum for the collection of the air from the piping. A short section of Tygon™ tubing was used between the sample port and the canister. The time to collect the sample volume sufficient for analysis was less than one minute. The effluent samples were analyzed for the following parameters:

- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) by EPA 8021B
- Gasoline Range Organics (GRO) by AK 101; and
- Methane, carbon dioxide, oxygen and nitrogen by ASTM 1945M

A Solinist™ probe was used to detect water in each of three groundwater monitoring wells. The probe was equipped with an incremental tape to measure the depth to groundwater within the casing of the well. It was also used to confirm the depth to the bottom of the well casing. Groundwater samples were collected from the wells using disposable polyethylene bailers. The samples were stored in laboratory-prepared containers and transported to the project lab in an ice-packed cooler. The groundwater samples were analyzed for the following parameters:

- AK 101 for gasoline range organics (GRO)
- AK 102 for diesel range organics (DRO)
- EPA 8260B for volatile organic compounds as listed in Appendix D
- EPA 8270SIM for polynuclear aromatic hydrocarbons (PAH) as listed in Appendix D

Soil borings were advanced with a hollow stem auger and the soil samples were collected from the borings using a split spoon sampler. The auger was advanced to selected depths and the split spoon sampler driven into the soil at depth. The samples were removed from the split spoon and placed into sample jars with gloved hand. The nitrile gloves were changed between samples. The soil samples were transported to the lab in an iced cooler. The groundwater samples were analyzed for the following parameters:

- AK 101 for gasoline range organics (GRO)
- AK 102 for diesel range organics (DRO)
- EPA 8260B for volatile organic compounds as listed in Appendix D
- EPA 8270SIM for polynuclear aromatic hydrocarbons (PAH) as listed in Appendix D

4.2 Air Sample Results

The air samples collected from the effluent air through the SVE/BV exhaust stack were analyzed for GRO, BTEX constituents benzene, toluene, ethylbenzene, P&M-xylenes, and O-xylenes and were reported in units of parts per million (ppm). The naturally occurring gases oxygen, nitrogen, methane, and carbon dioxide were reported in percent by volume (%). One of the two laboratory-

prepared canisters was used for the analyses of the petroleum related volatiles listed above while the second canister was used for the analyses of the naturally occurring gases. The respirometer reports in Appendix B contain results for 11 samples. The extra sample (02FRA008AG) was reported from the second canister that the lab had inadvertently analyzed for the GRO/BTEX constituents, thus doubling the necessary tests. A third canister was collected from the effluent and submitted to the lab as sample 02FRA009AG. This sample was used for the analyses of the naturally occurring gases reported in respirometer test 4 of 5.

No GRO constituents were detected in any of the air samples. A small amount of BTEX was detected in the first of six air samples at 0.830 ppm. The benzene constituent of the BTEX was not detectable. The reported result was entirely P&M-xylenes at 0.833 ppm.

The naturally occurring gas results were used for the determination of biological activity related to the effectiveness of the SVE/BV system. The reported results for oxygen ranged from 14 to 17.179 % by volume. Nitrogen results ranged from 82.205 to 85 % by volume. Methane was not detected in the first five of the six samples. The reported methane concentration in the sixth sample was 0.018 % by volume. Carbon dioxide results ranged from 0.002 to 0.81 % by volume.

4.3 Groundwater Sampling Results

Groundwater results are provided in Appendix B and summarized in Table 2. One groundwater sample (03FRA001WS) was collected from monitoring well AP-3648. A field duplicate sample (03FRA800WS) and quality control samples were also collected. The samples were analyzed for GRO, DRO, VOCs, and PAH at SGS in Anchorage. No detectable concentrations were reported in GRO, DRO, and PAH analyses. In the analyses of VOCs only chloroform was detected. The reported result for chloroform was 0.00168 milligrams per liter (mg/L), Table 2. The reported result was below the cleanup level for chloroform as listed in Table C 18 AAC 75.345.

4.4 Soil Sample Results

Soil samples were collected from five soil borings advanced at the site from October 6th to October 8th, 2003. The borings were identified with location, site, and bore hole designators. For example, the boring on Fort Richardson at the POL lab that was the eleventh boring advanced at the site was identified with the name FRPOLCB-11. The letters CB were used to indicate a soil boring. Logs of the exploratory borings are presented in Appendix C. The soil samples were analyzed at SGS in Anchorage for GRO, DRO, BTEX, and PAH, as listed in Table 3. At five-foot intervals down the boring, samples were collected and analyzed onsite with a photoionization detector (PID). The PID results and other environmental data are presented in the logs.

Soil samples for laboratory analyses were collected at or near 10, 15, 20, 30, 40, and 50-ft bgs. One additional soil sample was collected from 82-ft bgs in soil boring FRPOLCB-15. Sampling depths were recorded on the boring logs and in the sample description in Table 3.

For each sample the result for each analyte with the respective test method is listed and the associated cleanup level is listed for comparison. The cleanup levels were referenced from the Table B1 Method Two – Soil Cleanup Levels, Under 40-inch Zone Migration to Groundwater, 18 AAC 75.341. Cleanup levels for some of the reported analytes were not listed in Table B1. The analytical results for GRO, DRO, and BTEX constituents were reported in units of milligrams per kilogram (mg/Kg). The analytical results for PAH analytes were reported in units of micrograms per kilogram (μ g/Kg). The cleanup levels for PAH were not cited directly from Table B1 but were converted from mg/Kg to μ g/Kg for listing in Table 3 and for the comparison to the laboratory reported results attached in Appendix D. Reported analytical results that exceed the cleanup levels are presented in bold print and in shaded cells of Table 3.

Six field samples were collected from soil boring CB-11. All of the reported results for soil boring CB-11 were below the regulatory cleanup levels.

Six field samples and one field duplicate sample were collected from soil boring CB-12. With the exception of benzene, all of the reported results for CB-12 were below the regulatory cleanup levels. The reported result for benzene was 0.0296 mg/Kg and the cleanup level is 0.0200 mg/Kg. The reported result for benzene in the field duplicate sample, 03FRA800SS, was 0.0173 mg/Kg.

Six field samples were collected from soil boring CB-13. With the exception of benzene and DRO, all of the reported results for CB-13 were below the regulatory cleanup levels. The reported results for benzene in samples 03FRA013SS at 12-ft bgs, 03FRA014SS at 15-ft bgs, 03FRA015SS at 20-ft bgs, and 03FRA016SS at 30-ft bgs were 0.0375, 0.0430, 0.0633, and 0.0276 mg/Kg, respectively (benzene cleanup level is 0.0200 mg/Kg). The reported result for DRO in sample 03FRA014SS at 15-ft bgs was 746 mg/Kg (DRO cleanup level is 250 mg/Kg). The location of soil boring CB-13 was outside of the area known as the “former dry well area” (Appendix A – Soil Boring Survey). CB-13 was located between CB-12 and the former dry well area.

Six field samples were collected from soil boring CB-14. With the exception of benzene and DRO, all of the reported results for CB-14 were below the regulatory cleanup levels. The reported results for benzene in samples 03FRA019SS at 10-ft bgs, 03FRA020SS at 15-ft bgs, and 03FRA021SS at 20-ft bgs were 0.0202, 0.0259, and 0.0292 mg/Kg, respectively (cleanup level is 0.0200 mg/Kg). The reported result for DRO in samples 03FRA019SS at 10-ft bgs and 03FRA021SS at 20-ft were 318 and 296 mg/Kg, respectively (DRO cleanup level is 250 mg/Kg). CB-14 was also located outside the former dry well area.

Seven field samples and two field duplicate samples were collected from soil boring CB-15. With the exception of benzene and DRO, all of the reported results for CB-15 were below the regulatory cleanup levels. The reported results for benzene in samples 03FRA025SS at 10-ft bgs, 03FRA026SS at 15-ft bgs, 03FRA027SS at 20-ft bgs, 03FRA028SS at 30-ft bgs, and 03FRA029SS at 40-ft bgs were 0.0221, 0.0862, 0.0792, 0.0432, and 0.0204 mg/Kg, respectively (benzene cleanup level is 0.0200 mg/Kg). The reported result for DRO in the field duplicate sample 03FRA802SS at 20-ft bgs was 581 mg/Kg (DRO cleanup level is 250 mg/Kg). The field sample 03FRA027SS at 20-ft bgs was not reported above the cleanup level for DRO. The location of CB-15 was on the edge of or near the area known as the “former dry well area” (Appendix A – Soil Boring Survey).

4.5 Data Validation

AGVIQ used standard statistical methods to complete DQOs for the evaluation of the following factors:

- Completeness
- Accuracy (for example, transcription errors, internal consistency)
- Unexpected results with accompanying explanations
- Adherence to sampling procedures outlined in the ADEC Procedures Manual
- Comparison of field instrument results with laboratory results

AGVIQ achieved 100% completeness with all samples collected, handled, and analyzed per method requirements. Accuracy of data was high and no errors in transcription or other quality objectives occurred.

The relative percent difference (RPD) used to measure precision of the data yielded seven sets of unacceptable results. The RPD was not calculated for non-detectable results. The RPD between sample 03FRA027SS and 03FRA802SS (DUP-3) were calculated for GRO, DRO, BTEX, and PAH. The data set yielded unexpected results, 86.3% GRO, 90.9% DRO, 20.6% Benzene, 63.3% Ethylbenzene, 67.7% P&M Xylene, 57.3% o-Xylene, and 52.3% Fluorene, respectively (Table 3) that were out of the acceptable QA range ($\leq 20\%$).

Matrix spike (MS) and matrix spike duplicate (MSD) samples were collected from 50-ft bgs in soil boring CB-15 and labeled as samples 03FRA030SS-MS and 03FRA030SS-MSD. These samples were analyzed at SGS in Anchorage for BTEX by EPA 8021B, GRO by AK101, DRO by AK102, and PAH by EPA 8270C SIM. For each analyte the RPD between the MS and the MSD was calculated. All of the RPD results were within acceptable limits as reported in Appendix D.

All sampling procedures were adhered to during the confirmation sampling activities. Sampling procedures and handling were conducted in accordance with the Alaska and EPA method descriptions.

The comparison between the field instrument (PID) and the lab results as listed in Table 3 showed a reliable correlation between the PID and lab results.

SGS Environmental Services' QA/QC Department performed Level III quality assurance according to Alaska and EPA protocol and comprehensive internal review. SGS produce the Level III data deliverable packages for each sample batch submitted for analysis. The Level III packages included the following items:

- Cover page
- Case narrative
- Chain of custody records
- Sample receipt form
- Glossary of qualifiers
- Sample results with surrogate recoveries
- Extended QC report
- QC data tables
- Raw analytical data, and
- Initial calibration.

The data deliverable packages were very comprehensive and contain many pages. AGVIQ maintains the data deliverable packages on file in our Anchorage office. Electronic data deliverable records are also on file in our offices.

5.0 ALTERNATE CLEANUP LEVELS (ACLs) – ADEC METHOD THREE

AGVIQ used the online Method Three Calculator provided by the ADEC to evaluate soil analytical results with respect to published Method Two Cleanup Levels. Results from remedial activities conducted at the site were used to apply site-specific data to the calculation. The calculator was accessed at:

<http://www.dec.state.ak.us/spar/cs/webcalc>

In step one the “Under 40-inch Zone” was selected, since the Fort Richardson site was located in Anchorage and in the South Central region of Alaska. Commercial/Industrial exposure assumptions were selected.

In step two the maximum concentrations of chemicals in the soils were entered. Only detectable concentrations were entered. The values entered were in units of mg/Kg which were different than the units of $\mu\text{g/Kg}$ reported by the laboratory and by AGVIQ in Table 3.

Site-specific information was entered in step three. Default values were used for the derivation of the Volatilization Factor and Soil Saturation Limit, as well as, the parameters for derivation of Migration to Groundwater. Much of the required soil data could only be obtained by significant geotechnical analyses that were beyond the scope of this remedial activity. The hydraulic gradient information was not calculated since only one of three wells contained groundwater.

Step four listed the calculated cleanup levels for each chemical and pathway. The Migration to GW (groundwater) listed in step four was compared to the Method Two cleanup levels. ACLs calculated for the site were compared to published maximum cleanup levels (mcls) and chemical data results of soil analytical testing. Figure 3 shows the soil boring depths at which sample results exceeded Method Two mcls. There were no mcls exceeded in soil boring FRPOLCB-11.

- The calculated ACL for benzene (0.0186 mg/Kg) was lower than (more restrictive) the Method Two level (0.02 mg/Kg). For benzene, Method Two mcls were exceeded in soil borings FRPOLCB-12, -13, -14, and -15. In soil boring FRPOLCB-12 the benzene mcl was exceeded at a depth of 15-feet bgs with a result of 0.0296mg/Kg benzene. In soil boring FRPOLCB-13 the benzene mcl was exceeded at depths of 12, 15, 20, and 30-feet bgs with results of 0.0375, 0.0430, 0.0633, and 0.0276mg/Kg, respectively. In soil boring FRPOLCB-14 the benzene mcl was exceeded at depths of 10, 15, and 20-feet bgs with results of 0.0202, 0.0259, and 0.0292mg/Kg, respectively. In soil boring FRPOLCB-15 the benzene mcl was exceeded at depths of 10, 15, 20, 30, and 40-feet bgs with results of 0.0221, 0.0862, 0.0792, 0.0432, and 0.0204mg/Kg, respectively. If the calculated alternate cleanup levels (ACLs) for benzene were applied to this data set then the same results would not have met the criteria.
- The calculated ACL for DRO (254 mg/Kg) was slightly higher than or less restrictive than the Method Two level (250 mg/Kg). The DRO mcl was not exceeded in soil borings FRPOLCB-11 and -12. The DRO mcl was exceeded in soil boring FRPOLCB-13 at a depth of 15-feet bgs with a result of 746 mg/Kg. In soil boring FRPOLCB-14 the DRO mcl was exceeded at 10 and 20-feet bgs with results of 318 and 296 mg/Kg, respectively. In soil boring FRPOLCB-15 the DRO mcl was exceeded at a depth of 20-feet bgs with a result of 581mg/Kg. If the calculated alternate cleanup levels (ACLs) for DRO were applied to this data set then the same results would not have met the criteria.

No other mcls were exceeded for the analytes tested from the soil samples collected. The following represents the comparison of the calculated ACLs and the published Method Two mcls for analytes detected and reported by the analytical laboratory.

- The calculated ACL for Ethylbenzene (5.51 mg/Kg) was slightly higher than or less restrictive than the Method Two level (5.5 mg/Kg).
- The calculated ACL for Fluorene (272 mg/Kg) was slightly higher than or less restrictive than the Method Two level (270 mg/Kg).
- The calculated ACL for GRO (295 mg/Kg) was slightly lower than or more restrictive than the Method Two level (300 mg/Kg).
- The calculated ACL for Naphthalene (20.5 mg/Kg) was significantly lower than or more restrictive than the Method Two level (43 mg/Kg).
- The calculated ACL for Pyrene (1540 mg/Kg) was slightly higher than or less restrictive than the Method Two level (1500 mg/Kg).
- The calculated ACL for Toluene (5.4 mg/Kg) was at the same value as the Method Two level (5.4 mg/Kg).
- The calculated ACL for Xylenes (77.4 mg/Kg) was slightly lower than or more restrictive than the Method Two level (78 mg/Kg).

6.0 DECOMMISSIONING of the SVE/BV SYSTEM

Due to the timing of the remedial activities and the analysis, calculation, and reporting of data obtained by the remedial effort, the decommissioning of the SVE/BV system including piping and utilities had been postponed to the spring of 2004. The documentation of the activities will be addressed in a letter report following the completion of the activity.

7.0 SUMMARY & CONCLUSIONS

Operation and maintenance of the SVE/BV system was accomplished from January 2002 to January 2003. Periodic O&M activities were extended from February to August 2003. Activities included operation of the system as a complete task and inspecting, cleaning, and adjusting components of the system as subtasks. No operational problems were encountered during the remedial activities.

Monthly monitoring activities were completed and consisted of system configuration for optimal operation, exhaust air monitoring with a PID, and soil gas monitoring with a CGI. The system configuration did not vary significantly from month to month. The optimal configuration was checked to balance airflow and maximum PID values related to the exhaust. The soil gas monitoring was fairly consistent and indicative of subsurface conditions for the area.

Quarterly monitoring included the monthly monitoring for the associated month of the testing. The air and soil gas monitoring continued and air samples for laboratory analyses were collected from the exhaust at the SVE/BV system. The air sample analytical results showed a consistent trend of very low or non-detectable results for BTEX and consistent detectable results for the natural soil gases. The soil gases were indicative of biological activity within the soil vapor extraction area and decreasing activity outside of the SVE area (MP-3). No abnormal results were encountered during the quarterly monitoring efforts.

Groundwater sampling was conducted once at the site in August 2003. Three monitoring wells (AP-3020, AP-3022, and AP-3648) existed at the site. Two shallow depth wells AP-3020 and AP-3022 did not contain groundwater for sample collection or for determination of groundwater gradient. The groundwater in AP-3648 was found at 121.27-ft bgs. One field sample and one field duplicate sample were collected from the groundwater. Although chloroform was reported at a detectable level, the analytical results yielded no concentrations of contaminants above the published ADEC cleanup levels.

Soil sampling was conducted through the advancement of five exploratory borings at the site. Six soil samples were collected within each of the borings and one sample collected from 80-ft bgs was collected from soil boring CB-15. The borings in each well were collected at intervals of 10, 15, 20, 30, 40, and 50-ft bgs. PID samples were tested onsite. Laboratory analytical samples were collected and transported to the lab under chain of custody procedures. Several results were reported over the ADEC cleanup level for benzene and a couple of results were over the cleanup level for DRO. The remaining benzene contamination was found from 10 to 40-ft bgs inside of the vapor extraction area as shown on Figure 2. Remaining DRO contamination was reported at 10 and 15-ft bgs.

Alternate cleanup levels were calculated using the ADEC Method Three Calculator and presented in Appendix E. The calculated cleanup level did not offer a significant difference from the published Method Two cleanup levels.

In conclusion, even though petroleum hydrocarbon concentrations above the regulatory limits remain at the site, the SVE/BV system operated as designed and for the full duration of the project. Monthly and quarterly sampling data and lab results indicate biological activity in the soil and removal of low levels of petroleum hydrocarbons. Soil boring sample results show that contamination remains in the soil within the “vapor extraction area”. The system may have reached its limit as designed. Possible improvements of remedial actions could include:

- Excavation of remaining contaminated soil, though benzene contamination exists at depths below the reach of excavation equipment. The action would thus be limited.

- Placement of Bioventing wells inside of and nearer the soil boring locations that exhibit remaining contamination
- Submit request to the ADEC for “No Further Action with Institutional Controls”

TABLES

Table 1
Air Sample Results

PARAMETERS

Sample ID	GRO	BTEX	BENZENE	TOLUENE	ETHYLENE	PROPYLENE	ETHYLENE	PROPYLENE	ETHYLENE	PROPYLENE	ETHYLENE	PROPYLENE	OXYGEN	NITROGEN	METHANE	CARBON DIOXIDE
02FRA001AG	20.0 U	0.833	0.780 U	0.660 U	0.580 U	0.833 U	0.580 U	0.580 U	N/A	0.580 U	0.580 U	0.580 U	N/A	N/A	N/A	N/A
02FRA002AG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17.179	82.205	0.002 U	0.616
02FRA003AG	20.0 U	0.780 U	0.780 U	0.660 U	0.580 U	0.880 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	N/A	N/A	N/A	N/A
02FRA004AG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17	82	0.0026	0.5
02FRA005AG	20.0 U	0.780 U	0.780 U	0.660 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	N/A	N/A	N/A	N/A
02FRA006AG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16	83	0.00024	0.81
02FRA007AG	20.0 U	3.18U	0.780 U	0.660 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	N/A	N/A	N/A	N/A
**02FRA008AG	20.0 U	3.18 U	0.780 U	0.660 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	N/A	N/A	N/A	N/A
02FRA009AG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17	82	0.002 U	0.002
03FRA010AG	20.0 U	3.18 U	0.780 U	0.660 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	0.580 U	N/A	N/A	N/A	N/A
**03FRA011AG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14	85	0.018	0.58

U = Non Detectable
 ppm = Parts Per Million
 N/A = Not Applicable
 % Vol = Percent by Volume
 ** = Extra Sample
 ** = Sample was also analyzed for the compounds ethane, propane, isobutane, neopentane, isopentane, pentane, and C6+. All of which were reported non-detectable

Table 2
Water Sample Results

Method	Analyte	Groundwater Clean Up Level	Sample ID 03FRA800WS 18 AAC 75.345 Depth 12.0 FT	Result	Quality Control Field Duplicate 03FRA800WS 18 AAC 75.345 Depth 12.0 FT	Sample ID 03FRA800WS 18 AAC 75.345 Depth 12.0 FT
Petroleum Hydrocarbons (mg/L)[†]						
AK 101	Gasoline Range Organics	1.3*		0.0900 U	N/A	0.0900 U
AK102	Diesel Range Organics	1.5		0.309 U	N/A	0.297 U
BTEX (mg/L)[†]						
SW8260B	Benzene	0.005		0.000400 U	N/A	0.000400 U
	Toluene	1.0		0.00100 U	N/A	0.00100 U
	Ethylbenzene	0.7		0.00100 U	N/A	0.00100 U
	P & M - Xylene			0.00200 U	N/A	0.00200 U
	o - Xylene	10		0.00100 U	N/A	0.00100 U
PAH (ug/L)*						
SW8270 SIM	Naphthalene			0.0500 U	N/A	0.0495 U
	Acenaphthylene	220		0.0500 U	N/A	0.0495 U
	Acenaphthene	220		0.0500 U	N/A	0.0495 U
	Fluorene	150		0.0500 U	N/A	0.0495 U
	Phenanthrene			0.0500 U	N/A	0.0495 U
	Anthracene	1,100		0.0500 U	N/A	0.0495 U
	Fluoranthene	150.0		0.0500 U	N/A	0.0495 U
	Pyrene	110.0		0.0500 U	N/A	0.0495 U
	Benzo(a)anthracene	0.1		0.0500 U	N/A	0.0495 U
	Chrysene	10.0		0.0500 U	N/A	0.0495 U
	Benzo[b] fluoranthene	0.100		0.0500 U	N/A	0.0495 U
	Benzo[k] fluoranthene	1.00		0.0500 U	N/A	0.0495 U
	Benzo[a] pyrene	0.02		0.0500 U	N/A	0.0495 U
	Indeno[1,2,3-c,d] pyrene	0.100		0.0500 U	N/A	0.0495 U
	Dibenzo[a,h] anthracene	0.01		0.0500 U	N/A	0.0495 U
	Benzo[g,h,i] perylene			0.0500 U	N/A	0.0495 U

[†] All Petroleum Hydrocarbon units are in milligrams per Kilogram (mg/Kg).
 * PAH (Polynuclear Aromatic Hydrocarbon) units are reported in micrograms per Liter (ug/L)
^{^^} Volatile Gas Chromatography units are in micrograms per Liter (ug/L)
^{**} Quality control field duplicate 03FRA800WS.
 No available standard
 SW SW-8260, Test Methods for Evaluating Ground Water
 PAH SIM PAH SIM, Test Methods for Evaluating Ground Water
 U Not detected above the method detection limit (MDL)
 Shaded Cells Indicate analytical concentration exceeds 18 AAC 75.345 Ground Water and Surface Water Clean up Levels
 N/A Not Applicable

Table 2
Water Sample Results (continue)

Volatile Gas Chromatography (mg/L) ^{AA}					
SW8260B	Dichlorodifluoromethane	0.001	0.00100 U	N/A	0.00100 U
	Chloromethane		0.00100 U	N/A	0.00100 U
	Vinyl Chloride	0.002	0.00100 U	N/A	0.00100 U
	Bromomethane		0.00300 U	N/A	0.00300 U
	Chloroethane	10.0	0.00300 U	N/A	0.00300 U
	Trichlorofluoromethane		0.00100 U	N/A	0.00100 U
	1,1-Dichloroethane	0.007	0.00100 U	N/A	0.00100 U
	Methylene Chloride	0.0	0.00500 U	N/A	0.00500 U
	Carbon Disulfide	3.65	0.00200 U	N/A	0.00200 U
	trans-1,2-Dichloroethene		0.00100 U	N/A	0.00100 U
	1,1-Dichloroethane	0.005	0.00100 U	N/A	0.00100 U
	2,2-Dichloropropane		0.00100 U	N/A	0.00100 U
	cis-1,2-Dichloroethene		0.00100 U	N/A	0.00100 U
	2-Butanone (MEK)		0.0100 U	N/A	0.0100 U
	Bromochloromethane	0.01	0.00100 U	N/A	0.00100 U
	Chloroform	0.1	0.00168	6.1	0.00158
	1,1,1-Trichloroethane	0.2	0.00100 U	N/A	0.00100 U
	Carbon Tetrachloride	0.005	0.00100 U	N/A	0.00100 U
	1,1-Dichloropropene		0.00100 U	N/A	0.00100 U
	Benzene	0.005	0.000400 U	N/A	0.000400 U
	Trichloroethene	0.005	0.00100 U	N/A	0.00100 U
	1,2-Dichloropropane	0.005	0.00100 U	N/A	0.00100 U
	Dibromomethane		0.00100 U	N/A	0.00100 U
	Bromodichloromethane	0.1	0.000500 U	N/A	0.000500 U
	2-Chloroethyl Vinyl Ether		0.0100 U	N/A	0.0100 U
	cis-1,3-Dichloropropene		0.000500 U	N/A	0.000500 U
	Toluene	1.0	0.00100 U	N/A	0.00100 U
	trans-1,3-Dichloropropene		0.00100 U	N/A	0.00100 U
	1,1,2-Trichloroethane	0.005	0.00100 U	N/A	0.00100 U
	Tetrachloroethene	0.005	0.00100 U	N/A	0.00100 U
	1,3-Dichloropropane	0.005	0.000400 U	N/A	0.000400 U
	Dibromochloromethane		0.000500 U	N/A	0.000500 U
	1,2-Dibromoethane		0.00100 U	N/A	0.00100 U
	Chlorobenzene	0.1	0.000500 U	N/A	0.000500 U
	1,1,1,2-Tetrachloroethane	0.004	0.000500 U	N/A	0.000500 U
	Ethylbenzene	0.7	0.00100 U	N/A	0.00100 U
	o-Xylene		0.00100 U	N/A	0.00100 U
	Styrene	0.1	0.00100 U	N/A	0.00100 U
	Bromoform	0.1	0.00100 U	N/A	0.00100 U
	P & M - Xylene		0.00100 U	N/A	0.00200 U
	Isopropylbenzene (Cumene)		0.00100 U	N/A	0.00100 U
	Bromobenzene		0.00100 U	N/A	0.00100 U
	1,1,2,2-Tetrachloroethane	0.004	0.00100 U	N/A	0.00100 U
	1,2,3-Trichloropropane		0.00100 U	N/A	0.00100 U
	n-Propylbenzene		0.00100 U	N/A	0.00100 U
	2-Chlorotoluene		0.00100 U	N/A	0.00100 U
	4-Chlorotoluene		0.00100 U	N/A	0.00100 U
	1,3,5-Trimethylbenzene		0.00100 U	N/A	0.00100 U
	tert-Butylbenzene		0.00100 U	N/A	0.00100 U
	1,2,4-Trimethylbenzene		0.00100 U	N/A	0.00100 U
	sec-Butylbenzene		0.00100 U	N/A	0.00100 U
	1,3-Dichlorobenzene		0.00100 U	N/A	0.00100 U
	4-Isopropyltoluene		0.00100 U	N/A	0.00100 U
	1,4-Dichlorobenzene	0.075	0.000500 U	N/A	0.000500 U
	1,2-Dichlorobenzene	0.06	0.00100 U	N/A	0.00100 U
	n-Butylbenzene		0.00100 U	N/A	0.00100 U
	1,2-Dibromo-3-Chloropropane		0.00200 U	N/A	0.00200 U
	1,2,4-Trichlorobenzene		0.00100 U	N/A	0.00100 U
	Hexachlorobutadiene		0.00100 U	N/A	0.00100 U
	Naphthalene	1.46	0.00200 U	N/A	0.00200 U
	1,2,3-Trichlorobenzene		0.00100 U	N/A	0.00100 U
	4-Methyl-2-Pentanone (MIBK)		0.0100 U	N/A	0.0100 U

¹ All Petroleum Hydrocarbon units are in milligrams per Kilogram (mg/Kg).

² PAH (Polynuclear Aromatic Hydrocarbon) units are reported in micrograms per Liter (ug/L)

^{AA} Volatile Gas Chromatography units are in micrograms per Liter (ug/L)

^{**} Quality control field duplicate 03FRA800WS.

No available standard

SW SW-8260, Test Methods for Evaluating Ground Water

PAH SIM PAH SIM, Test Methods for Evaluating Ground Water

U Not detected above the method detection limit (MDL)

Standard Cells Indicate analytical concentration exceeds 18 AAC 75.345 Ground Water and Surface Water Clean up Levels

N/A Not Applicable

Table 3
Soil Sample Results

Method	Analyte	Upper Limit (mg/Kg) Migration	Sample 037RA00035 Soil Boring PRPOLCB-1 Depth 10-11		Sample 037RA00035 Soil Boring PRPOLCB-1 Depth 10-11		Sample 037RA00035 Soil Boring PRPOLCB-1 Depth 29-30		Sample 037RA00035 Soil Boring PRPOLCB-1 Depth 30-31		Sample 047RA00055 Soil Boring PRPOLCB-1 Depth 40-41		Sample 047RA00055 Soil Boring PRPOLCB-1 Depth 40-41	
			Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Petroleum Hydrocarbons (mg/Kg)¹														
AK 101	Gasoline Range Organics	300	2.13 U		1.79 U		1.88 U		1.48 U		1.84 U		1.66 U	
AK102	Diesel Range Organics	250	21.5 U		21.2 U		21.6 U		21.7 U		21.7 U		21.0 U	
BTEX (mg/Kg)¹														
SW8021B	Benzene	0.02	0.0107U		0.00893U		0.00939U		0.00739U		0.00921U		0.0083U	
	Toluene	5.4	0.0427U		0.0357 U		0.0376 U		0.0296 U		0.0369 U		0.0332 U	
	Ethylbenzene	5.5	0.0427U		0.0357 U		0.0376 U		0.0296 U		0.0369 U		0.0332 U	
	P & M - Xylene	78	0.0427U		0.0357 U		0.0376 U		0.0296 U		0.0369 U		0.0332 U	
	o - Xylene	Total Xylenes		0.0427U		0.0357 U		0.0376 U		0.0296 U		0.0369 U		0.0332 U
PAH (ug/Kg)*														
SW8270C SIM	Napthalene	4300	5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Acenaphthylene		5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Acenaphthene	21,000	5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Fluorene	27,000	5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Phenanthrene		5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Anthracene	430,000	5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Fluoranthene	210,000	5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Pyrene	150,000	5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Benzo(a)anthracene	600	5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Chrysene	62,000	5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Benzo[b] fluoranthene	2,000	5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Benzo[k] fluoranthene	20,000	5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Benzo[a] pyrene	300	5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Indeno[1,2,3-c,d] pyrene	5,400	5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
	Dibenzo[a,h] anthracene	600	5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U	
Benzo[g,h,i] perylene		5.36 U		5.48 U		5.52 U		5.36 U		5.30 U		7.44 U		
Miscellaneous Parameters														
SM20 2540G	Total Solids (%)		94.50		93.00		92.30		92.60		93.70		96.70	
D4129-82M	Total Organic Carbon (%)		0.13		0.13		0.62		0.41		0.15		1.13	

¹ All Petroleum Hydrocarbon units are in milligrams per Kilogram (mg/Kg).
 * PAH (Polynuclear Aromatic Hydrocarbon) units are reported in micrograms per Kilogram (ug/Kg)
 Under 40-inch Zone Migration to Groundwater cleanup levels for PAH are listed in micrograms per Kilogram (ug/Kg)
 [Shaded Cell] = No available clean up level
 SW = Test method for evaluating soil samples
 SIM = Test method for evaluating soil samples
 [Shaded Cells] = indicate analytical concentration exceeds the ADEC Method Two Soil Cleanup Criteria

Table 3
Soil Sample Results (continue)

Method	Analyte	Under 40-inch Migration to GW	Sample ID: FRPOL00731		Sample ID: FRPOL00735		Sample ID: FRPOL00985		Relative Percent Distribution (%)	Soil Binding Parameters: FRPOL00731		Soil Binding Parameters: FRPOL00735		Soil Binding Parameters: FRPOL00985	
			Depth: 0-4	Depth: 15-4	Depth: 0-4	Depth: 15-4	Depth: 0-4	Depth: 15-4		Depth: 0-4	Depth: 15-4	Depth: 0-4	Depth: 15-4	Depth: 0-4	Depth: 15-4
Petroleum Hydrocarbons (mg/Kg)¹															
AK 101	Gasoline Range Organics	300	1.84 U		16.4		1.85 U		10.30%	2.05 U		1.88 U		2.13 U	1.83 U
AK102	Diesel Range Organics	250	21.1 U		96.5		21.6 U		2.30%	21.1 U		21.2 U		21.3 U	21.1 U
BTEX (mg/Kg)¹															
SW8021B	Benzene	0.02	0.00922U		0.0204		0.0139		14.20%	0.0173		0.015		0.0107U	0.00917U
	Toluene	5.4	0.0369 U		0.0392		0.0369U		N/A	0.0410 U		0.0375U		0.0427U	0.0367U
	Ethylbenzene	5.5	0.0369 U		0.0824		0.0369U		N/A	0.0410 U		0.0375U		0.0427U	0.0367U
	P & M - Xylene	78	0.0369 U		0.185		0.0369U		N/A	0.0410 U		0.0375U		0.0427U	0.0367U
	o - Xylene	Total Xylenes		0.0369 U		0.0946		0.0369U		N/A	0.0410 U		0.0375U		0.0427U
PAH (ug/Kg)[*]															
SW8270C SIM	Napthalene	4300	5.16 U		9.02		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
	Acenaphthylene		5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
	Acenaphthene	21,000	5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
	Fluorene	27,000	5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
	Phenanthrene		5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
	Anthracene	430,000	5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
	Fluoranthene	210,000	5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
	Pyrene	150,000	5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
	Benzo(a)anthracene	600	5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
	Chrysene	62,000	5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
	Benzo[b] fluoranthene	2,000	5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
	Benzo[k] fluoranthene	20,000	5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
	Benzo[a] pyrene	300	5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
	Indeno[1,2,3-c,d] pyrene	5,400	5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U
Dibenzo[a,h] anthracene	600	5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U	
Benzo[g,h,i] perylene		5.16 U		5.46 U		5.18 U		N/A	5.30 U		5.28 U		5.25 U	5.20 U	
Miscellaneous Parameters															
SM20 2540G	Total Solids (%)		95.70		92.40		94.80		N/A	94.50		94.40		94.20	96.50
D4129-82M	Total Organic Carbon (%)		0.19		0.29		0.31		N/A			0.21		0.18	0.16

¹ All Petroleum Hydrocarbon units are in milligrams per Kilogram (mg/Kg).
^{*} PAH (Polynuclear Aromatic Hydrocarbon) units are reported in micrograms per Kilogram (ug/Kg)
 Under 40-inch Zone Migration to Groundwater Cleanup Levels for PAH are listed in micrograms per Kilogram (ug/Kg)
^{**} Quality control field duplicate of regular sample.
 [] = No available standard
 SW = Test Methods for Evaluating Soild Waste Physical
 SIM = Test Methods for Evaluating Soild Waste Physical
 Shaded Cells = indicate analytical concentration exceeds the ADEC Method Two Soil Cleanup Criteria

Table 3
Soil Sample Results (continue)

Method	Analyte	Under 40- Inch Zone Migration to GW	Sample 03FRA01355 Soil Boring FRPOLCB-13 Depth: 12 ft		Sample 03FRA01455 Soil Boring FRPOLCB-13 Depth: 15 ft		Sample 03FRA01555 Soil Boring FRPOLCB-13 Depth: 21 ft		Sample 03FRA01655 Soil Boring FRPOLCB-13 Depth: 31 ft		Sample 03FRA01755 Soil Boring FRPOLCB-13 Depth: 41 ft		
			Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	
Petroleum Hydrocarbons (mg/Kg)¹													
AK 101	Gasoline Range Organics	300	1.64 U		1.62 U		28.3		2.20 U		1.09 U		1.71 U
AK102	Diesel Range Organics	250	27.4		746		241		22.0 U		21.0 U		21.3 U
BTEX (mg/Kg)¹													
SW8021B	Benzene	0.02	0.0375		0.0430		0.0633		0.0276		0.00545U		0.00853U
	Toluene	5.4	0.0386		0.0323U		0.0587		0.0466		0.0218 U		0.0341 U
	Ethylbenzene	5.5	0.0328U		0.0323U		0.178		0.0440U		0.0218 U		0.0341 U
	P & M - Xylene	78	0.0591		0.0556		0.393		0.0440U		0.0218 U		0.0341 U
	o - Xylene	Total Xylenes		0.0328U		0.0323U		0.169		0.0440U		0.0218 U	
PAHs (ug/Kg)*													
SW80270C SIM	Napthalene	4300	5.24 U		52.4 U		67.3		5.35 U		5.01 U		5.33 U
	Acenaphthylene		5.24 U		52.4 U		5.29 U		5.35 U		5.01 U		5.33 U
	Acenaphthene	21,000	5.24 U		52.4 U		5.29 U		5.35 U		5.01 U		5.33 U
	Fluorene	27,000	5.24 U		9.73		13.0		5.35 U		5.01 U		5.33 U
	Phenanthrene		5.24 U		7.58		9.86		5.35 U		5.01 U		5.33 U
	Anthracene	430,000	5.24 U		52.4 U		5.29 U		5.35 U		5.01 U		5.33 U
	Fluoranthene	210,000	5.24 U		52.4 U		5.29 U		5.35 U		5.01 U		5.33 U
	Pyrene	150,000	5.24 U		8.58		5.29 U		5.35 U		5.01 U		5.33 U
	Benzo(a)anthracene	600	5.24 U		52.4 U		5.29 U		5.35 U		5.01 U		5.33 U
	Chrysene	62,000	5.24 U		52.4 U		5.29 U		5.35 U		5.01 U		5.33 U
	Benzo[b] fluoranthene	2,000	5.24 U		52.4 U		5.29 U		5.35 U		5.01 U		5.33 U
	Benzo[k] fluoranthene	20,000	5.24 U		52.4 U		5.29 U		5.35 U		5.01 U		5.33 U
	Benzo[a] pyrene	300	5.24 U		52.4 U		5.29 U		5.35 U		5.01 U		5.33 U
	Indeno[1,2,3-c,d] pyrene	5,400	5.24 U		52.4 U		5.29 U		5.35 U		5.01 U		5.33 U
	Dibenzo[a,h] anthracene	600	5.24 U		52.4 U		5.29 U		5.35 U		5.01 U		5.33 U
Benzo[g,h,i] perylene		5.24 U		52.4 U		5.29 U		5.35 U		5.01 U		5.33 U	
Miscellaneous Parameters													
SM20 2540G	Total Solids (%)		97.20		93.80		95.70		93.00		97.80		94.70
D4129-82M	Total Organic Carbon (%)		0.21		0.31		0.29		0.21		0.12		0.10

¹ All Petroleum Hydrocarbon units are in milligrams per Kilogram (mg/Kg).

* PAH (Polynuclear Aromatic Hydrocarbon) units are reported in micrograms per Kilogram (ug/Kg)

Under 40-inch Zone Migration to Groundwater cleanup levels for PAH are listed in micrograms per Kilogram (ug/Kg)

[] = No available standard

SW = Test Methods for Evaluating Soild Waste Physical

S = Test Methods for Evaluating Soild Waste Physical

[Cells] = indicate analytical concentration exceeds the ADEC Method Two Soil Cleanup Criteria

Table 3
Soil Sample Results (Continue)

Method	Analyte	Under 40-inch Zone Migration to GW	Sample 03PRA024SS		Sample 03PRA024SS		Sample 03PRA024SS		Sample 03PRA024SS		RFD	Flag
			Soil Boring Depth 0-15" (mg/Kg)	Soil Boring Depth 15-30" (mg/Kg)	Soil Boring Depth 0-15" (mg/Kg)	Soil Boring Depth 15-30" (mg/Kg)	Soil Boring Depth 0-15" (mg/Kg)	Soil Boring Depth 15-30" (mg/Kg)				
Petroleum Hydrocarbons (mg/Kg)¹												
AK 101	Gasoline Range Organics	300	1.53 U	1.94	6.73	1.88 U	1.64 U	1.48 U	N/A	1.52 U		
AK102	Diesel Range Organics	250	318	22.0 U	288	22.0 U	21.1 U	22.0 U	N/A	21.1 U		
BTEX (mg/Kg)¹												
SW8021B	Benzene	0.02	0.020 U	0.025	0.022	0.00939 U	0.00819 U	0.00742 U	N/A	0.00761 U		
	Toluene	5.4	0.0473	0.0603	0.0417 U	0.0376 U	0.0328 U	0.0297 U	N/A	0.0305 U		
	Ethylbenzene	5.5	0.0307 U	0.0487	0.0493	0.0376 U	0.0328 U	0.0297 U	N/A	0.0305 U		
	P & M - Xylene	78	0.0307 U	0.0717	0.145	0.0376 U	0.0328 U	0.0297 U	N/A	0.0305 U		
	o - Xylene	Total Xylenes	0.0307 U	0.0507	0.0417 U	0.0376 U	0.0328 U	0.0297 U	N/A	0.0305 U		
PAH (ug/Kg)*												
SW8270C SIM	Napthalene	4300	5.51 U	6.20	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Acenaphthylene		5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Acenaphthene	21,000	5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Fluorene	27,000	5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Phenanthrene		5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Anthracene	430,000	5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Fluoranthene	210,000	5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Pyrene	150,000	11.6	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Benzo(a)anthracene	600	5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Chrysene	62,000	5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Benzo[b] fluoranthene	2,000	5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Benzo[k] fluoranthene	20,000	5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Benzo[a] pyrene	300	5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Indeno[1,2,3-c,d] pyrene	5,400	5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Dibenzo[a,h] anthracene	600	5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Benzo[g,h,i] perylene		5.51 U	5.32 U	5.54 U	5.36 U	5.23 U	5.13 U	N/A	5.11 U		
	Miscellaneous Parameters											
SM20 2540G	Total Solids (%)		92.5	92.9	89.3	93.6	96.3	95.6	N/A	96.2		
D4129-82M	Total Organic Carbon (%)		0.31	0.29	0.29	1.11	0.13	0.11	N/A			

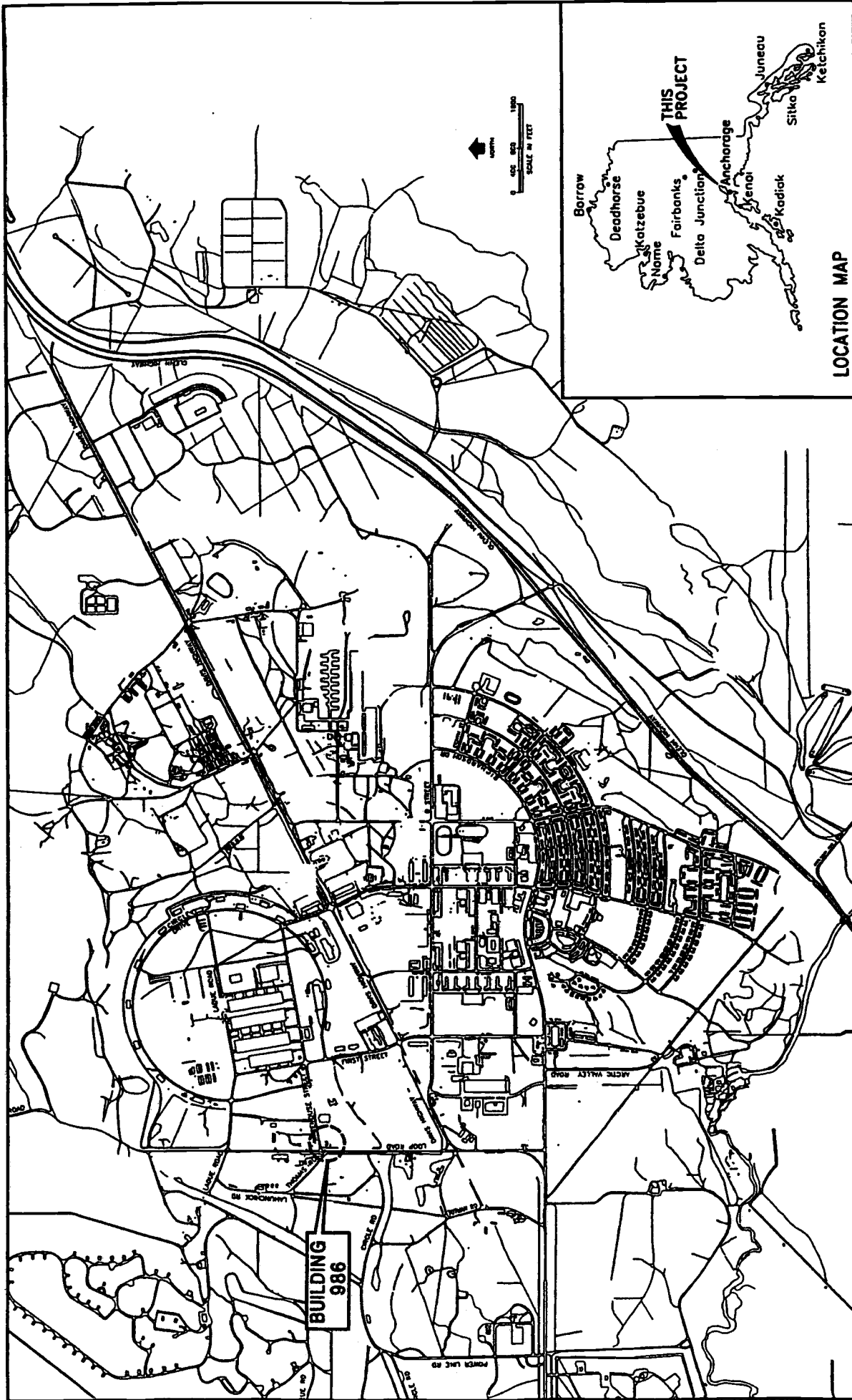
¹ All Petroleum Hydrocarbon units are in milligrams per Kilogram (mg/Kg).
 * PAH (Polynuclear Aromatic Hydrocarbon) units are reported in micrograms per Kilogram (ug/Kg)
 Under 40-inch Zone Migration to Groundwater cleanup levels for PAH are listed in micrograms per Kilogram (ug/Kg)
 ** Quality control field duplicate of regular sample 03PRA024SS
 [Shaded Cell] = No available standard
 SW = Test Methods for Evaluating Solid Waste Physical
 SIM = Test Methods for Evaluating Solid Waste Physical
 [Shaded Cells] = indicate analytical concentration exceeds the ADEC Method Two Soil Cleanup Criteria

Table 3
Soil Sample Results (continue)

Petroleum Hydrocarbons (mg/Kg) ¹											
AK101	Gasoline Range Organics	300	1.49 U	16.1	14.1	35.5	1.79 U	1.53 U	1.50 U	1.19 U	1.25 U
AK102	Diesel Range Organics	250	21.1 U	40.7	218		23.2 U	21.8 U	20.4 U	20.5 U	20.4 U
BTEX (mg/Kg) ¹											
SW8021B											
	Benzene	0.02							0.00748U	0.00597U	N/A
	Toluene	5.4	0.0471					0.0366U	0.0289 U	0.0239 U	N/A
	Ethylbenzene	5.5	0.0297U	0.0395U	0.0829	0.179	0.0359U	0.0306U	0.0299 U	0.0238 U	N/A
	P & M - Xylene	78	0.0464	0.364	0.245	0.496	0.0359U	0.0371	0.0299 U	0.0239 U	N/A
	o - Xylene			0.131	0.0804	0.145	0.0359U	0.0306U	0.0299 U	0.0239 U	N/A
	Total Xylenes		0.0428								N/A
PAH (ug/Kg) ¹											
SW8270C											
	Naphthalene	4300	5.28 U	16.7	35.0	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Acenaphthylene		5.28 U	6.00 U	5.57 U	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Acenaphthene	21,000	5.28 U	6.00 U	5.57 U	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Fluorene	27,000	5.28 U	6.00 U	7.61	13.0	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Phenanthrene		5.28 U	6.00 U	18.7	20.5	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Anthracene	430,000	5.28 U	6.00 U	5.57 U	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Fluoranthene	210,000	5.28 U	6.00 U	5.57 U	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Pyrene	150,000	5.28 U	6.00 U	5.57 U	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Benzo(a)anthracene	600	5.28 U	6.00 U	5.57 U	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Chrysene	62,000	5.28 U	6.00 U	5.57 U	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Benzo(b)fluoranthene	2,000	5.28 U	6.00 U	5.57 U	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Benzo(k)fluoranthene	20,000	5.28 U	6.00 U	5.57 U	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Benzo(a)pyrene	300	5.28 U	6.00 U	5.57 U	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Indeno(1,2,3-c,d)pyrene	5,400	5.28 U	6.00 U	5.57 U	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Dibenz(a,h)anthracene	600	5.28 U	6.00 U	5.57 U	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
	Benzo(g,h,i)perylene		5.28 U	6.00 U	5.57 U	5.50 U	5.62 U	5.28 U	6.08 U	5.11 U	N/A
Miscellaneous Parameters											
SM20.2540G	Total Solids (%)		96.7	94.4	91.8	92.8	87.5	94.2	95.1	98.2	97.6
DA129-82M	Total Organic Carbon (%)		0.18	0.38	0.31	N/A	0.88	0.14	0.16	0.26	N/A

¹ All Petroleum Hydrocarbon units are in milligrams per Kilogram (mg/Kg).
² PAH (Polynuclear Aromatic Hydrocarbon) units are reported in micrograms per Kilogram (ug/Kg).
 Under 40-inch Zone Migration to Groundwater cleanup levels for PAH are listed in micrograms per Kilogram (ug/Kg).
 ** Quality control field duplicate of regular sample 03FRA0275S. ***Field duplicate of 03FRA0315S
 = No available standard
 = Test Methods for Evaluating Solid Waste Physical
 = Test Methods for Evaluating Solid Waste Physical
 = indicate analytical concentration exceeds the ADEC Method Two Soil Cleanup Criteria

APPENDIX A – FIGURES



DATE DEC. 1997
 DWN. 97ftr1.dwg
 CKD. C. BLACK
 REV. 0
 PROJECT No. 55016-008.000.8AC

EMCONALASKA, Inc.
 4701 Business Park Blvd Suite 35 Anchorage, Ak. 99503
 (907) 562-3452 Fax (907) 563-2814

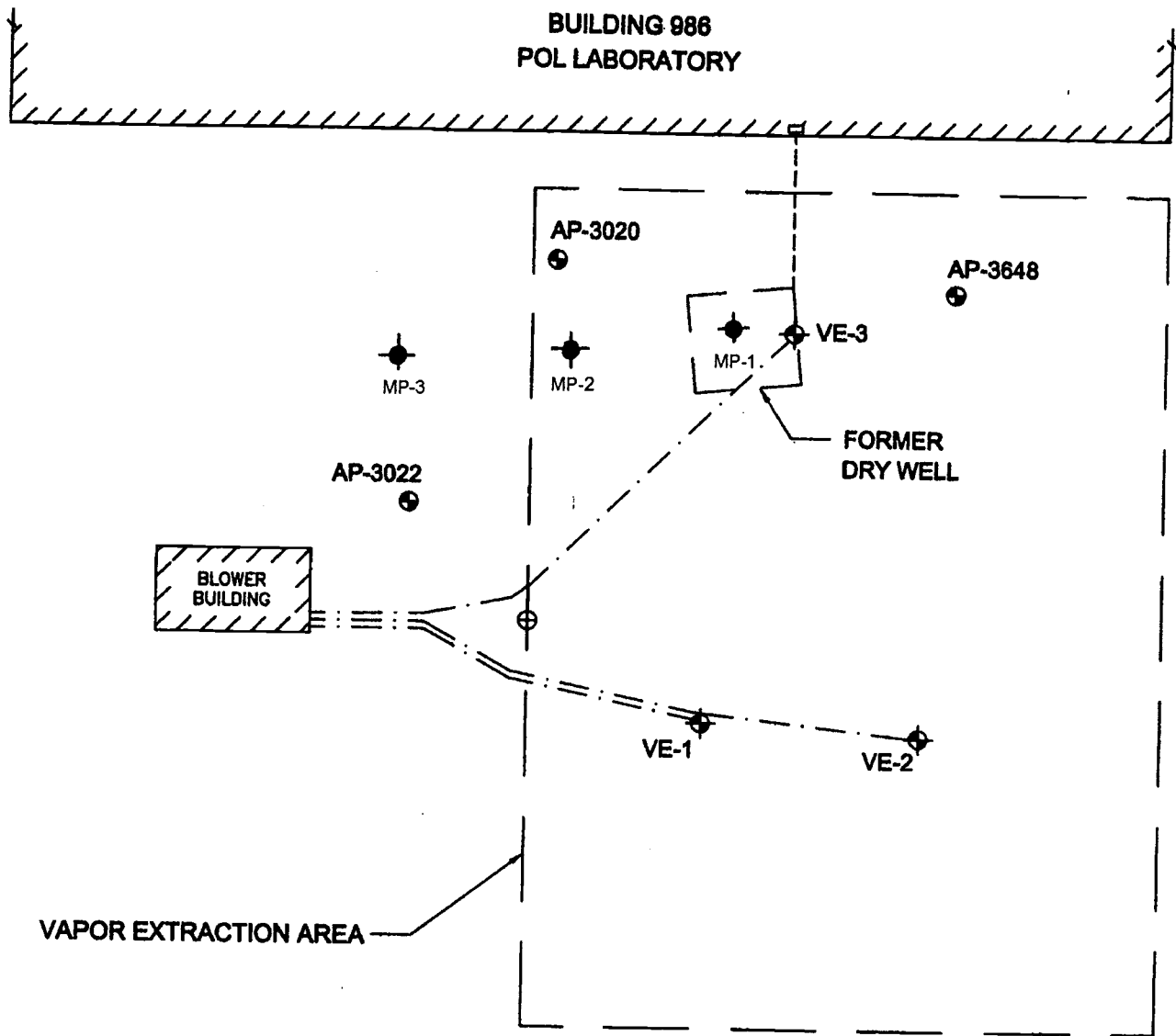
FORT RICHARDSON
 BUILDING 986 REMEDIAL ACTION
 Anchorage, Alaska

SITE VICINITY MAP

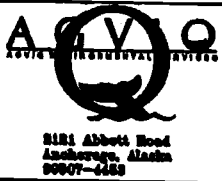
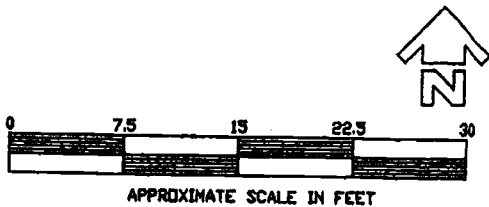
LOCATION MAP

FIGURE
 1

3



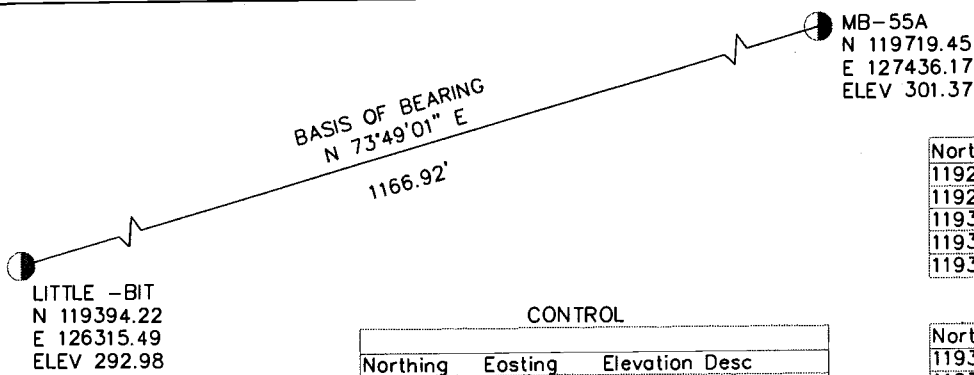
- LEGEND**
- ⊕ MONITORING WELL LOCATION
 - ⊕ VAPOR EXTRACTION WELL LOCATION
 - ⊕ TYPE A SURVEY MONUMENT
 - SUBSURFACE PIPE
 - · - SUBSURFACE VE PIPE



DATE DEC. 2001
 DWN. TWS
 CND. DML
 REV. 1
 CONTRACT. No. DACAB5-01-P-0080

FORT RICHARDSON, ALASKA
 BUILDING 986 OPERATION & MAINTENANCE
 SITE LAYOUT MAP

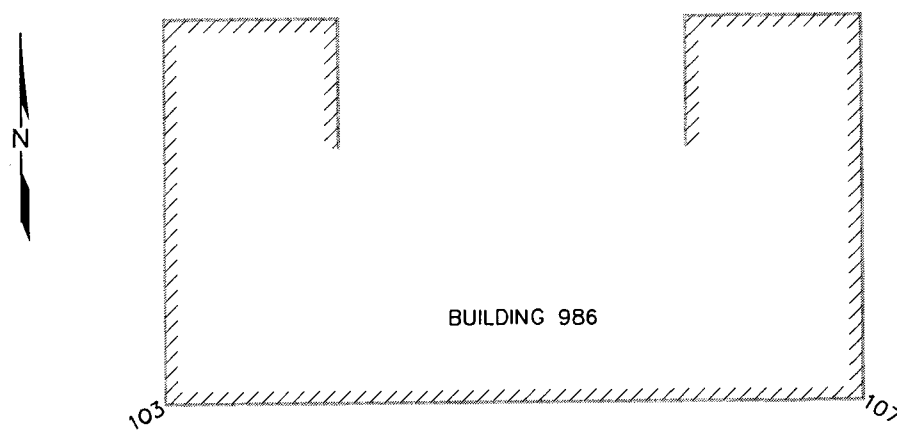
FIGURE
 2



SOIL BORE			
Northing	Easting	Elevation	Desc
119273.45	126464.03	293.7	CB-11
119279.02	126440.49	294.1	CB-12
119300.34	126445.93	295.6	CB-13
119321.84	126463.28	296.4	CB-14
119316.90	126431.57	295.8	CB-15

CONTROL			
Northing	Easting	Elevation	Desc
119719.45	127436.17	301.37	MB-55A
119394.22	126315.49	292.98	LITTLE-BIT
119296.53	126426.41	294.68	VE-SYSTEM

BUILDING CORNERS			
Northing	Easting	Elevation	Number
119331.32	126388.59	296.1	103
119331.53	126471.76	296.3	107
119302.31	126411.08	295.2	100
119296.08	126410.93	295.1	113



Depth (ft bgs)	Benzene (mcl 0.02)	DRO (mcl 250)
10-ft	0.0221	--
15-ft	0.0862	--
20-ft	0.0792	581
30-ft	0.0432	--
40-ft	0.0204	--

Depth (ft bgs)	Benzene (mcl 0.02)	DRO (mcl 250)
10-ft	0.0202	318
15-ft	0.0259	--
20-ft	0.0292	296

Depth (ft bgs)	Benzene (mcl 0.02)	DRO (mcl 250)
12-ft	0.0375	--
15-ft	0.0430	746
20-ft	0.0633	--
30-ft	0.0276	--

Depth (ft bgs)	Benzene (mcl 0.02)	DRO (mcl 250)
15-ft	0.0296	--

BLDG 113

VE-SYSTEM
N 119296.53
E 126426.41
ELEV 294.68

FRPOLCB-15

FRPOLCB-13


FRPOLCB-12

FRPOLCB-11

No mcls exceeded

- LEGEND**
- FOUND ACOE MONUMENT
 - ⊗ SOIL BORE LOCATION
 - ADEC METHOD TWO MAXIMUM CONTAMINANT LEVEL (mcl) NOT EXCEEDED

**Soil Boring Survey & Results Exceeding ADEC Method Two Cleanup Level
Building 986 POL Lab - Fort Richardson, Alaska**

 2121 Abbott Road Anchorage, Alaska 99507-4463	Reference: Soil Bore Survey - Building 986 POL Lab, Fort Richardson, Alaska Del Norte Surveying, Inc. Anchorage, Alaska, November 6, 2003. Control is based on local coordinates and elevations provided by ACOE. Elevations are reported as mean sea level. Monument "VE-SYSTEM" is enclosed in an aluminum monument case flush to the ground.		<h1>FIGURE 3</h1>	
	Drawn By. J.A.M.	Grid		Scale. Not to Scale

APPENDIX B – RESPIROMETER REPORTS

**FINAL
QUARTERLY RESPIROMETER TEST 1 OF 5**

BUILDING 986 POL LABORATORY

**SOIL VAPOR EXTRACTION AND BIO-VENTING
OPERATIONS AND MAINTENANCE**

**FORT RICHARDSON, ALASKA
CONTRACT NO. DACA85-01-P-0080**

Prepared for:

U.S. Army Corps of Engineers, Alaska District
CEPOA-PM-M-A
P. O. Box 898
Anchorage, Alaska 99506-0898

Prepared By:



AGVIQ, Inc.
2121 Abbott Road Suite 100
Anchorage, Alaska 99507

Project #200110

April 2002

OPERATIONAL MONITORING

AGVIQ, Inc. inspected the soil vapor extraction (VE) and bio-venting system for proper operational parameters. The system appeared to be operating normally, as designed and was tested as initially configured. No alternative data was available at the time of testing to change the configuration. Power indicators and alarms were operational. The system's air flow was free-flowing, did not have excessive vacuum, the lower explosive limits (LEL) concentrations were low and the condensate tank was empty and unobstructed.

RESPIROMETER TESTING

On January 30, 2002 the initial respiration testing of this yearly sequence of O & M activities was performed for a period of eight (8) days. Prior to shutting off the blower for the respirometer test, the VE system was configured to extract air from VE wells 1 and 2, an initial effluent sample was collected, and initial soil vapor readings were collected from three (3) monitoring points. VE well 3 was left closed. Readings using a Combustible Gas Indicator (CGI) were collected from each of the monitoring points (MP-1, MP-2 and MP-3) at half hour intervals for the first four (4) hours after shut down on January 30, 2002. Readings were also collected daily over the next seven (7) days and the blower was restarted on February 6, 2002.

ANALYTICAL SAMPLING PROGRAM

Effluent Sampling

Effluent samples were collected from the VE system exhaust stack, prior to shutdown, to estimate hydrocarbon-mass removal rates as configured. The samples were collected from the exhaust stack using laboratory-prepared 1-liter stainless steel canisters. The samples were sent to CT&E of Anchorage, Alaska. The effluent samples were analyzed for the following parameters:

- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) by EPA 8021B
- Gasoline Range Organics (GRO) by AK 101; and
- Methane, carbon dioxide, oxygen and nitrogen by ASTM 1945M

FINDINGS

Effluent Sampling

At the time of sample collection, all of the GRO and BTEX constituents had undetectable levels except for P & M Xylene (Table 1). The air sample analytical results indicate that the percent levels of oxygen and nitrogen are similar to the concentrations found in the

atmosphere. All of the analytical results from the effluent air samples collected during the respirometer sampling event are presented in Appendix A.

Monitoring Events

The CGI results from the monitoring events are presented in Appendix B. The readings at MP-1 suggest biological activity due to the decrease in oxygen and the increase in carbon dioxide, during the extent of the monitoring period. This trend is greater at 20 ft bgs than at 10 ft bgs. This implies that biological activity is occurring in the vicinity of MP-1 and a significantly higher amount of activity is taking place at the greater depth. MP-1 is located in the vicinity of the former dry well (Appendix C).

The readings from MP-2 also exhibited evidence of biological activity. However, there was less evidence of biological activity seen at 10 ft bgs, than was exhibited at the same depth at MP-1. Evidence of a considerably higher amount of microbial activity is seen at the 20 ft bgs depth at this location.

MP-3 is located outside of the main contaminated area at the former dry well area. Very little activity was observed at both depths in this location.

To assist in assessing the VE system performance, the air flow rates (CFM) and vacuum (inches of H₂O) were measured from each vent well and concentrations of volatiles (ppm) were measured with a calibrated photo-ionization detector (PID) from each vent well at the exhaust stack. The air flow rates measured at the VE blower ranged between 13 and 39 CFM and the applied vacuum levels at the VE blower ranged between 16 and 24 inches of H₂O. The concentration of volatiles ranged between 1.5 and 9.2 ppm. The air flow, vacuum and concentration of volatiles results are listed in Table 2.

CONCLUSION

Review of the monitoring and analytical data indicates that the VE system is actively remediating the subsurface soils in the vicinity of the former dry well located at Building 986. The observations indicate that the remediation is progressing by two processes: bioremediation through the utilization of oxygen in the soil gas and, to a lesser degree, physical removal of hydrocarbon vapors. The physical removal is diminished due to the age of the system and remedial process.

Evidence of bioremediation and physical removal is obtained through sampling and analysis of the extracted soil gas. Analysis of the VE system effluent for petroleum hydrocarbons indicates that the VE system is successfully extracting contaminants. The presence of elevated CO₂ concentrations in the soil gas analyzed from the VE system exhaust stack may be an indication of hydrocarbon biodegradation in the site soils. In addition, atmospheric oxygen concentrations in the soil gas indicate that the oxygen is not currently limiting hydrocarbon biodegradation. Similarly, the data collected from the three soil gas monitoring points also indicate by the increase in CO₂ concentrations and significant decrease in O₂ concentrations that biodegradation is occurring in the soils at the site where contamination was found.

TABLE 1
 AIR SAMPLE ANALYTICAL RESULTS

SAMPLE ID	PARAMETERS										
	GRO mg/Kg	BTEX mg/Kg	Benzene mg/Kg	Toluene mg/Kg	Ethylbenzene mg/Kg	P & M-Xylene mg/Kg	O-Xylene mg/Kg	Oxygen %	Nitrogen %	Methane %	Carbon Dioxide %
Exhaust 02FRA001AG	U	0.830	U	U	U	0.830	U	N/A	N/A	N/A	N/A
Exhaust 02FRA002AG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17.1790	82.2050	U	0.616000

Note:
 GRO = Gasoline Range Organics
 BTEX = Benzene, Toluene, Ethylbenzene and Total Xylenes
 U = Undetectable as listed in the analytical report
 N/A = Not Applicable as listed in the analytical report
 mg/Kg = milligram per kilogram
 % = percent by volume

TABLE 2
SOIL VAPOR EXTRACTION & BIO-VENTING SYSTEM
OPERATIONAL DATA

----- PARAMETERS -----

LOCATION	AIR FLOW (CFM)	VACUUM (inches of H ₂ O)	CONCENTRATION OF VOLATILES (ppm)	% WELLS OPEN
VE - 1	13 (max)	24	2.5	100 %
VE - 2	44	20	1.5	100 %
VE - 3	39	16	9.2	Approx. 10 %
EXHAUST STACK	27	6	4.6	N/A

Note:
 CFM = Cubic Feet per Minute
 ppm = Parts Per Million
 N/A = Not applicable

Appendix A

Laboratory Analytical Results



CT&E Environmental Services Inc.

CT&E Ref.# 1020552001
 Client Name AGVIQ Inc.
 Project Name/# Bldg 986 FRA BVS System Ex.
 Client Sample ID Exhaust 02FRA001AG
 Matrix Gas & Air
 Ordered By

Client PO#
 Printed Date/Time 02/21/2002 8:36
 Collected Date/Time 01/30/2002 14:00
 Received Date/Time 01/31/2002 5:57
 Technical Director Stephen C. Ede

Released By *Michael R. King*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
<u>Volatile Fuels Department</u>								
Gasoline Range Organics	20.0 U	20.0	ppm	CTE 8015M/8021B		02/04/02	02/04/02	DAR
Benzene	0.780 U	0.780	ppm	CTE 8015M/8021B		02/04/02	02/04/02	DAR
Toluene	0.660 U	0.660	ppm	CTE 8015M/8021B		02/04/02	02/04/02	DAR
Ethylbenzene	0.580 U	0.580	ppm	CTE 8015M/8021B		02/04/02	02/04/02	DAR
P & M -Xylene	0.830	0.580	ppm	CTE 8015M/8021B		02/04/02	02/04/02	DAR
o-Xylene	0.580 U	0.580	ppm	CTE 8015M/8021B		02/04/02	02/04/02	DAR
<u>Proteges</u>								
1,4-Difluorobenzene <Surr>	96.4		%	CTE 8015M/8021B	60-120	02/04/02	02/04/02	DAR
4-Bromofluorobenzene <Surr>	78.6		%	CTE 8015M/8021B	50-150	02/04/02	02/04/02	DAR



CT&E Environmental Services Inc.

CT&E Ref.# 1020552002
Client Name AGVIQ Inc.
Project Name/# Bldg 986 FRA BVS System Ex.
Client Sample ID Exhaust 02FRA002AG
Matrix Gas & Air
Ordered By

Client PO#
Printed Date/Time 02/21/2002 8:36
Collected Date/Time 01/30/2002 14:00
Received Date/Time 01/31/2002 5:57
Technical Director Stephen C. Edge

Released By *Michael Biele*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Oxygen	17.1790	0.00200	%	ASTM D-1945			02/04/02	KWM
Nitrogen	82.2050	0.00200	%	ASTM D-1945			02/04/02	KWM
Methane	0.00200 U	0.00200	%	ASTM D-1945			02/04/02	KWM
Carbon Dioxide	0.616000	0.00200	%	ASTM D-1945			02/04/02	KWM

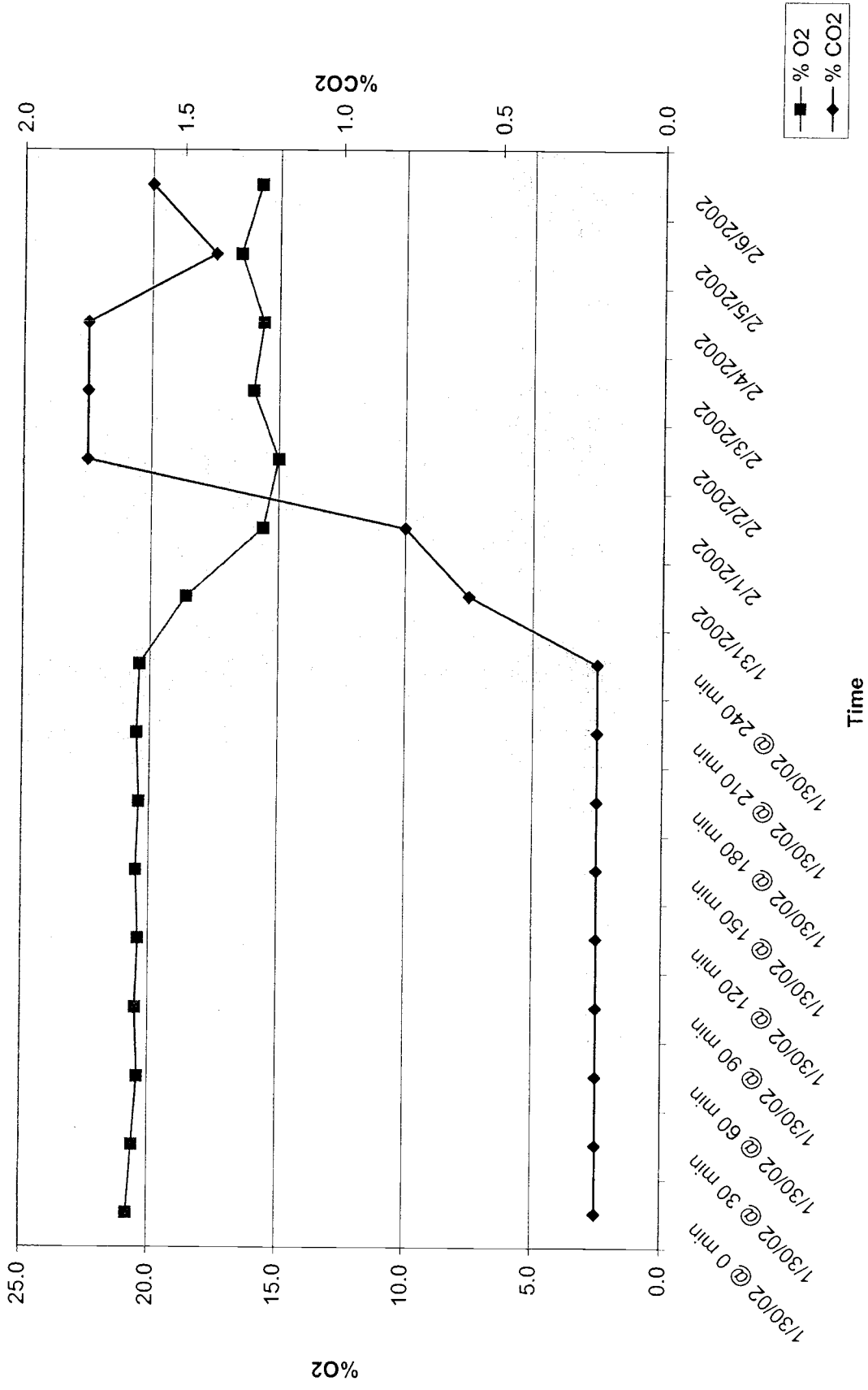
Appendix B

**Combustible Gas Indicator Results
From Quarterly Respirometer Test 1 of 5**

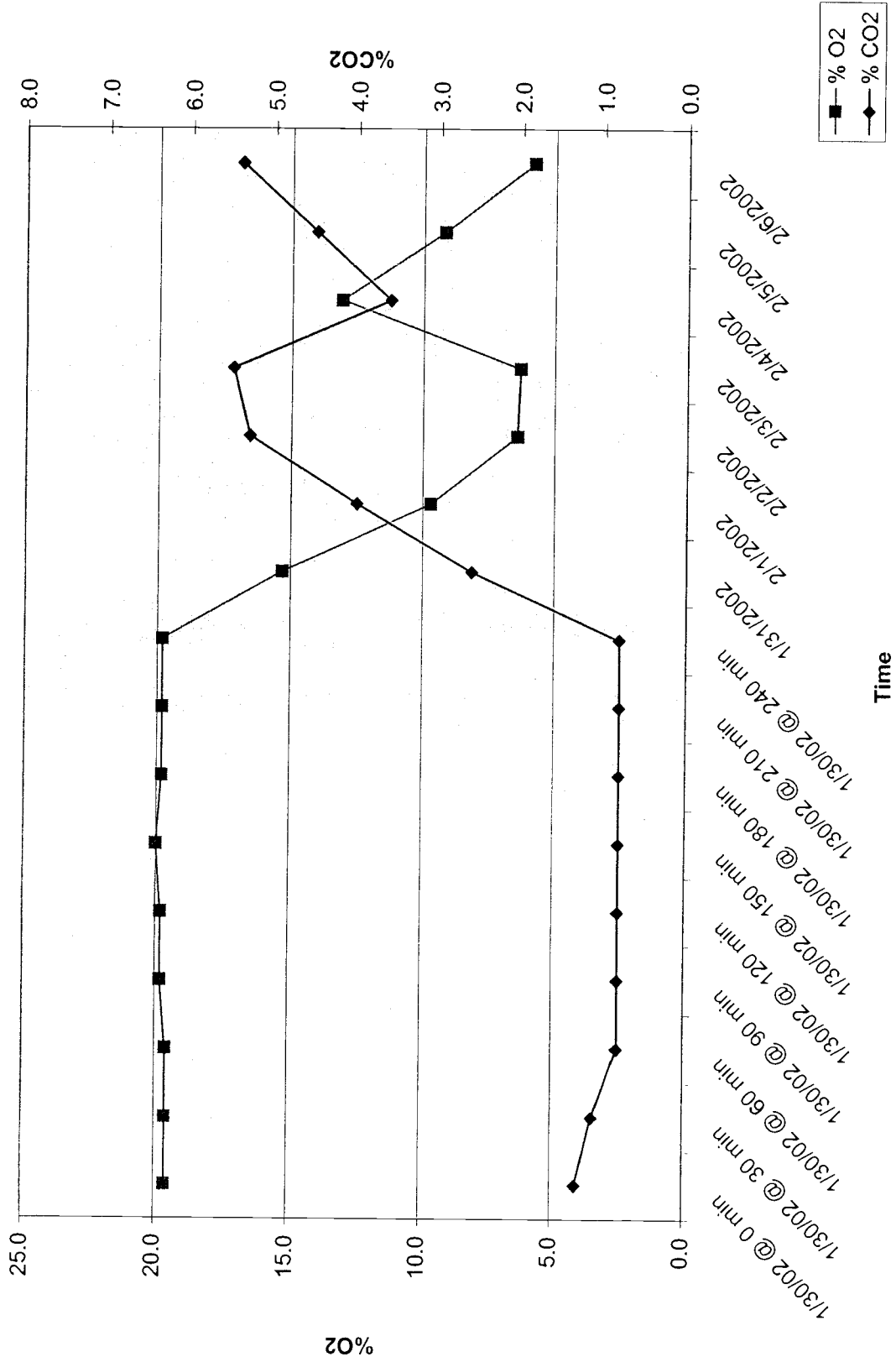
DATE	MP - 1				MP - 2				MP - 3			
	10 ft bgs (Blue)		20 ft bgs (Green)		10 ft bgs (Blue)		20 ft bgs (Green)		10 ft bgs (Blue)		20 ft bgs (Green)	
	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂
1/30/02 @ 0 min	0.2	20.8	1.3	19.6	0.0	20.8	0.6	20.2	0.0	20.9	0.1	20.9
1/30/02 @ 30 min	0.2	20.6	1.1	19.6	0.0	20.6	0.6	20.1	0.0	20.7	0.0	20.7
1/30/02 @ 60 min	0.2	20.4	0.8	19.6	0.0	20.4	0.6	19.8	0.0	20.7	0.0	20.6
1/30/02 @ 90 min	0.2	20.5	0.8	19.8	0.0	20.5	0.8	19.7	0.0	20.8	0.2	20.7
1/30/02 @ 120 min	0.2	20.4	0.8	19.8	0.0	20.5	0.8	19.5	0.0	20.8	0.1	20.7
1/30/02 @ 150 min	0.2	20.5	0.8	20.0	0.0	20.5	0.8	19.3	0.0	20.8	0.1	20.7
1/30/02 @ 180 min	0.2	20.4	0.8	19.8	0.0	20.6	1.0	19.2	0.0	20.8	0.1	20.7
1/30/02 @ 210 min	0.2	20.5	0.8	19.8	0.0	20.2	1.2	18.9	0.0	20.9	0.2	20.6
1/30/02 @ 240 min	0.2	20.4	0.8	19.8	0.0	20.2	1.4	18.4	0.0	20.7	0.2	20.5
1/31/2002	0.6	18.6	2.6	15.3	0.2	19.7	3.0	13.5	0.2	20.9	0.2	20.9
2/1/2002	0.8	15.6	4.0	9.7	0.0	20.5	3.6	9.0	0.0	20.2	0.2	18.9
2/2/2002	1.8	15.0	5.3	6.4	0.2	18.8	3.7	7.2	0.0	19.6	0.4	19.8
2/3/2002	1.8	16.0	5.5	6.3	0.1	19.8	4.8	6.2	0.0	20.9	0.4	20.7
2/4/2002	1.8	15.6	3.6	13.1	0.1	19.5	5.0	9.0	0.2	20.3	0.5	19.7
2/5/2002	1.4	16.5	4.5	9.2	0.2	20.1	5.6	8.2	0.1	20.4	0.4	19.3
2/6/2002	1.6	15.7	5.4	5.8	0.1	20.8	6.8	5.4	0.2	20.9	0.4	20.4

Note:
 MP = monitoring point
 ft = feet
 bgs = below ground surface

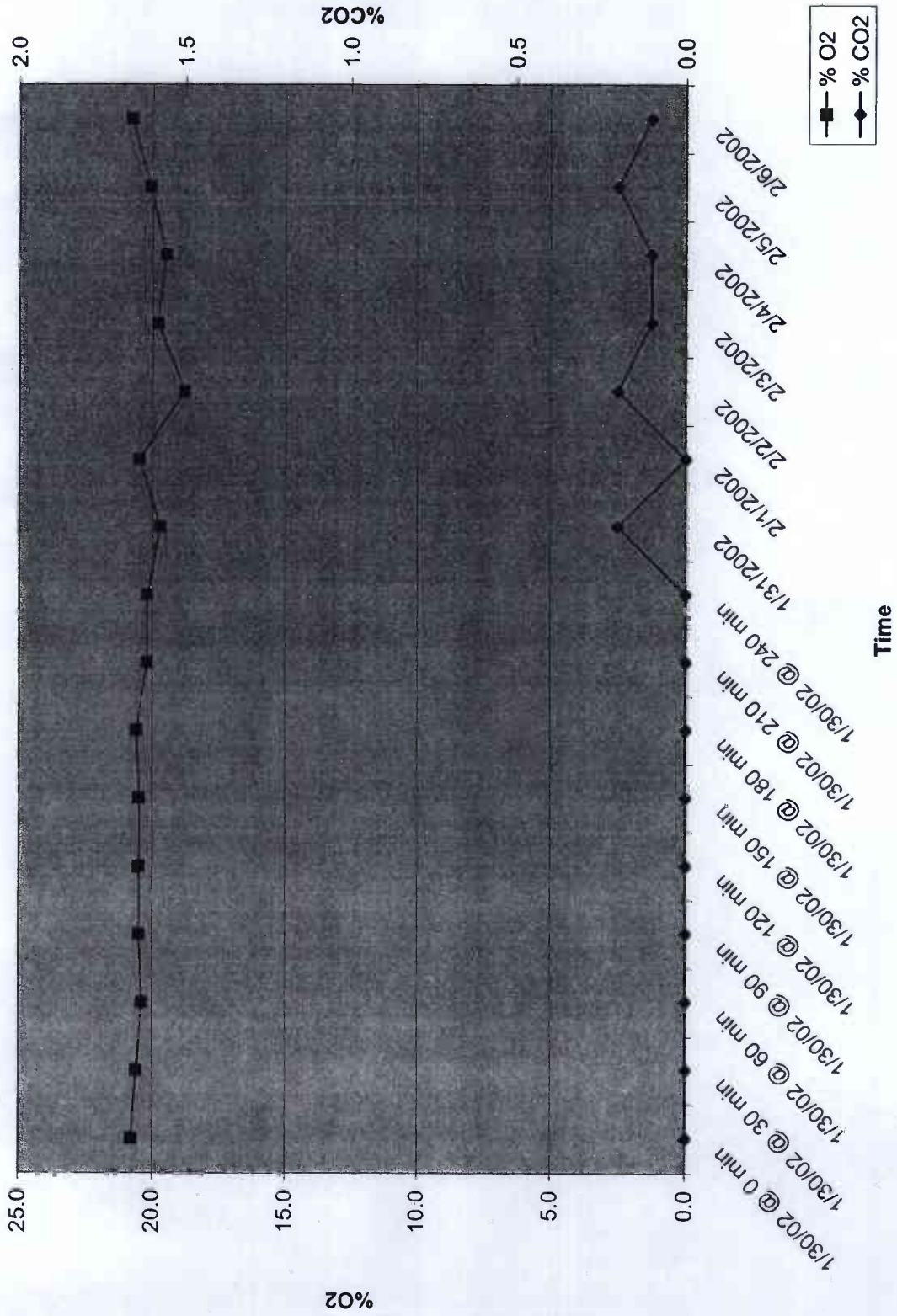
January/February 2002
MP-1 at 10 ft bgs



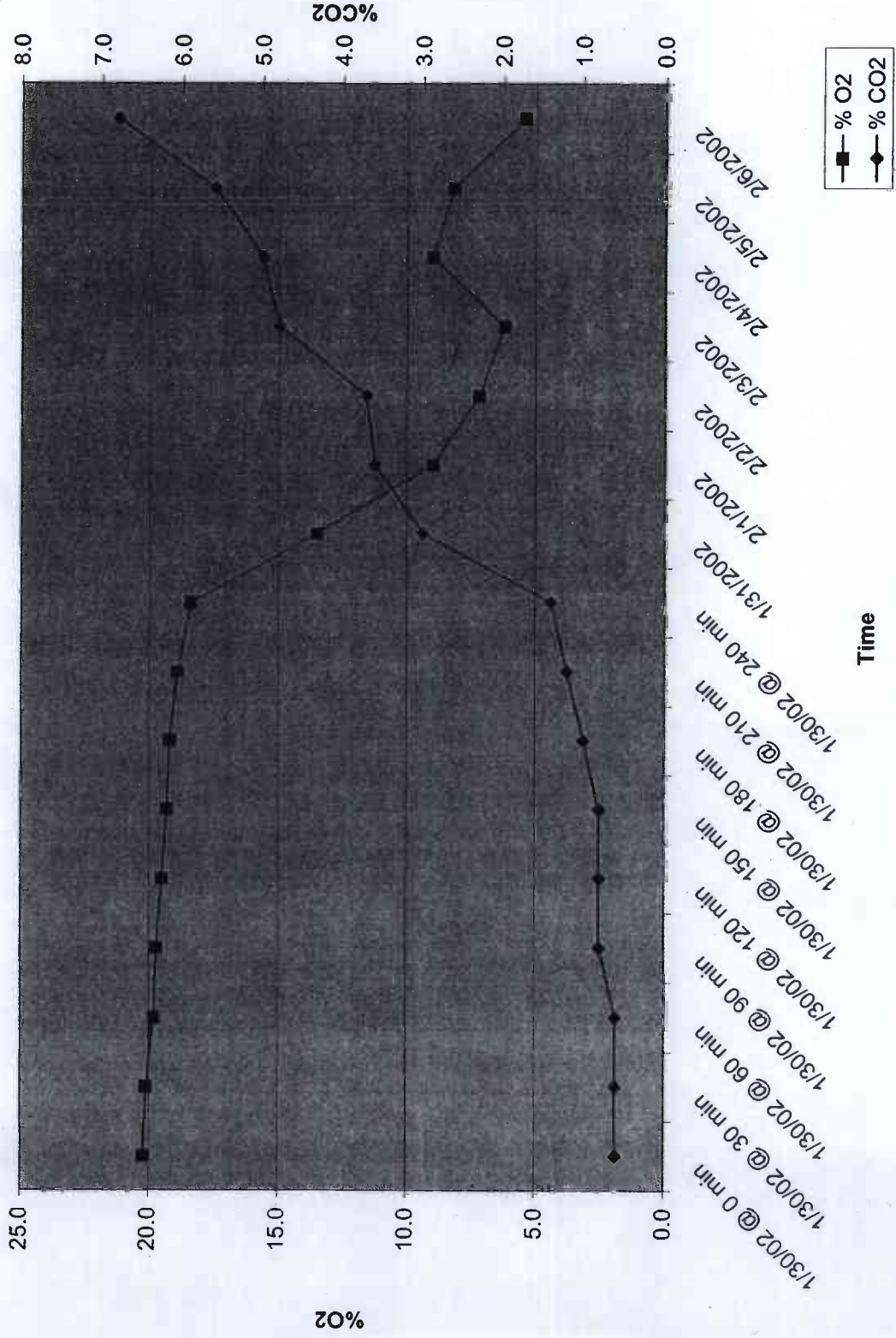
January/February 2002
MP-1 at 20 ft bgs



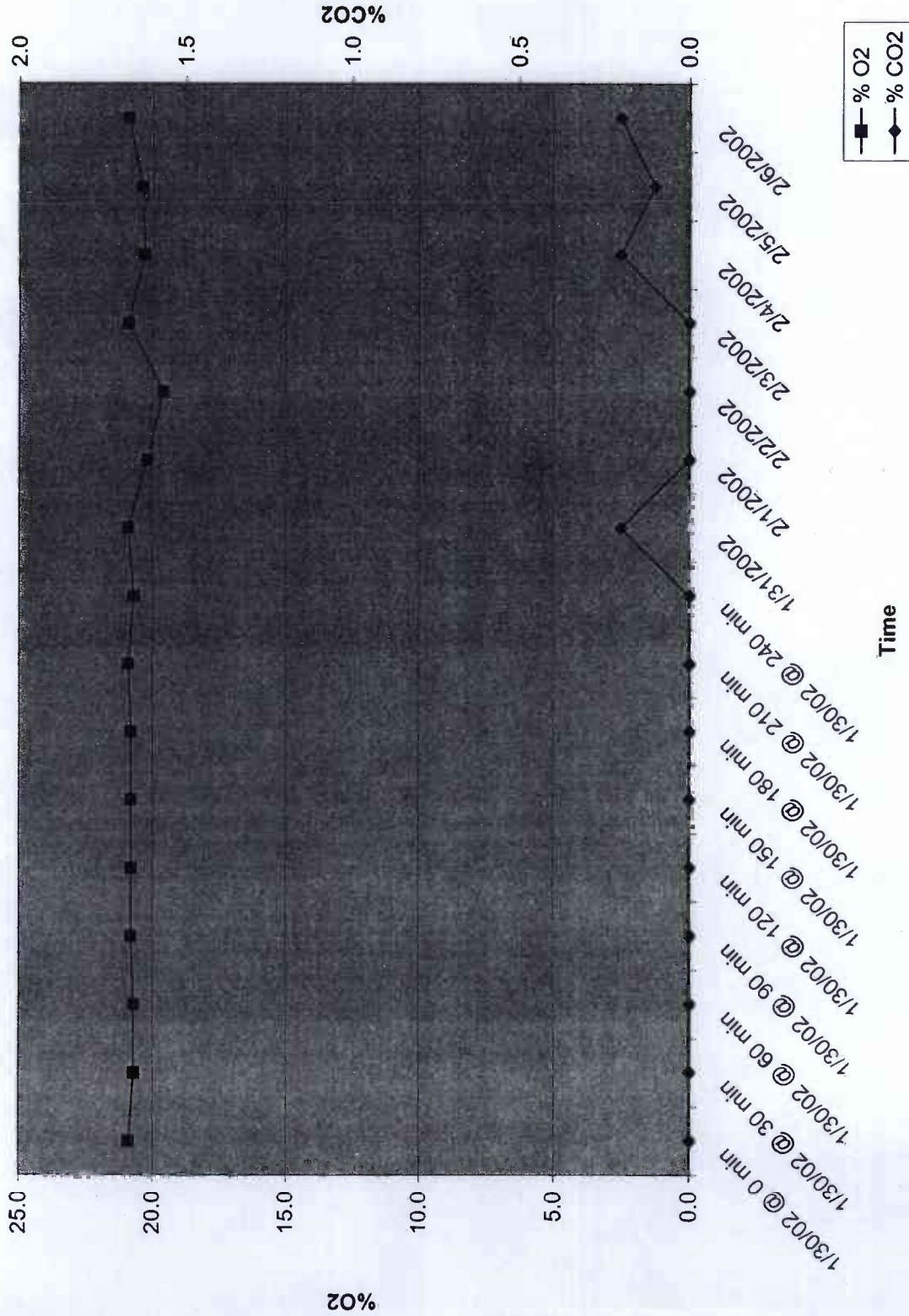
January/February 2002
MP-2 at 10 ft bgs



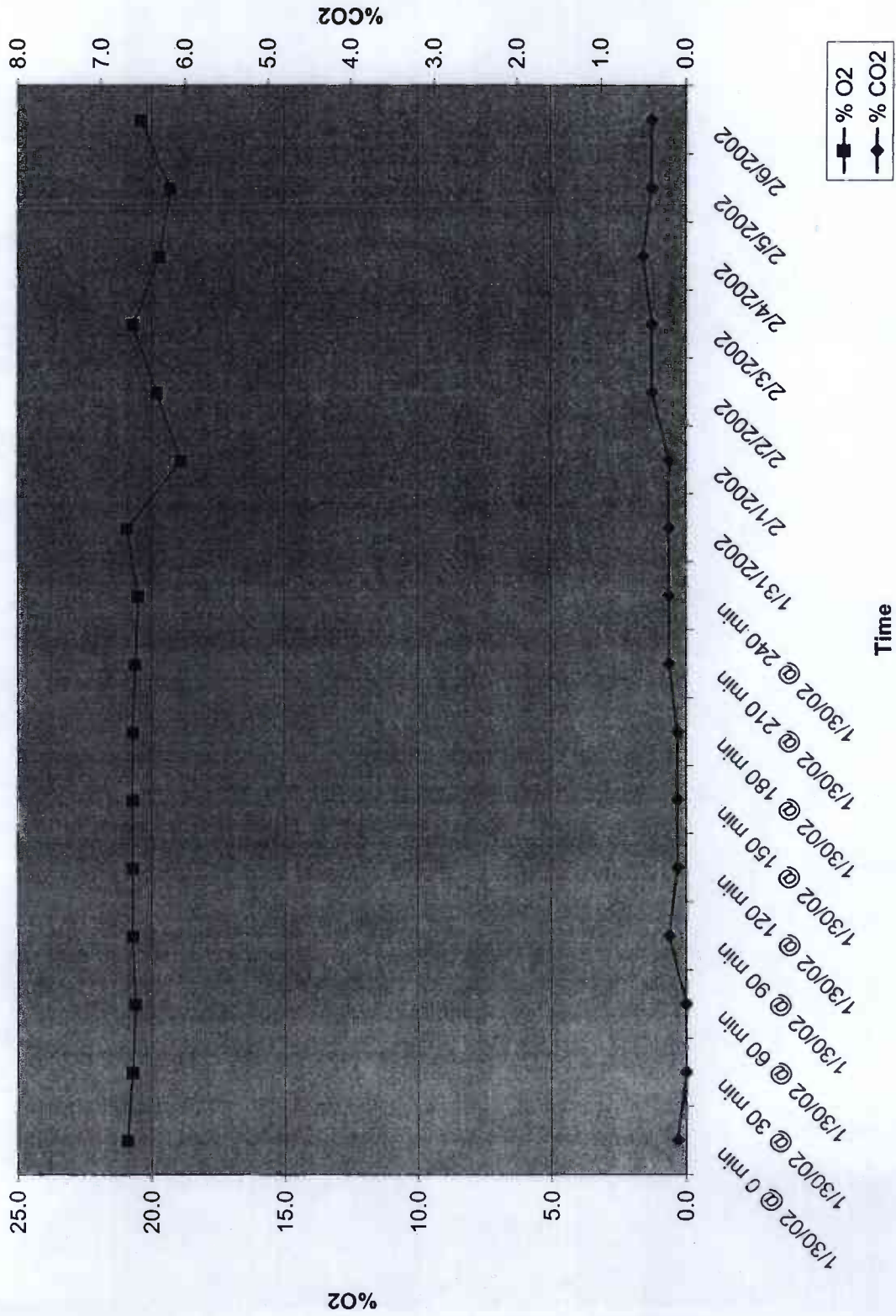
January/February 2002
MP-2 at 20 ft bgs



January/February 2002
MP-3 at 10 ft bgs



January/February 2002
MP-3 at 20 ft bgs

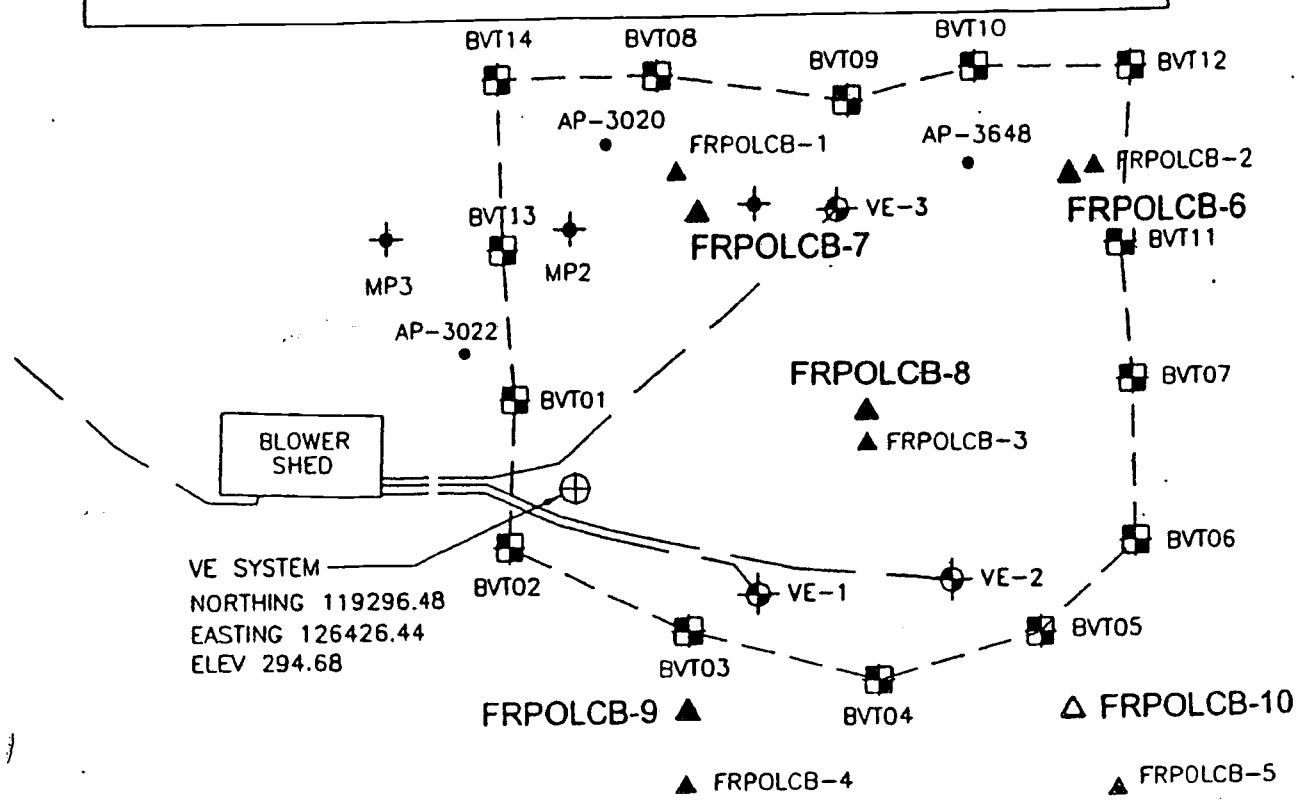


Appendix C

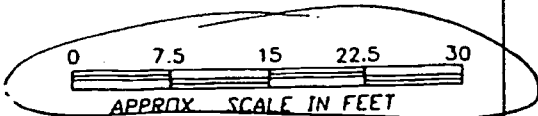
Site map



BUILDING 986
POL LABORATORY



VE SYSTEM
 NORTHING 119296.48
 EASTING 126426.44
 ELEV 294.68



NOTE:

CONTROL IS BASED ON COORDINATES PROVIDED BY COE SURVEY SECTION IN LOCAL FORT RICHARDSON GRID SYSTEM. ELEVATIONS ARE TO MEAN SEA LEVEL DATUM. UG LINES SHOWN CONNECTING THE VE WELLS TO THE BLOWER ARE AS DESCRIBED BY EMCON STAFF AND LOCATED BY STAKES PLACED AT ANGLE POINTS ON GROUND SURFACE. MONUMENT "VE SYSTEM" IS A STANDARD COE DISK MONUMENT SET AS PER EM 1110-1-1002 WITH FINNED ROD SECTION, DRIVEN TO A 4' REFUSAL DEPTH.

LEGEND

- ✦ MP1 SOIL GAS MONITORING POINTS
- ⊙ VE-1 VAPOR EXTRACTION WELL
- AP-3020 MONITORING WELL
- ▲ FRPOLCB-4 CONFIRMATION BORING LOCATION
- ⊠ BVT01 BIOVENTING WELLS
- ⊕ MONUMENT
- — — SUBSURFACE PIPE

▲ FRPOLCB-6 2000 CONFIRMATION BORING LOCATION

\\PROJECTS\IDTRA\01600800

ALC-99FTR2.DWG



emcon Alaska, Inc.
 4701 Business Park Drive Suite 33
 Anchorage, Alaska 99503-7186
 (207) 342-3452 Fax (207) 342-2814

DATE DEC. 1997
 DWN. 99ftrf2.dwg
 CKD. L. RAYMORE
 REV. OCT. 1999
 PROJECT No.

FORT RICHARDSON
 BUILDING 986 REMEDIAL ACTION
 Anchorage, Alaska
 SITE LAYOUT

FIGURE
 3

**FINAL
QUARTERLY RESPIROMETER TEST 2 OF 5**

BUILDING 986 POL LABORATORY

**SOIL VAPOR EXTRACTION AND BIO-VENTING
OPERATIONS AND MAINTENANCE**

**FORT RICHARDSON, ALASKA
CONTRACT NO. DACA85-01-P-0080**

Prepared for:

U.S. Army Corps of Engineers, Alaska District
CEPOA-PM-M-A
P. O. Box 6898
Elmendorf AFB, Alaska 99506-6898

Prepared By:

A G V I Q
AGVIQ ENVIRONMENTAL SERVICES

AGVIQ, Inc.
2121 Abbott Road Suite 100
Anchorage, Alaska 99507

Project #200110

July 2002

OPERATIONAL MONITORING

AGVIQ, Inc. inspected the soil vapor extraction (VE) and bio-venting (BV) system for proper operational parameters. The system appeared to be operating normally, as designed and was tested as initially configured. Power indicators and alarms were operational. The system's airflow was free flowing, did not have excessive vacuum, the lower explosive limit (LEL) concentrations were low and the condensate tank was empty and unobstructed.

RESPIROMETER TESTING

Since the VE/BV system re-start on February 6, 2002, AGVIQ has performed three operational monitoring events at the Building 986 POL Lab. During each of these events, initial soil vapor readings were collected from three (3) monitoring points (MP-1, MP-2 and MP-3). Readings using a Combustible Gas Indicator (CGI) were collected from each of the monitoring points. The first two events took place on February 28 and March 28, 2002. The third monitoring event occurred on April 15, 2002 in conjunction with the quarterly respirometer testing. These monthly monitoring events consisted of soil vapor readings and airflow rates (CFM) and vacuum (inches of H₂O) were measured from each vent well. The concentrations of volatiles (ppm) were measured with a calibrated photo-ionization detector (PID) from each vent well at the VE manifold. On April 15, 2002 the second respiration testing of this yearly sequence of O & M activities was performed for a period of eight (8) days. Prior to shutting off the blower for the respirometer test; the VE system was configured to extract air from VE wells 1 and 2, an initial effluent sample was collected, and initial soil vapor readings were collected from three (3) monitoring points. VE well 3 was left nearly closed (approx. 5% open). Soil vapor readings were also collected daily over the next seven (7) days and the blower was restarted on April 22, 2002.

ANALYTICAL SAMPLING PROGRAM

Effluent Sampling

Effluent samples were collected from the VE system exhaust stack, prior to shutdown, to estimate hydrocarbon-mass removal rates as configured. The samples were collected from the exhaust stack using laboratory-prepared 1-liter stainless steel canisters. The samples were sent to CT&E of Anchorage, Alaska. The effluent samples were analyzed for the following parameters:

- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) by EPA 8021B
- Gasoline Range Organics (GRO) by AK 101; and
- Methane, carbon dioxide, oxygen and nitrogen by ASTM D-1945

FINDINGS

Effluent Sampling

The reported analytical results for GRO and BTEX constituents in the exhaust air sample were undetectable (Table 1) at levels stated in the report. The air sample analytical results indicate that the percent levels of oxygen and nitrogen are similar to the concentrations found in the atmosphere. The methane and carbon dioxide results were similar to the previous respirometer test (Table 1). The concentrations of volatiles in the exhaust air at the time of sample collection were low (Table 2). All of the analytical results from the effluent air samples collected during the respirometer sampling event are presented in Appendix A.

Monitoring Events

The CGI results from the monitoring events are presented in Appendix B. The readings at MP-1 suggest biological activity due to the decrease in oxygen and the increase in carbon dioxide, during the extent of the monitoring period. This trend is greater at 20 ft bgs than at 10 ft bgs. This implies that biological activity may be occurring in the vicinity of MP-1 and a significantly higher amount of activity may be taking place at the greater depth. MP-1 is located in the vicinity of the former dry well (Appendix C).

The readings from MP-2 also exhibited evidence of biological activity. However, there was less evidence of biological activity seen at 10 ft bgs, than was exhibited at the same depth at MP-1. Evidence of a considerably higher amount of microbial activity is seen at the 20 ft bgs depth at this location.

MP-3 is located outside of the main contaminated area at the former dry well area. Very little activity was observed at both depths in this location.

To assist in assessing the VE/BV system performance, the airflow rates (CFM) and vacuum (inches of H₂O) were measured from each vent well and concentrations of volatiles (ppm) were measured from each vent well at the exhaust manifold. The airflow rates measured at the VE blower during the second respirometer test ranged between 2 and 51 CFM and the applied vacuum levels at the VE blower ranged between 11 and 21 inches of H₂O. The concentration of volatiles ranged between 0.6 and 7.1 ppm. The airflow, vacuum and concentration of volatiles results for all three monitoring events are listed in Tables 2-4.

CONCLUSION

Review of the monitoring and analytical data indicates that the VE/BV system is actively remediating the subsurface soils in the vicinity of the former dry well located at Building 986. The observations indicate that the remediation is progressing by two processes: bioremediation through the utilization of oxygen in the soil gas and, to a lesser degree,

physical removal of hydrocarbon vapors. The physical removal is diminished due to the age of the system and remedial process.

Evidence of bioremediation and physical removal is obtained through sampling and analysis of the extracted soil gas. Analysis of the VE system effluent for petroleum hydrocarbons indicates that the VE system is successfully extracting contaminants. The presence of elevated CO₂ concentrations in the soil gas analyzed from the VE system exhaust stack may be an indication of hydrocarbon biodegradation in the site soils. In addition, oxygen concentrations in the soil gas indicate that the oxygen is not currently limiting hydrocarbon biodegradation. Similarly, the data collected from the three soil gas monitoring points also indicate by the increase in CO₂ concentrations and significant decrease in O₂ concentrations that biodegradation is occurring in the soils at the site where contamination was found.

Based on the monthly monitoring, respirometer, and analytical test data, the system operational configuration was not changed. The system was configured Table 4 - Soil Vapor Extraction & Bio-Venting System Operational Data – April 2002

TABLE 1

AIR SAMPLE ANALYTICAL RESULTS

----- PARAMETERS -----

SAMPLE ID	GRO ppm	BTEX ppm	Benzene ppm	Toluene ppm	Ethylbenzene ppm	P & M-Xylene ppm	O-Xylene ppm	Oxygen %	Nitrogen %	Methane %	Carbon Dioxide %
Exhaust 02FRA003AG	U	U	U	U	U	U	U	N/A	N/A	N/A	N/A
Exhaust 02FRA004AG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17	82	U	0.50

Note:

- GRO = Gasoline Range Organics
- BTEX = Benzene, Toluene, Ethylbenzene and Total Xylenes
- U = Undetectable as listed in the analytical report
- N/A = Not Applicable as listed in the analytical report
- ppm = parts per million by volume
- % = percent by volume

TABLE 2
SOIL VAPOR EXTRACTION & BIO-VENTING SYSTEM
OPERATIONAL DATA – FEBRUARY 2002

----- PARAMETERS -----

LOCATION	AIR FLOW (CFM)	VACUUM (inches of H ₂ O)	CONCENTRATION OF VOLATILES (ppm)	% WELLS OPEN
VE - 1	9	29	1.7	100 %
VE - 2	53	29	1.3	100 %
VE - 3	39	16	7.3	< 25 %
EXHAUST STACK	33	11	3.1	N/A

Note:
 CFM = Cubic Feet per Minute
 ppm = Parts Per Million
 N/A = Not applicable

TABLE 3

**SOIL VAPOR EXTRACTION & BIO-VENTING SYSTEM
 OPERATIONAL DATA – MARCH 2002**

----- PARAMETERS -----

LOCATION	AIR FLOW (CFM)	VACUUM (inches of H ₂ O)	CONCENTRATION OF VOLATILES (ppm)	% WELLS OPEN
VE - 1	6	18	0.6	100 %
VE - 2	28	16	1.1	100 %
VE - 3	49	11	7.1	< 5 %
EXHAUST STACK	25	4	2.5	N/A

Note:
 CFM = Cubic Feet per Minute
 ppm = Parts Per Million
 N/A = Not applicable

TABLE 4
**SOIL VAPOR EXTRACTION & BIO-VENTING SYSTEM
 OPERATIONAL DATA – APRIL 2002**

----- PARAMETERS -----

LOCATION	AIR FLOW (CFM)	VACUUM (inches of H ₂ O)	CONCENTRATION OF VOLATILES (ppm)	% WELLS OPEN
VE - 1	2	20	1.3	100 %
VE - 2	44	21	1.4	100 %
VE - 3	51	12	6.5	< 5 %
EXHAUST STACK	26	11	4.2	N/A

Note:
 CFM = Cubic Feet per Minute
 ppm = Parts Per Million
 N/A = Not applicable

Appendix A

Laboratory Analytical Results



200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: <http://www.cteesi.com>

Darrin Lawless
AGVIQ Inc.
2121 Abbott Road Suite 100
Anchorage, AK 995074453

Work Order: 1021920
Bld 986 200110 DACA-85-0170080

Client: AGVIQ Inc.

Report Date: May 14, 2002

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by CT&E. A copy of our Quality Control Manual that outlines this program is available at your request.

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth in our Quality Assurance Program Plan.

If you have any questions regarding this report or if we can be of any other assistance, please call your CT&E Project Manager at (907) 562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

- U Indicates the analyte was analyzed for but not detected.
- F Indicates an estimated value that falls below PQL, but is greater than the MDL.
- B Indicates the analyte is found in the blank associated with the sample.
- * The analyte has exceeded allowable limits.
- GT Greater Than
- D Secondary Dilution
- LT Less Than
- ! Surrogate out of range



CT&E Ref.# 1021920001
Client Name AGVIQ Inc.
Project Name/# Bld 986 200110 DACA-85-0170080
Client Sample ID 02FRA003AG
Matrix Gas & Air
Ordered By

All Dates/Times are Alaska Standard Time
Printed Date/Time 05/14/2002 12:01
Collected Date/Time 04/15/2002 12:00
Received Date/Time 04/16/2002 11:35
Technical Director Stephen C. Ede

Released By [Signature]

Sample Remarks:
Corrected Report, PQL.

Table with 9 columns: Parameter, Results, PQL, Units, Method, Allowable Limits, Prep Date, Analysis Date, Init. Rows include Volatile Fuels Department (Gasoline Range Organics, Benzene, Toluene, Ethylbenzene, P & M -Xylene, o-Xylene) and Subrogates (1,4-Difluorobenzene, 4-Bromofluorobenzene).



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AN ENVIRONMENTAL ANALYTICAL LABORATORY

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

This electronic report includes the following:

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

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

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

Hours 8:00 A.M to 6:00 P.M. Pacific

E-mail to: samplereceiving@airtoxics.com



AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0204497

Work Order Summary

CLIENT: Ms. Rhonda Strucher
CT & E
200 West Potter
Anchorage, AK 99518

BILL TO: Ms. Rhonda Strucher
CT & E
200 West Potter
Anchorage, AK 99518

PHONE: 907-562-2343

P.O. #

FAX: 907-561-5301

PROJECT # AGVIQ Inc.

DATE RECEIVED: 4/25/02

CONTACT: Lisa Argento

DATE COMPLETED: 5/3/02

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC/PRES.</u>
01A	1021920002 (02FRA004AG)	ASTM D-1945	0.0 "Hg
02A	Lab Blank	ASTM D-1945	NA
03A	LCS	ASTM D-1945	NA

CERTIFIED BY:

Laboratory Director

DATE: 05/06/02

Certification numbers: CA ELAP - 1149, NY NELAP - 11291, UT ELAP - E-217, LA - AI 30763
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 01/01/02, Expiration date: 06/30/02

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
ASTM D-1945
CT & E
Workorder# 0204497

One Bomb sample was received on April 25, 2002. The laboratory performed analysis via Modified ASTM Method D-1945 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of up to 1.0 mL of sample. With the exception of analyses conducted in accordance with AFCEE 3.0, all reported compound quantifications were calculated from response factors derived from the first Continuing Calibration Verification of each relevant analytical batch. See the data sheets for the reporting limits for each compound.

<i>Requirement</i>	<i>ASTM D-1945</i>	<i>ATL Modifications</i>
Quantification based on average response factor in the Initial Calibration.	NELAC Standard 5.9.4.2.1(c)	With the exception of samples analyzed under AFCEE 3.0 protocol, all quantification based on the response factor derived from the first Continuing Calibration Verification of each relevant analytical batch.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.

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

- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: 1021920002 (02FRA004AG)

ID#: 0204497-01A

NATURAL GAS ANALYSIS BY ASTM D-1945 GC/TCD/FID

File Name:	01/25/02	Date of Collection:	4/15/02
Dil. Factor:	1.02	Date of Analysis:	4/26/02

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	17
Nitrogen	0.20	82
Methane	0.00020	Not Detected
Carbon Dioxide	0.0020	0.50

Container Type: Bomb

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0204497-02A

NATURAL GAS ANALYSIS BY ASTM D-1945 GC/TCD/FID

File Name:	3042608	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	4/26/02

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.0010	Not Detected

Container Type: NA - Not Applicable

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0204497-03A

NATURAL GAS ANALYSIS BY ASTM D-1945 GC/TCD/FID

File Name:	3042604	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	4/26/02

Compound	Rpt. Limit (%)	%Recovery
Oxygen	0.10	105
Nitrogen	0.10	103
Methane	0.00010	106
Carbon Dioxide	0.0010	106

Container Type: NA - Not Applicable



CHAIN OF CUSTODY RECORD

CT&E Environmental Services Inc.
Laboratory Division

• Alaska
• Michigan
• West Virginia
and
• Jersey
• Arizona
• Illinois
• New York
• Pennsylvania
• Virginia
• Washington
• Wisconsin
www.cteesi.com

1 CLIENT: *CITE AK* PHONE NO: *907-522-2213* PWSID#:
 CONTACT: *Rhonda Snelson*
 PROJECT: *AGVIG Inc.* FAX NO: *907-522-2213*
 REPORTS TO: *500 W. Potter Dr.*
Anchorage, Alaska
 INVOICE TO: *J* QUOTE# P.O. NUMBER:

CT&E Reference: *Air Tox* PAGE *1* OF *1*

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No.	SAMPLE TYPE	Preservatives Used	Analysis Required	REMARKS
	<i>1031190002</i>	<i>11/30/02</i>	<i>12:00</i>	<i>NC</i>		<i>C</i>		<i>3</i>	<i>CHLORIDE</i>
						<i>C</i>			<i>DEFACONAG</i>
						<i>COMP</i>			
						<i>GRAB</i>			

5 Collected/Relinquished By: (1) *Rhonda Snelson* Date *11/30/02* Time *11:00* Received By: Temperature C:
 Relinquished By: (2) _____ Date _____ Time _____ Received By: Chain of Custody Seal: (Circle)
 Relinquished By: (3) _____ Date _____ Time _____ Received By: *INTACT BROKEN ABSENT*
 Relinquished By: (4) _____ Date _____ Time _____ Received For Laboratory By: *Requested Turnaround Time and Special Instructions:*
Please put Chloride + C17 in on report

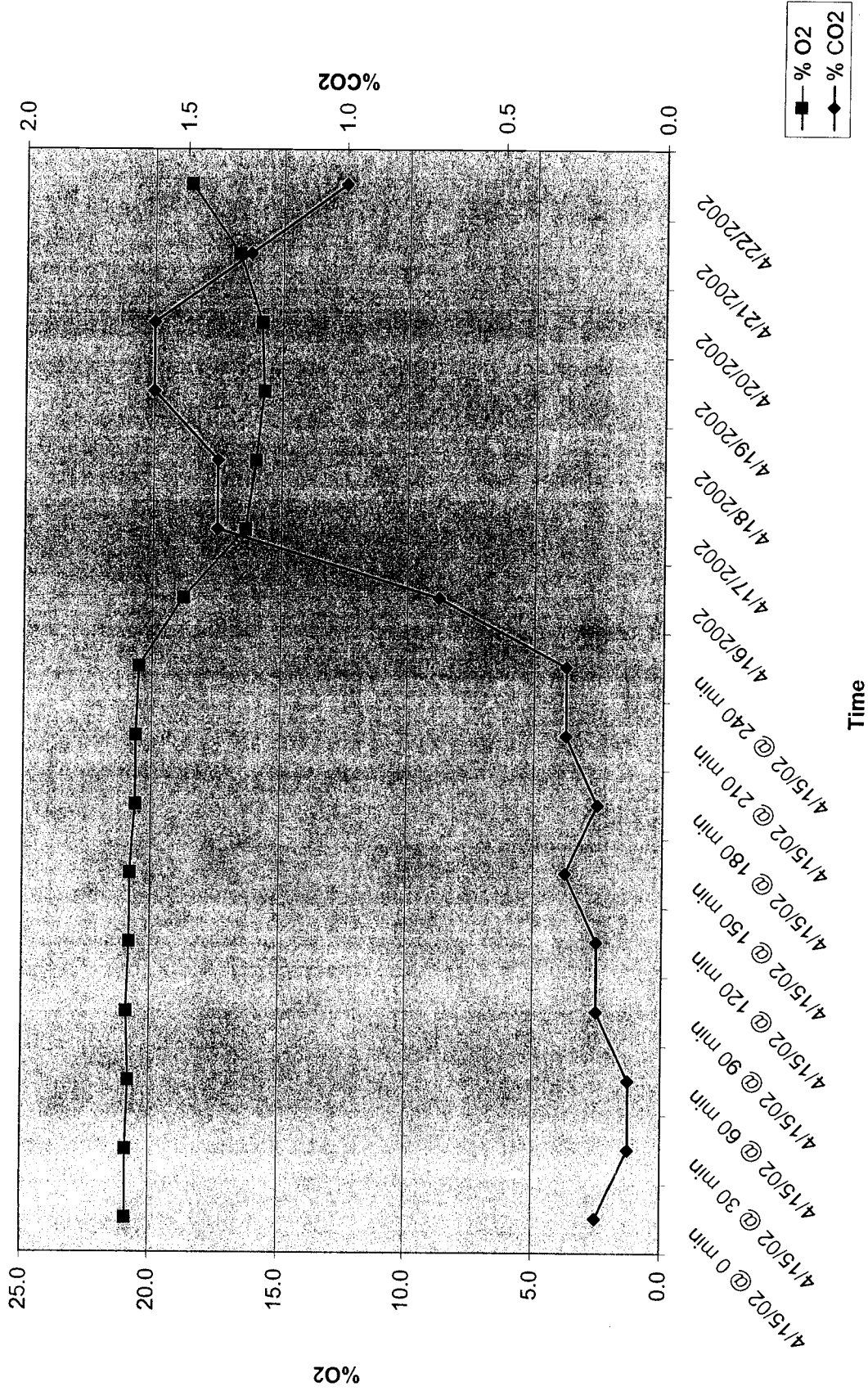
Appendix B

**Combustible Gas Indicator Results
From Quarterly Respirometer Test 2 of 5**

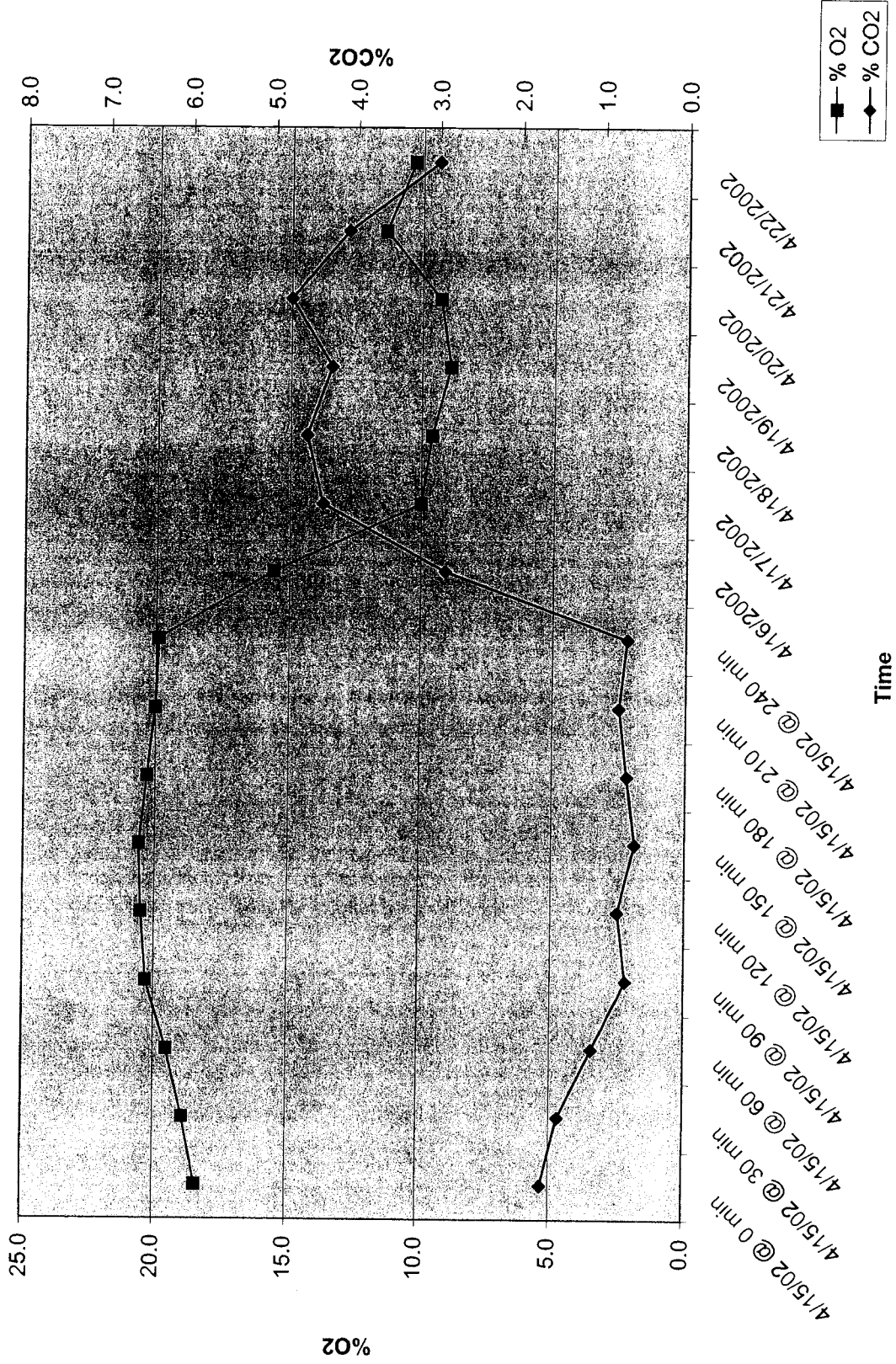
DATE	MP - 1						MP - 2						MP - 3					
	10 ft bgs (Blue)			20 ft bgs (Green)			10 ft bgs (Blue)			20 ft bgs (Green)			10 ft bgs (Blue)			20 ft bgs (Green)		
	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂
2/28/2002	0.2	20.8	1.6	18.9	0.0	20.9	0.4	20.7	0.0	20.9	0.4	20.7	0.0	20.9	0.0	20.9	0.0	20.9
3/28/2002	0.4	20.7	1.1	18.4	0.0	20.9	0.4	20.4	0.0	20.9	0.4	20.4	0.0	20.9	0.0	20.9	0.1	20.9
4/15/02 @ 0 min	0.2	20.9	1.7	18.4	0.0	20.9	0.4	20.4	0.0	20.9	0.4	20.4	0.0	20.9	0.0	20.9	0.0	20.9
4/15/02 @ 30 min	0.1	20.9	1.5	18.9	0.0	20.9	0.4	20.3	0.0	20.9	0.4	20.3	0.0	20.9	0.0	20.9	0.0	20.9
4/15/02 @ 60 min	0.1	20.8	1.1	19.5	0.0	20.9	0.6	20.3	0.0	20.9	0.6	20.3	0.0	20.9	0.0	20.9	0.0	20.9
4/15/02 @ 90 min	0.2	20.9	0.7	20.3	0.0	20.8	0.6	20.1	0.0	20.8	0.6	20.1	0.0	20.8	0.0	20.9	0.1	20.9
4/15/02 @ 120 min	0.2	20.8	0.8	20.5	0.0	20.9	0.6	19.8	0.0	20.8	0.6	19.8	0.0	20.8	0.0	20.9	0.1	20.9
4/15/02 @ 150 min	0.3	20.8	0.6	20.6	0.0	20.7	0.7	19.6	0.0	20.7	0.7	19.6	0.0	20.8	0.0	20.9	0.2	20.9
4/15/02 @ 180 min	0.2	20.6	0.7	20.3	0.0	20.7	0.8	19.5	0.0	20.7	0.8	19.5	0.0	20.8	0.0	20.8	0.1	20.8
4/15/02 @ 210 min	0.3	20.6	0.8	20.0	0.0	20.3	1.0	19.3	0.0	20.3	1.0	19.3	0.0	20.7	0.0	20.6	0.2	20.6
4/15/02 @ 240 min	0.3	20.5	0.7	19.9	0.0	20.4	1.2	19.0	0.0	20.4	1.2	19.0	0.0	20.8	0.0	20.6	0.2	20.6
4/16/2002	0.7	18.8	2.9	15.6	0.0	20.2	2.7	13.0	0.0	20.2	2.7	13.0	0.0	20.8	0.0	20.0	0.3	20.0
4/17/2002	1.4	16.4	4.4	10.0	0.2	19.8	3.4	9.6	0.0	19.8	3.4	9.6	0.0	20.7	0.0	19.7	0.3	19.7
4/18/2002	1.4	16.0	4.6	9.6	0.1	19.9	4.2	8.5	0.0	19.9	4.2	8.5	0.0	20.8	0.0	19.6	0.4	19.6
4/19/2002	1.6	15.7	4.3	8.9	0.0	20.1	3.8	7.9	0.0	20.1	3.8	7.9	0.0	20.7	0.1	20.1	0.3	20.1
4/20/2002	1.6	15.8	4.8	9.3	0.0	20.2	3.0	7.6	0.0	20.2	3.0	7.6	0.0	20.8	0.0	20.7	0.2	20.7
4/21/2002	1.3	16.7	4.1	11.4	0.1	20.4	3.5	7.7	0.0	20.4	3.5	7.7	0.0	20.6	0.0	19.9	0.4	19.9
4/22/2002	1.0	18.6	3.0	10.3	0.0	20.7	3.8	8.3	0.0	20.7	3.8	8.3	0.0	20.9	0.0	20.2	0.2	20.2

Note:
MP = monitoring point
ft = feet
bgs = below ground surface

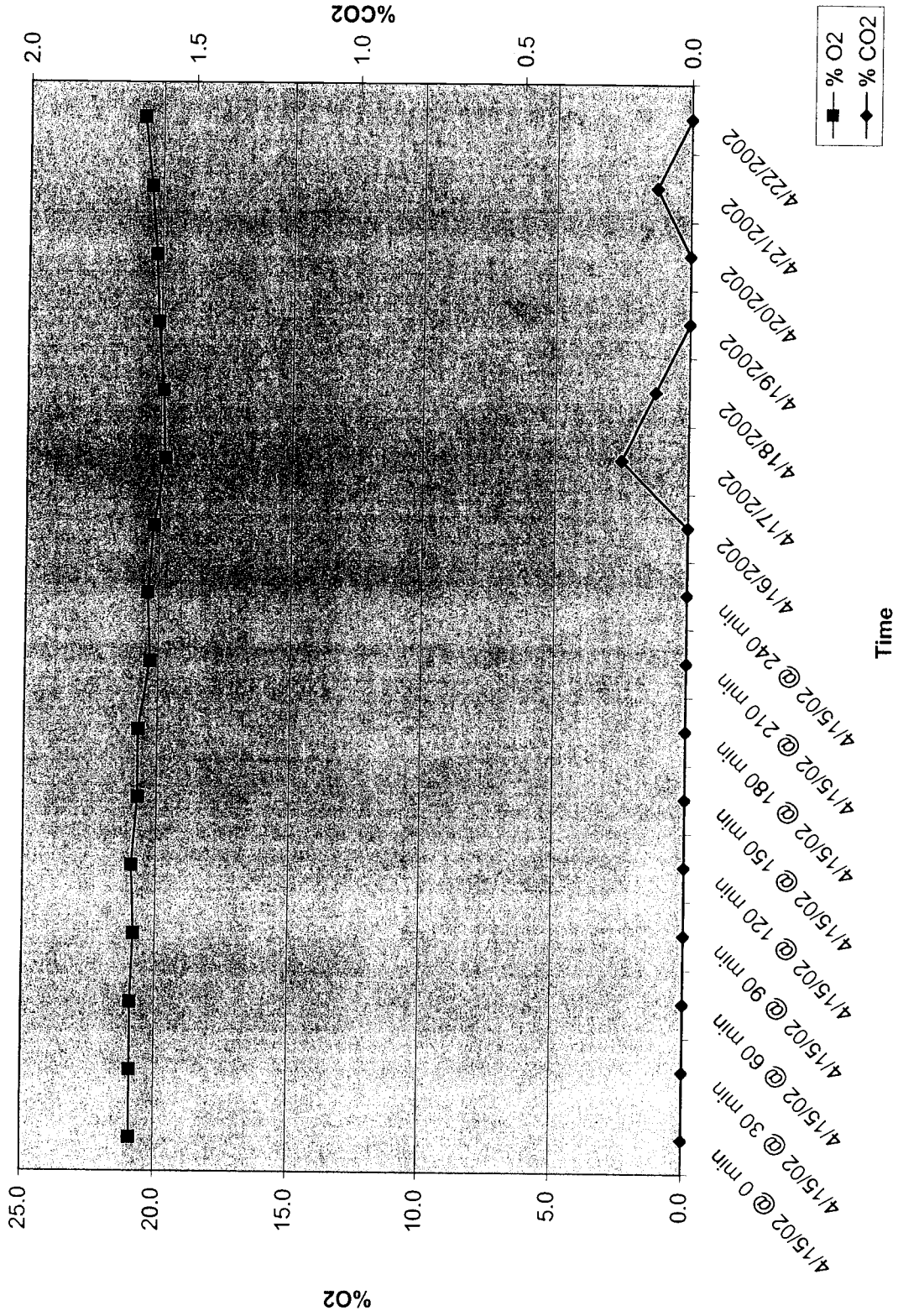
Quarterly Respirometer Test 2 of 5 MP-1 at 10 ft bgs



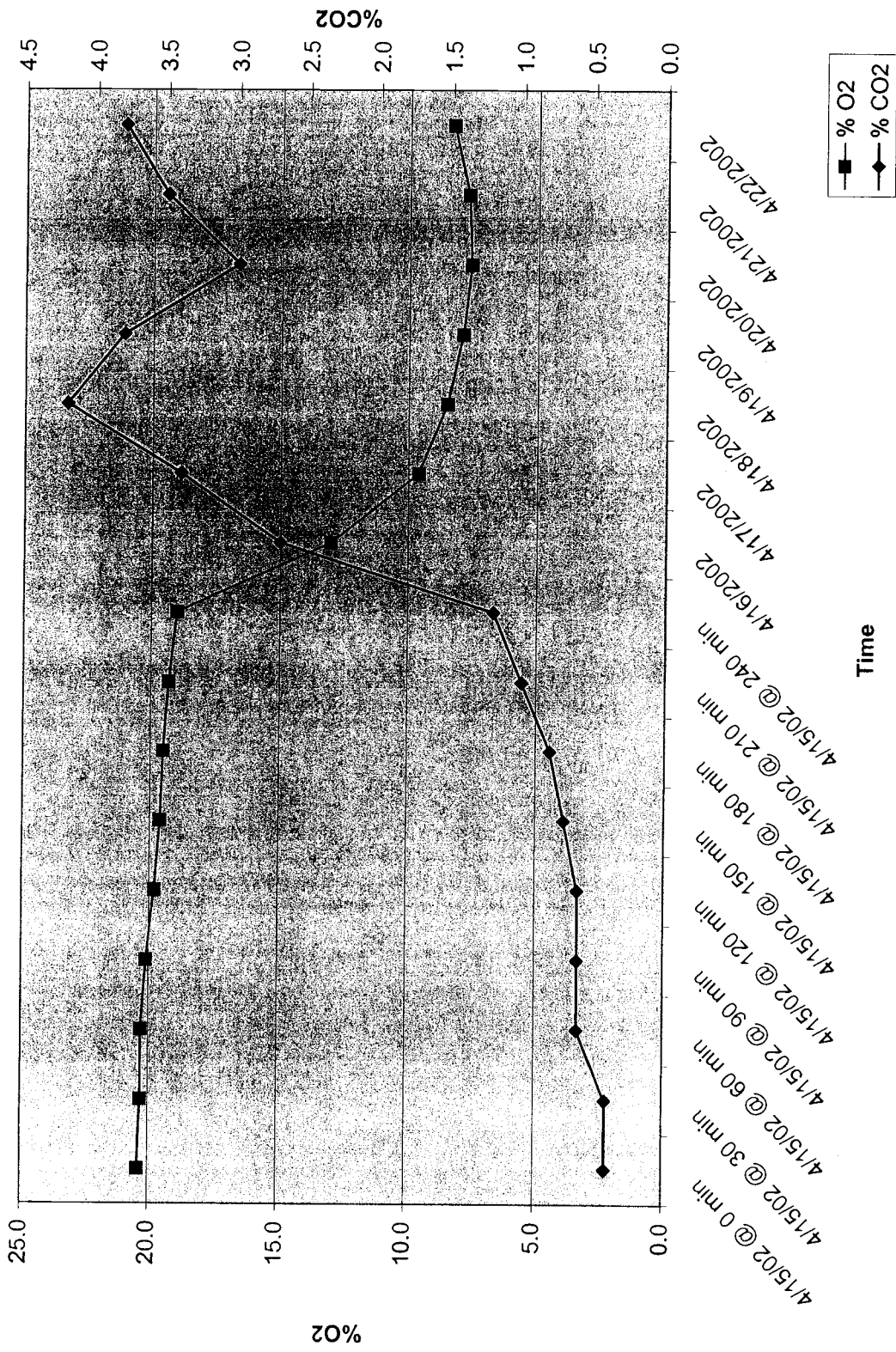
Quarterly Respirometer Test 2 of 5 MP-1 at 20 ft bgs



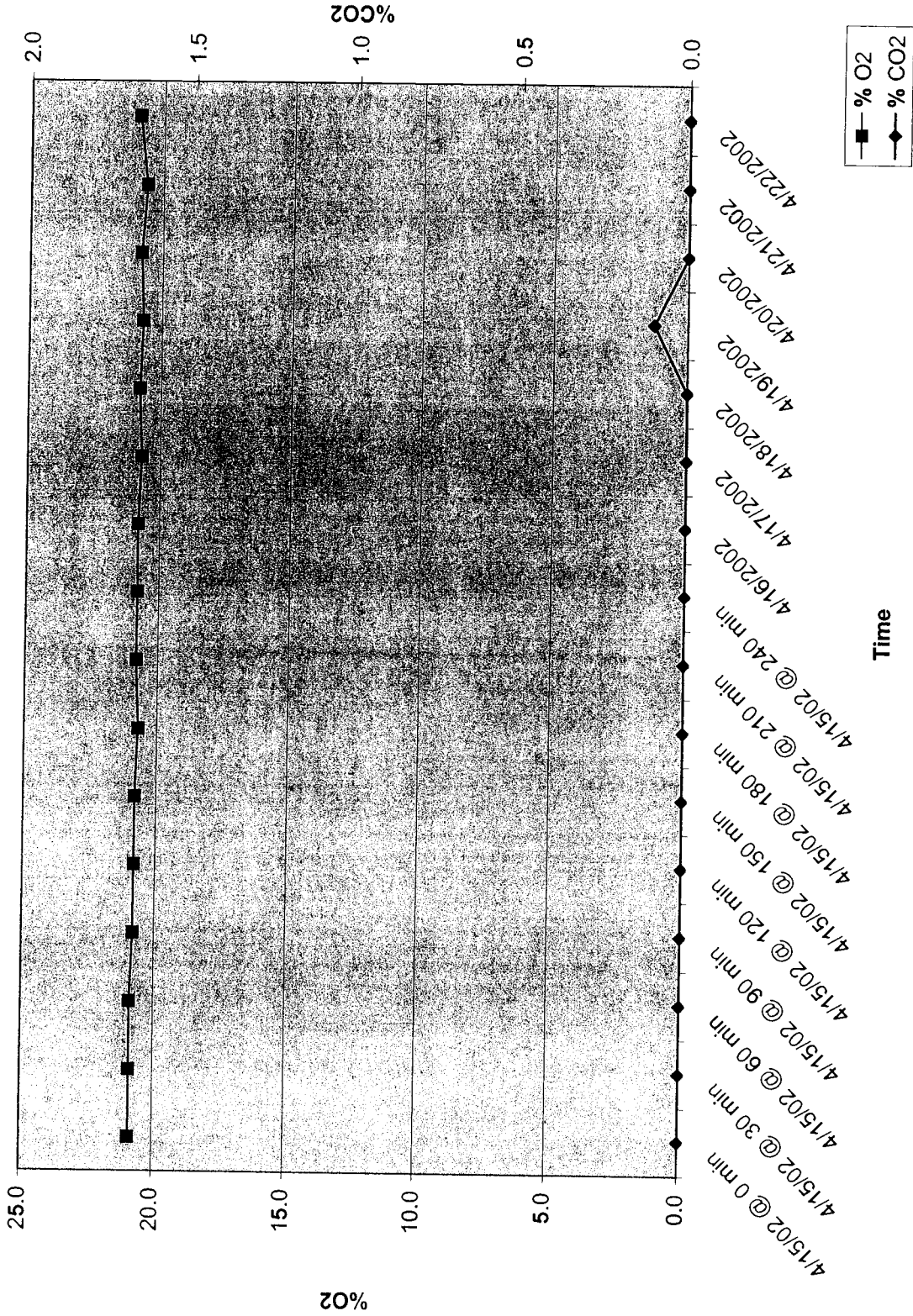
Quarterly Respirometer Test 2 of 5
 MP-2 at 10 ft bgs



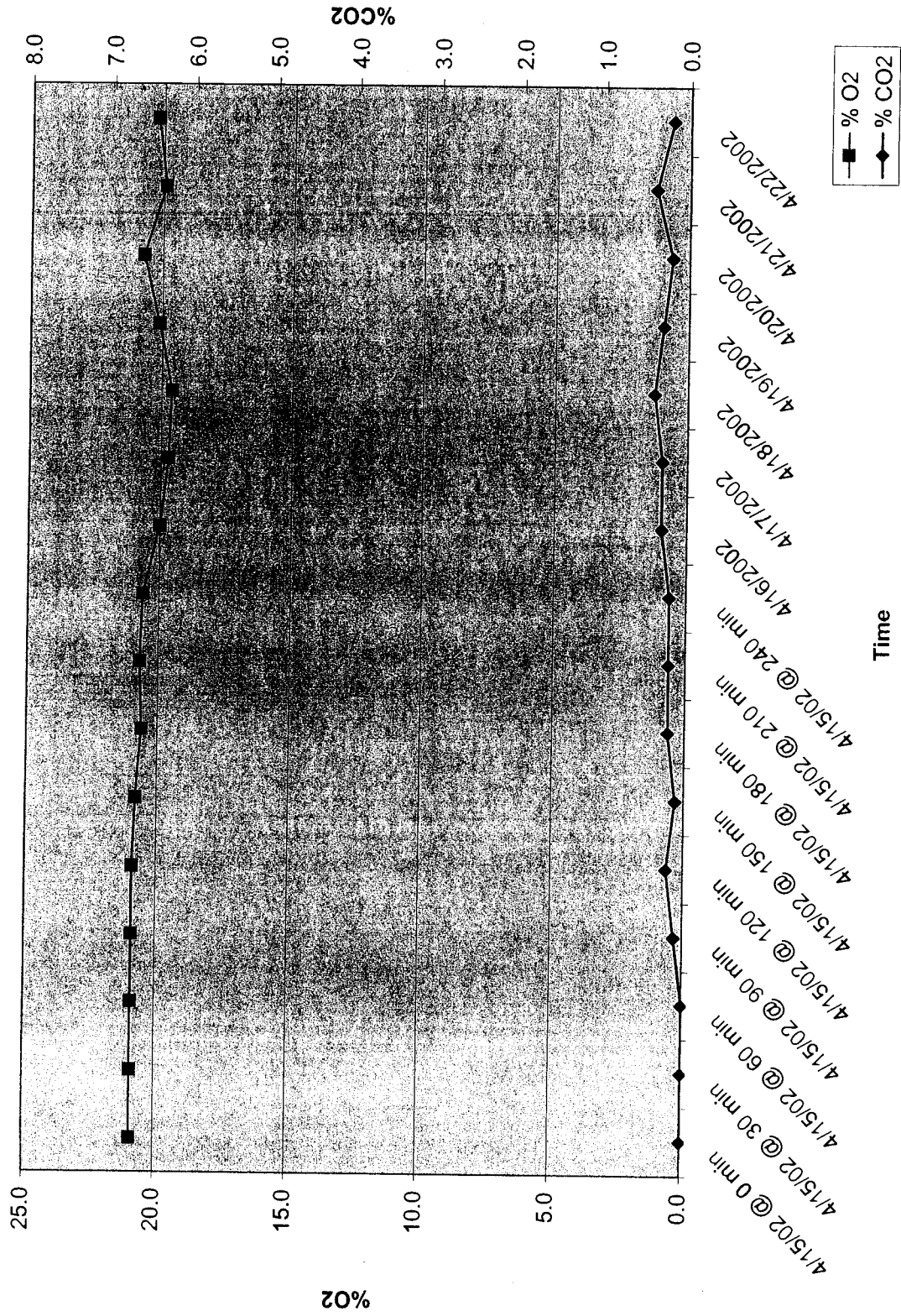
Quarterly Respirometer Test 2 of 5
 MP-2 at 20 ft bgs

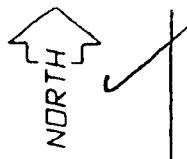


Quarterly Respirometer Test 2 of 5 MP-3 at 10 ft bgs

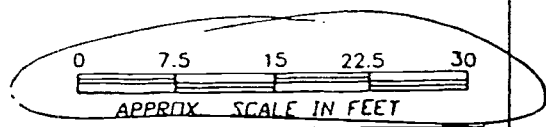
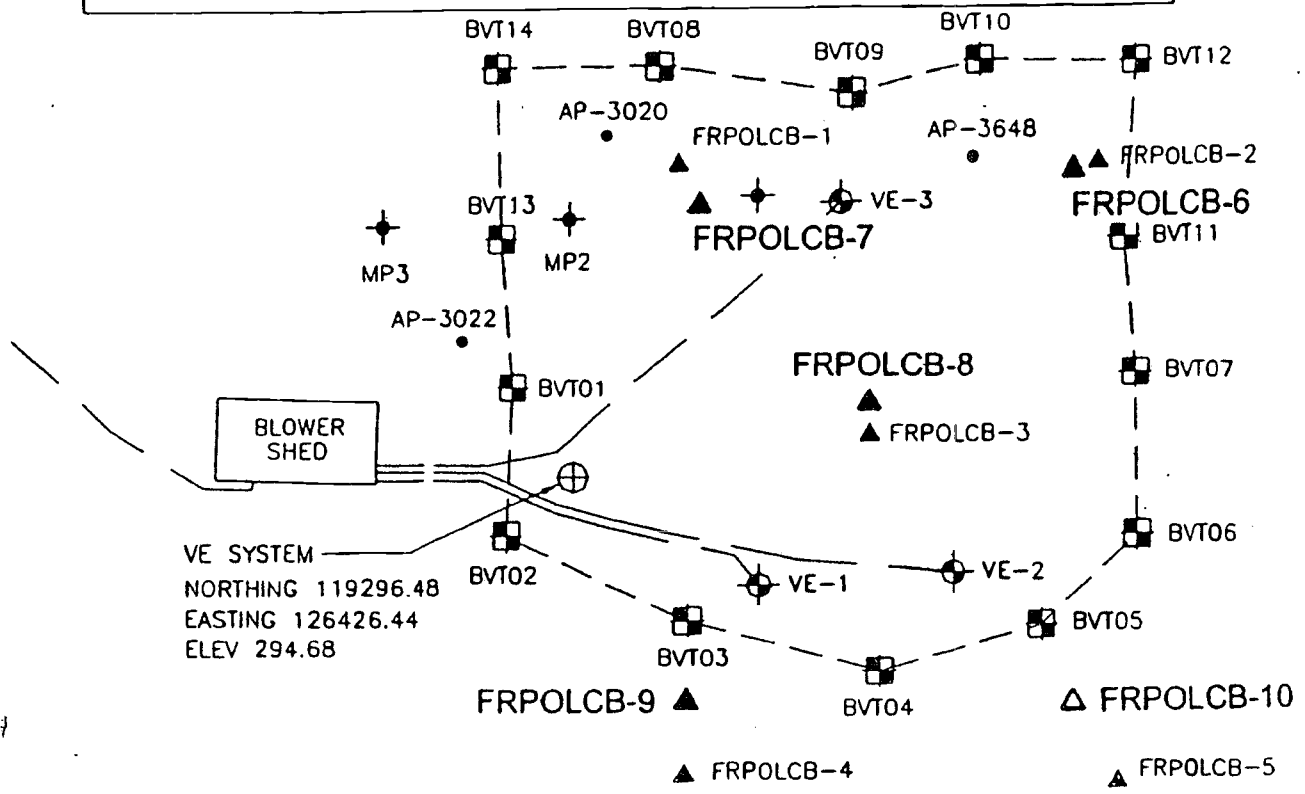


Quarterly Respirometer Test 2 of 5 MP-3 at 20 ft bgs





BUILDING 986
POL LABORATORY



NOTE:

CONTROL IS BASED ON COORDINATES PROVIDED BY COE SURVEY SECTION IN LOCAL FORT RICHARDSON GRID SYSTEM. ELEVATIONS ARE TO MEAN SEA LEVEL DATUM. UG LINES SHOWN CONNECTING THE VE WELLS TO THE BLOWER ARE AS DESCRIBED BY EMCON STAFF AND LOCATED BY STAKES PLACED AT ANGLE POINTS ON GROUND SURFACE. MONUMENT "VE SYSTEM" IS A STANDARD COE DISK MONUMENT SET AS PER EM 1110-1-1002 WITH FINNED ROD SECTION, DRIVEN TO A 4' REFUSAL DEPTH.

LEGEND

- ✦ MP1 SOIL GAS MONITORING POINTS
- ⊕ VE-1 VAPOR EXTRACTION WELL
- AP-3020 MONITORING WELL
- ▲ FRPOLCB-4 CONFIRMATION BORING LOCATION
- ⊠ BVT01 BIOVENTING WELLS
- ⊕ MONUMENT
- — SUBSURFACE PIPE

▲ FRPOLCB-6 2000 CONFIRMATION BORING LOCATION

PROJECTS\01\TRA\01600800



DATE DEC. 1997
DWN. 99/trf2.dwg
CKD. L. RAYMDRE
REV. OCT. 1999
PROJECT No.

FORT RICHARDSON
BUILDING 986 REMEDIAL ACTION
Anchorage, Alaska
SITE LAYOUT

FIGURE
3

QUARTERLY RESPIROMETER TEST 3 OF 5

BUILDING 986 POL LABORATORY

**SOIL VAPOR EXTRACTION AND BIO-VENTING
OPERATIONS AND MAINTENANCE**

**FORT RICHARDSON, ALASKA
CONTRACT NO. DACA85-01-P-0080**

Prepared for:

U.S. Army Corps of Engineers, Alaska District
CEPOA-PM-M-A
P. O. Box 6898
Elmendorf AFB, Alaska 99506-6898

Prepared By:



AGVIQ, Inc.
2121 Abbott Road Suite 100
Anchorage, Alaska 99507

Project #200110

October 2002

OPERATIONAL MONITORING

AGVIQ, Inc. inspected the soil vapor extraction (VE) and bio-venting (BV) system for proper operational parameters. The system appeared to be operating normally, as designed and was tested as initially configured. Power indicators and alarms were operational. The system airflow was free flowing, did not have excessive vacuum, the lower explosive limit (LEL) concentrations were low and the condensate tank was empty and unobstructed.

RESPIROMETER TESTING

Since the VE/BV system re-start on April 22, 2002, AGVIQ has performed three operational monitoring events at the Building 986 POL Lab. During each of these events, initial soil vapor readings were collected from three (3) monitoring points (MP-1, MP-2 and MP-3). Readings using a Combustible Gas Indicator (CGI) were collected from each of the monitoring points. The first two events took place on May 15 and June 12, 2002. The third monitoring event occurred on July 26, 2002 in conjunction with the quarterly respirometer testing. These monthly monitoring events consisted of soil vapor readings and airflow rates (CFM) and vacuum (inches of H₂O) were measured from each vent well. The concentrations of volatiles (ppm) were measured with a calibrated photo-ionization detector (PID) from each vent well at the VE manifold. On July 26, 2002 the third respiration testing of this yearly sequence of O & M activities was performed for a period of eight (8) days. Prior to shutting off the blower for the respirometer test; the VE system was configured to extract air from VE wells 1 and 2, an initial effluent sample was collected, and initial soil vapor readings were collected from three (3) monitoring points. VE well 3 was adjusted from approx. 5% open to 100% open. Soil vapor readings were also collected daily over the next seven (7) days and the blower was restarted on August 2, 2002.

ANALYTICAL SAMPLING PROGRAM

Effluent Sampling

Effluent samples were collected from the VE system exhaust stack, prior to shutdown, to estimate hydrocarbon-mass removal rates as configured. The samples were collected from the exhaust stack using laboratory-prepared 1-liter stainless steel canisters. The samples were sent to CT&E of Anchorage, Alaska. The effluent samples were analyzed for the following parameters:

- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) by EPA 8021B
- Gasoline Range Organics (GRO) by AK 101; and
- Methane, carbon dioxide, oxygen and nitrogen by ASTM D-1945

FINDINGS

Effluent Sampling

The reported analytical results for GRO and BTEX constituents in the exhaust air sample were undetectable (Table 1) at levels stated in the report. The air sample analytical results indicate that the percent levels of oxygen and nitrogen are similar to the concentrations found in the atmosphere. The methane and carbon dioxide results were similar to the previous respirometer test (Table 1). The concentrations of volatiles in the exhaust air at the time of sample collection were low (Table 2). All of the analytical results from the effluent air samples collected during the respirometer sampling event are presented in Appendix A.

Monitoring Events

The CGI results from the monitoring events are presented in Appendix B. The readings at MP-1 suggest biological activity due to the decrease in oxygen and the increase in carbon dioxide, during the extent of the monitoring period. This trend is greater at 20 ft bgs than at 10 ft bgs. This implies that biological activity may be occurring in the vicinity of MP-1 and a significantly higher amount of activity may be taking place at the greater depth. MP-1 is located in the vicinity of the former dry well (Appendix C).

The readings from MP-2 also exhibited evidence of biological activity. However, there was less evidence of biological activity seen at 10 ft bgs, than was exhibited at the same depth at MP-1. Evidence of a considerably higher amount of microbial activity is seen at the 20 ft bgs depth at this location.

MP-3 is located outside of the main contaminated area at the former dry well area. Very little activity was observed at both depths in this location.

To assist in assessing the VE/BV system performance, the airflow rates (CFM) and vacuum (inches of H₂O) were measured from each vent well and concentrations of volatiles (ppm) were measured from each vent well at the exhaust manifold. The airflow rates measured at the VE blower during the third respirometer test ranged between 14 and 26 CFM and the applied vacuum levels at the VE blower ranged between 4 and 19 inches of H₂O. The concentration of volatiles ranged between 0.1 and 3.6 ppm. The airflow, vacuum and concentration of volatiles results for all three monitoring events are listed in Tables 2-4.

CONCLUSION

Review of the monitoring and analytical data indicates that the VE/BV system is actively remediating the subsurface soils in the vicinity of the former dry well located at Building 986. The observations indicate that the remediation is progressing by two processes: bioremediation through the utilization of oxygen in the soil gas and, to a lesser degree,

physical removal of hydrocarbon vapors. The physical removal is diminished due to the age of the system and remedial process.

Evidence of bioremediation and physical removal is obtained through sampling and analysis of the extracted soil gas. Analysis of the VE system effluent for petroleum hydrocarbons indicates that the VE system is successfully extracting contaminants. The presence of elevated CO₂ concentrations in the soil gas analyzed from the VE system exhaust stack may be an indication of hydrocarbon biodegradation in the site soils. In addition, oxygen concentrations in the soil gas indicate that the oxygen is not currently limiting hydrocarbon biodegradation. Similarly, the data collected from the three soil gas monitoring points indicate by the increase in CO₂ concentrations (Appendix D) and significant decrease in O₂ concentrations (Appendix E) that biodegradation is occurring in the soils at the site where contamination was found.

Based on the monthly monitoring, respirometer, and analytical test data, the system operational configuration was not changed. The system was configured as listed in Table 4 - Soil Vapor Extraction & Bio-Venting System Operational Data – July 2002.

TABLE 1
 AIR SAMPLE ANALYTICAL RESULTS

----- PARAMETERS -----

SAMPLE ID	GRO ppm	BTEX ppm	Benzene ppm	Toluene ppm	Ethylbenzene ppm	P & M-Xylene ppm	O-Xylene ppm	Oxygen %	Nitrogen %	Methane %	Carbon Dioxide %
Exhaust 02FRA005AG	U	U	U	U	U	U	U	N/A	N/A	N/A	N/A
Exhaust 02FRA006AG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16	83	U	0.81

Note:
 GRO = Gasoline Range Organics
 BTEX = Benzene, Toluene, Ethylbenzene and Total Xylenes
 U = Undetectable as listed in the analytical report
 N/A = Not Applicable as listed in the analytical report
 ppm = parts per million by volume
 % = percent by volume

TABLE 2
SOIL VAPOR EXTRACTION & BIO-VENTING SYSTEM
OPERATIONAL DATA – MAY 2002

----- PARAMETERS -----

LOCATION	AIR FLOW (CFM)	VACUUM (inches of H ₂ O)	CONCENTRATION OF VOLATILES (ppm)	% WELLS OPEN
VE - 1	15	14	1.9	100 %
VE - 2	16	16	2.7	100 %
VE - 3	21	14	3.5	< 5 %
EXHAUST STACK	24	4	3.6	N/A

Note:
 CFM = Cubic Feet per Minute
 ppm = Parts Per Million
 N/A = Not applicable

TABLE 3
SOIL VAPOR EXTRACTION & BIO-VENTING SYSTEM
OPERATIONAL DATA – JUNE 2002

----- PARAMETERS -----

LOCATION	AIR FLOW (CFM)	VACUUM (inches of H ₂ O)	CONCENTRATION OF VOLATILES (ppm)	% WELLS OPEN
VE - 1	16	18	1.6	100 %
VE - 2	18	14	3.1	100 %
VE - 3	24	12	3.6	5 %
EXHAUST STACK	26	5	3.4	N/A

Note:
 CFM = Cubic Feet per Minute
 ppm = Parts Per Million
 N/A = Not applicable

TABLE 4
SOIL VAPOR EXTRACTION & BIO-VENTING SYSTEM
OPERATIONAL DATA – JULY 2002

----- PARAMETERS -----

LOCATION	AIR FLOW (CFM)	VACUUM (inches of H ₂ O)	CONCENTRATION OF VOLATILES (ppm)	% WELLS OPEN
VE - 1	21	19	0.1	100 %
VE - 2	16	17	1.6	100 %
VE - 3	14	17	1.1	100 %
EXHAUST STACK	24	8	2.2	N/A

Note:
 CFM = Cubic Feet per Minute
 ppm = Parts Per Million
 N/A = Not applicable

Appendix A

Laboratory Analytical Results

**CT&E Environmental Services Inc.**

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: <http://www.cteesi.com>

Darrin Lawless
AGVIQ Inc.
2121 Abbott Road Suite 100
Anchorage, AK 995074453

Work Order: 1024677
Bldg 986 FRA BV S E 5020011
Client: AGVIQ Inc.
Report Date: September 05, 2002

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by CT&E. A copy of our Quality Control Manual that outlines this program is available at your request.

As specifically noted, all statements and data in this report are in conformance to the provisions set forth in our Quality Assurance Program Plan.

If you have any questions regarding this report or if we can be of any other assistance, please call your CT&E Project Manager at (907) 562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

- U Indicates the analyte was analyzed for but not detected.
- F Indicates an estimated value that falls below PQL, but is greater than the MDL.
- B Indicates the analyte is found in the blank associated with the sample.
- * The analyte has exceeded allowable limits.
- GT Greater Than
- D Secondary Dilution
- LT Less Than
- ! Surrogate out of range



CT&E Environmental Services Inc.

CT&E Ref.# 1024677001
 Client Name AGVIQ Inc.
 Project Name/# Bldg 986 FRA BV S E 5020011
 Client Sample ID 02FRA005AG
 Matrix Gas & Air
 Ordered By

All Dates/Times are Alaska Standard Time
 Printed Date/Time 09/05/2002 12:25
 Collected Date/Time 07/26/2002 11:02
 Received Date/Time 07/26/2002 17:00
 Technical Director Stephen C. Ede
 Released By *J. Widebank*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department								
Gasoline Range Organics	20.0 U	20.0	ppm	CTE 8015M/8021B		07/30/02	07/30/02	PFL
Benzene	0.780 U	0.780	ppm	CTE 8015M/8021B		07/30/02	07/30/02	PFL
Toluene	0.660 U	0.660	ppm	CTE 8015M/8021B		07/30/02	07/30/02	PFL
Ethylbenzene	0.580 U	0.580	ppm	CTE 8015M/8021B		07/30/02	07/30/02	PFL
P & M -Xylene	0.580 U	0.580	ppm	CTE 8015M/8021B		07/30/02	07/30/02	PFL
o-Xylene	0.580 U	0.580	ppm	CTE 8015M/8021B		07/30/02	07/30/02	PFL
rates								
1,4-Difluorobenzene <Surr>	90.4		%	CTE 8015M/8021B	60-120	07/30/02	07/30/02	PFL
4-Bromofluorobenzene <Surr>	89.5		%	CTE 8015M/8021B	50-150	07/30/02	07/30/02	PFL



Air Toxics Ltd. Introduces the Electronic Report

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

This electronic report includes the following:

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

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

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

Hours 8:00 A.M to 6:00 P.M. Pacific

E-mail to:samplereceiving@airtoxics.com

@ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

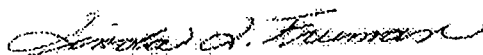
WORK ORDER #: 0208145

Work Order Summary

CLIENT:	Ms. Rhonda Strucher CT & E 200 West Potter Anchorage, AK 99518	BILL TO:	Ms. Rhonda Strucher CT & E 200 West Potter Anchorage, AK 99518
PHONE:	907-562-2343	P.O. #	
FAX:	907-561-5301	PROJECT #	
DATE RECEIVED:	8/6/02	CONTACT:	Lisa Argento
DATE COMPLETED:	8/19/02		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT YAC/PRES.</u>
01A	1024677002 (02FRA006AG)	Modified ASTM D-1945	0.0 "Hg
02A	Lab Blank	Modified ASTM D-1945	NA
03A	LCS	Modified ASTM D-1945	NA

CERTIFIED BY:



Laboratory Director

DATE: 08/19/02

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

Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,

Accreditation number: E87680, Effective date: 07/01/02, Expiration date: 06/30/03

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
ASTM D-1945 Modified
CT & E
Workorder# 0208145

One Sample Cylinder sample was received on August 06, 2002. The laboratory performed analysis via Modified ASTM Method D-1945 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of up to 1.0 mL of sample. With the exception of analyses conducted in accordance with AFCEE 3.0, all reported compound quantifications were calculated from response factors derived from the first Continuing Calibration Verification of each relevant analytical batch. See the data sheets for the reporting limits for each compound.

<i>Requirement</i>	<i>ASTM D-1945</i>	<i>ATL Modifications</i>
Quantification based on average response factor in the Initial Calibration.	NELAC Standard 5.9.4.2.1(c)	With the exception of samples analyzed under AFCEE 3.0 protocol, all quantification based on the response factor derived from the first Continuing Calibration Verification of each relevant analytical batch.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.

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

- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: 1024677002 (02FRA006AG)

ID#: 0208145-01A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1945

File Name:	3080912	Date of Collection:	7/26/02
Dil. Factor:	2.02	Date of Analysis:	8/9/02

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	16
Nitrogen	0.20	83
Methane	0.00020	Not Detected
Carbon Dioxide	0.0020	0.81

Container Type: Sample Cylinder

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0208145-02A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1945

File Name:	3080905	Date of Collection:	NA
Dil. Factor:	1.00	Date of Analysis:	2/2/02

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.0010	Not Detected

Container Type: NA - Not Applicable

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0208145-03A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1945

File Name	308090A	Date of Collection	NA
Dil Factor	1.00	Date of Analysis	1/9/02

Compound	Rpt. Limit (%)	%Recovery
Oxygen	0.10	104
Nitrogen	0.10	102
Methane	0.00010	104
Carbon Dioxide	0.0010	104

Container Type: NA - Not Applicable

AGVIO 2121 Abbott Rd. Suite 100
ANCHORAGE ENVIRONMENTAL SERVICES, Anchorage, Alaska 99507
phone (907) 341-6299
fax (907) 341-6256

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST

Date 7/26/02 Page 1 of 1 Cooler # COC#

Client: <u>AGVIO, Inc</u>		Sample Conditions		ANALYTICAL METHOD REQUESTED				
Project Site: <u>Bldg. 906 FRA</u>	Sampled by: <u>PBD</u>	Seal #		Number of Containers	Comments: 1024677			
Sampling Company: <u>AGVIO, Inc</u>	Seal intact upon receipt by sampling company? Yes <input type="checkbox"/> No <input type="checkbox"/>							
Sampling Site: <u>BY System Exhaust</u>	Condition of contents:			Grain Size Dist: ASTM D422				
Project Manager: <u>Darrin Lawless</u>	Sealed for Shipping by:			CH4, CO2, O2, N2 ASTM 1945				
Team Leader: <u>Scott Kendall</u>	Initial contents temp(C):			Total Organic Carbon EPA 8310B				
Project #: <u>5020011</u>	Sampling status:			GROB/TEX AK101/EPA 8021B				
Receiving Lab: <u>CTEE</u>	Seal intact upon receipt by laboratory? Yes <input type="checkbox"/> No <input type="checkbox"/>			DRO AK102				
Address:	Contents temp upon receipt:							
Purchase Order # <u>DACA-85-01-7-0080</u>	Condition of contents:							
Date	Time	Location ID	Sample ID	Matrix			LabID	Turnaround Time Required
<u>7/26/02</u>	<u>1102</u>	<u>Exhaust</u>	<u>02-FRA005AG</u>	<u>Air</u>			<u>01A</u>	Standard (30 days)
<u>7/26/02</u>	<u>1108</u>	<u>Exhaust</u>	<u>02-FRA006AG</u>	<u>Air</u>			<u>02A</u>	24 hr. <input type="checkbox"/> 48 hr. <input type="checkbox"/>
								3-5 days <input type="checkbox"/> 7 days <input type="checkbox"/>
								14 days <input type="checkbox"/> days <input type="checkbox"/>
								Provide verbal preliminary results? Yes <input type="checkbox"/> No <input type="checkbox"/>
								Provide FAX preliminary results? Yes <input type="checkbox"/> No <input type="checkbox"/>
								Requested report date
						EDF data required? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Relinquished by:			Relinquished by:			Shipping Details		
Signature: <u>[Signature]</u>	Signature					Delivered to shipper by: <u>AGVIO, Inc</u>		
Printed Name: <u>B. B. Davis</u>	Printed Name					Method of shipment: <u>Hand Delivered</u> Airbill # <u> </u>		
Firm: <u>AGVIO, Inc</u>	Firm					Received for lab: <u> </u> Signed: <u> </u>		
Date/Time: <u>7/26/02 1700</u>	Date/Time					Special Instructions/Comments: <u>COE Data Deliverables</u>		
Received by:			Received by:					
Signature: <u>[Signature]</u>	Signature							
Printed Name: <u>ROBERT TAYLOR</u>	Printed Name							
Firm: <u>CTEE</u>	Firm							
Date/Time: <u>7/26/02 1700</u>	Date/Time							



SAMPLE RECEIPT FORM

CT&E WO

1024677

Yes No

Are samples RUSH, priority, or within 72 hrs. of hold time?
If yes have you done e-mail notification?

Are samples within 24 hrs. of hold time or due date?
If yes, have you spoken with Supervisor?

Archiving bottles - if required, are they properly marked?

Are there any problems (e.g., ids, analyses)?

Were samples preserved correctly and pH verified?

Has Project Manager been notified of problems?
Is this a DOD project? (USACE, Navy, AFCEE):

If yes, complete page 2 of Sample Receipt Form
Will a data package be required? LEVEL II
If this is for PWS, provide PWSID.
Is there a quote for this project?
Will courier charges apply?
Method of payment?

Completed by (signature): [Signature] (print): FOREST TAYLOR

Notes:

of each Container Received:

950 ml amber unpres'd

950 ml amber w / HCl

500 ml amber w / H₂SO₄

1L cubies unpres'd

1L Cubitainers w / HNO₃

1L Cubitainers w / H₂SO₄

1L Cubitainers w / NaOH + ZnAc

250 mL Nalgene NaOH

120 ml coli bottles

60 ml Nalgene unpres'd

60 mL Nalgene w/ H₂SO₄

8 oz amber unpres'd

4 oz amber unpres'd

4 oz w / septa w / MeOH

40 ml vials w / HCl

40 mL ascorbic acid + HCl

2 Other (specify) SS CYLINDER

Other (specify)

Other (specify)

Other (specify)

TO BE COMPLETED IN ANCHORAGE UPON ARRIVAL FROM FAIRBANKS:

DATE / TIME:

COOLER AND TEMP BLANK READINGS*

Cooler ID	Temp Blank	Cooler

Cooler ID	Temp Blank	Cooler

CUSTODY SEALS INTACT: YES / NO # / WHERE:
COMPLETED BY (INITIAL):

Due Date: 8/14/02

Received Date/Time: 7/21/02 1300

Received Temperature*: AMBIENT

Thermometer ID: NONE

Cooler ID Temp Blank Cooler Temp

Matrix of each Sample:

4 " " # (-2)

" " "

" " "

" " "

" " "

Trip Blank

BMS/BMSD

Additional Sample Remarks

Extra Sample Volume?

Limited Sample Volume?

Field pres'd for volatiles?

Field-filtered for dissolved?

Lab-filtered for dissolved?

Ref Lab required?

Log-in proofed by:

*Temperature readings include thermometer correction factors.



The following *must* be completed for *all* DOD projects (AFCEE, Navy, and USACE)

Yes _____ No

Is received temperature $4 \pm 2^\circ\text{C}$?

Exceptions: _____

Samples/Analyses affected: None

Rad Screen performed?

Result: _____

Was there an airbill, etc.? Note #:

Was cooler sealed with custody seals? Fax'd to COE?

/ where: _____

Were seals intact upon arrival? N/A

Was there a COC with cooler?

Was the COC filled out properly?

Did the COC indicate ACOE / AFCEE project? (if applicable)

Did the COC and samples correspond?

Were all samples packed to prevent breakage? N/A

packing material: _____

Were all samples unbroken and clearly labeled?

Were all samples sealed in separate plastic bags?

Were all bottles for volatiles free of headspace? N/A

Were correct container / sample sizes submitted?

Is sample condition good?

Was client notified of problems? (specify below) _____

Individual contacted: _____

Date / Time: _____

Phone / Fax: _____

Completed by (sign): Forest Taylor (print): FOREST TAYLOR

Log-in proofed by: _____

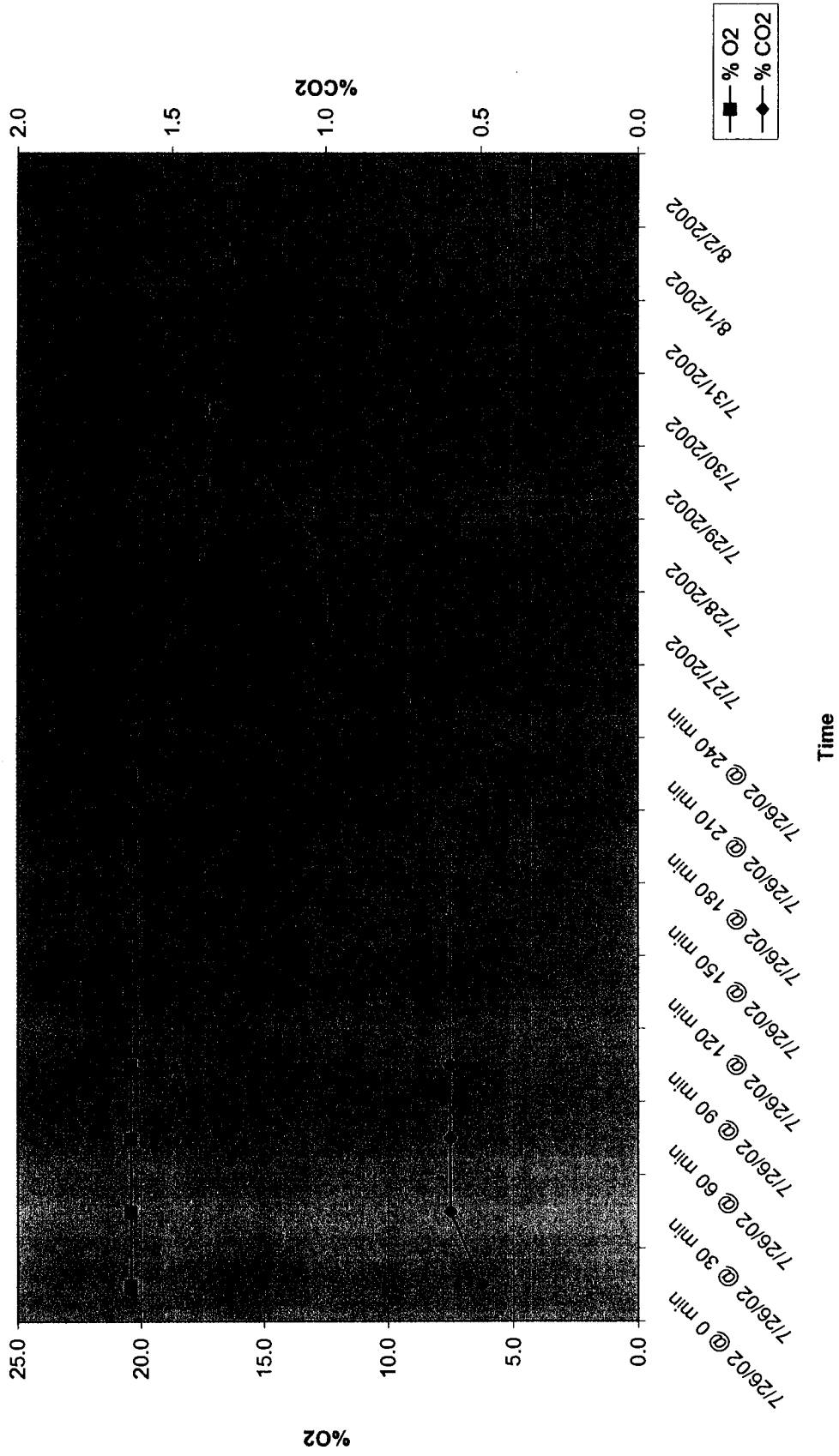
Appendix B

**Combustible Gas Indicator Results
From Quarterly Respirometer Test 3 of 5**

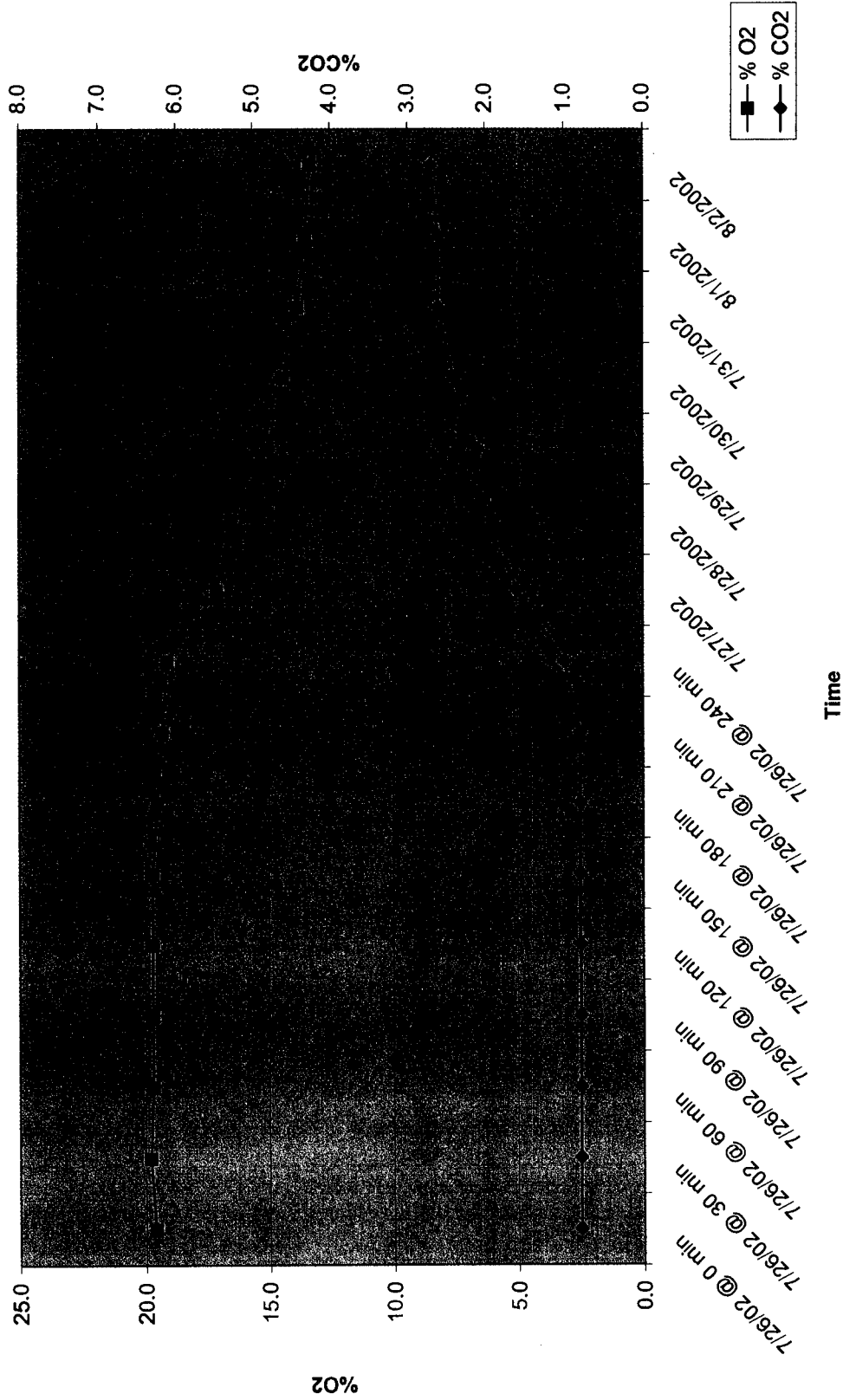
DATE	MP - 1				MP - 2				MP - 3			
	10 ft bgs (Blue)		20 ft bgs (Green)		10 ft bgs (Blue)		20 ft bgs (Green)		10 ft bgs (Blue)		20 ft bgs (Green)	
	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂
5/15/2002	0.3	20.8	0.9	19.8	0.1	20.8	0.2	20.7	0.1	20.8	0.0	20.9
6/12/2002	0.4	20.9	0.8	20.3	0.2	20.9	0.4	20.9	0.4	20.9	0.2	20.8
7/26/02 @ 0 min	0.5	20.4	0.8	19.6	0.2	20.9	0.3	20.5	0.0	20.9	0.2	20.6
7/26/02 @ 30 min	0.6	20.4	0.8	19.8	0.2	20.8	0.4	20.4	0.2	20.7	0.2	20.7
7/26/02 @ 60 min	0.6	20.4	0.8	19.7	0.2	20.8	0.4	20.3	0.2	20.8	0.2	20.6
7/26/02 @ 90 min	0.6	20.4	0.8	19.7	0.2	20.8	0.4	20.3	0.2	20.8	0.2	20.7
7/26/02 @ 120 min	0.6	20.4	0.8	19.7	0.2	20.8	0.4	20.0	0.2	20.8	0.2	20.7
7/26/02 @ 150 min	0.6	20.4	0.8	19.7	0.2	20.8	0.4	19.8	0.2	20.7	0.2	20.6
7/26/02 @ 180 min	0.6	20.4	0.8	19.5	0.2	20.8	0.5	19.8	0.1	20.7	0.2	20.6
7/26/02 @ 210 min	0.7	20.4	0.8	19.3	0.2	20.8	0.5	19.8	0.2	20.7	0.2	20.6
7/26/02 @ 240 min	0.7	20.2	1.0	19.1	0.2	20.8	0.5	19.7	0.2	20.7	0.2	20.6
7/27/2002	1.0	18.5	1.6	17.1	0.2	20.6	0.6	17.0	0.2	20.5	0.3	20.4
7/28/2002	1.0	17.9	1.9	16.5	0.2	20.6	0.6	16.6	0.2	20.6	0.2	20.2
7/29/2002	1.2	17.5	2.1	15.0	0.2	20.6	0.8	15.9	0.2	20.5	0.2	20.0
7/30/2002	1.4	16.9	2.4	14.4	0.2	20.6	1.0	15.6	0.4	20.4	0.2	20.1
7/31/2002	1.5	16.7	2.6	13.8	0.2	20.4	1.3	14.0	0.4	20.2	0.2	20.0
8/1/2002	1.6	16.5	2.6	13.5	0.2	20.4	1.5	13.9	0.4	20.2	0.2	20.0
8/2/2002	1.6	16.4	2.7	13.3	0.2	20.4	1.6	13.9	0.4	20.2	0.2	20.0

Note:
MP = monitoring point
ft = feet
bgs = below ground surface

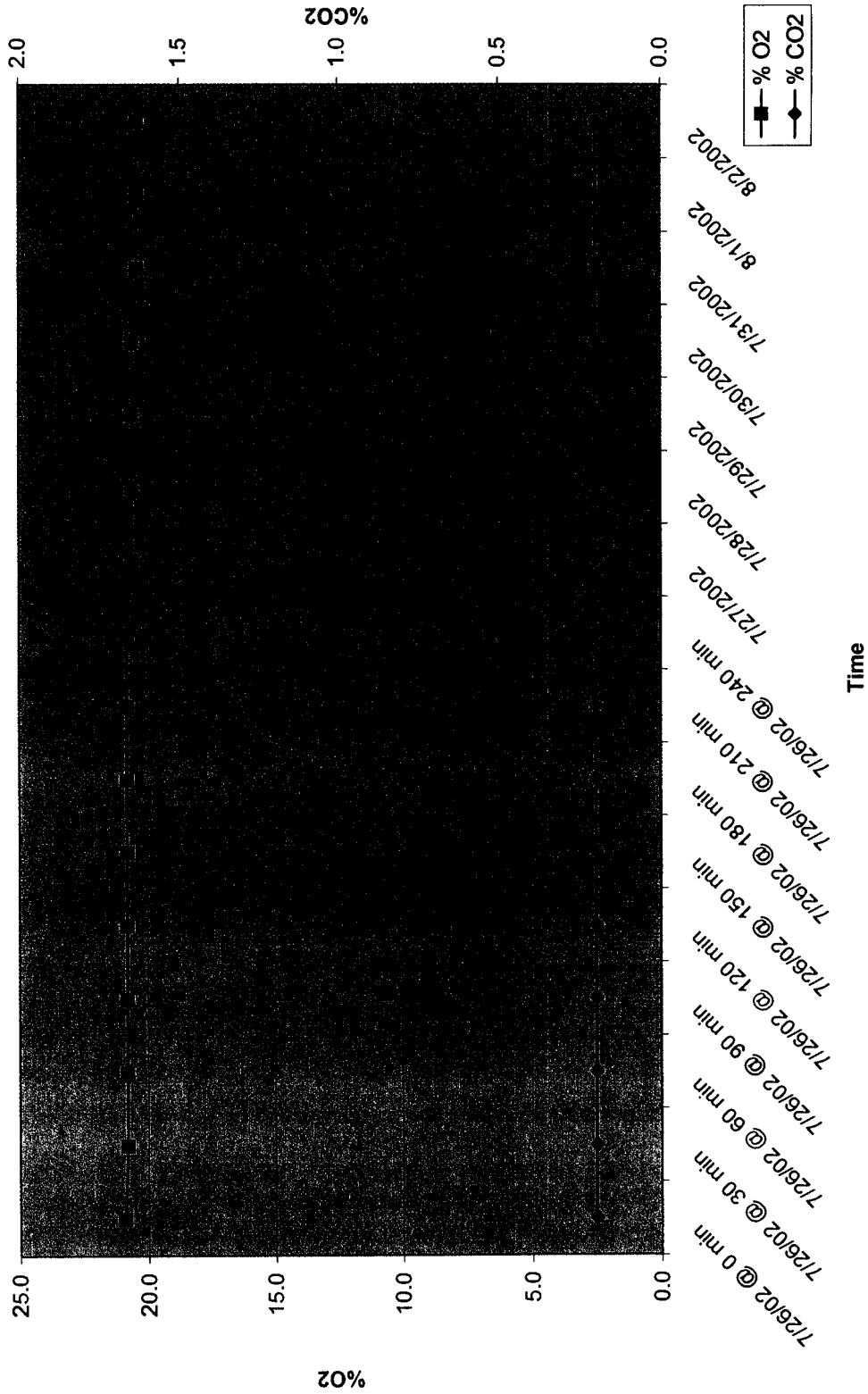
Quarterly Respirometer Test 3 of 5
MP-1 at 10 ft bgs



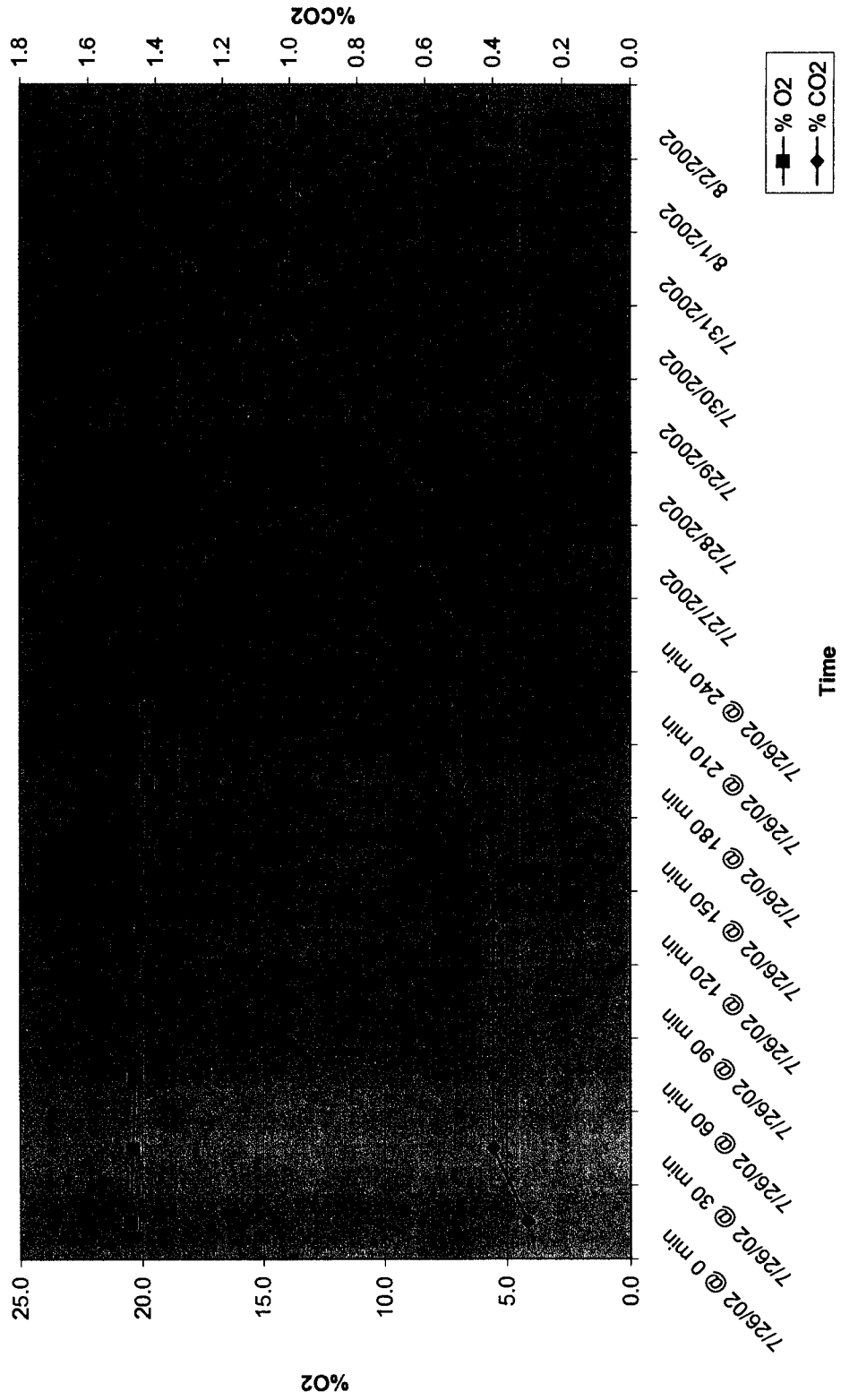
Quarterly Respirometer Test 3 of 5
MP-1 at 20 ft bgs



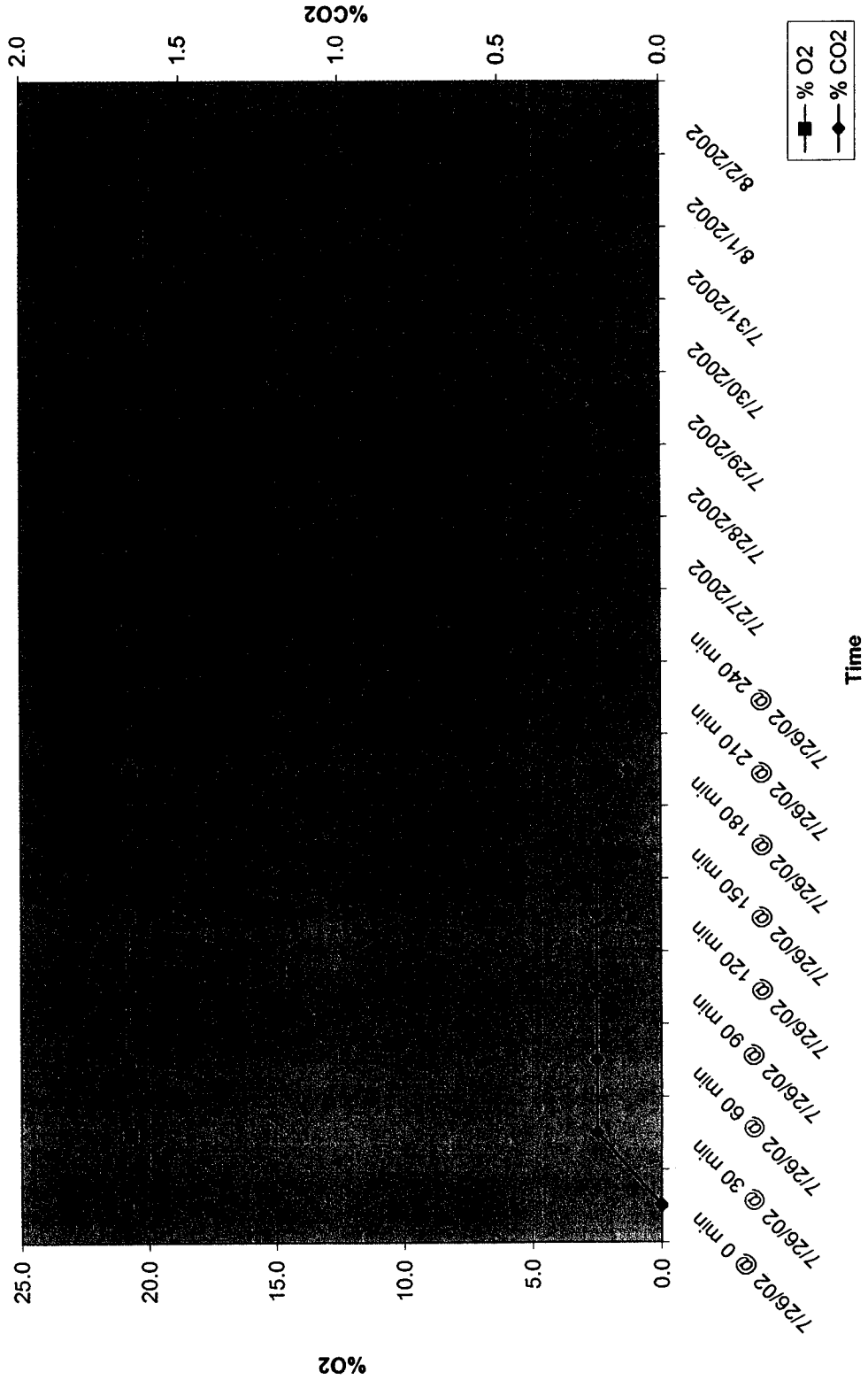
Quarterly Respirometer Test 3 of 5
MP-2 at 10 ft bgs



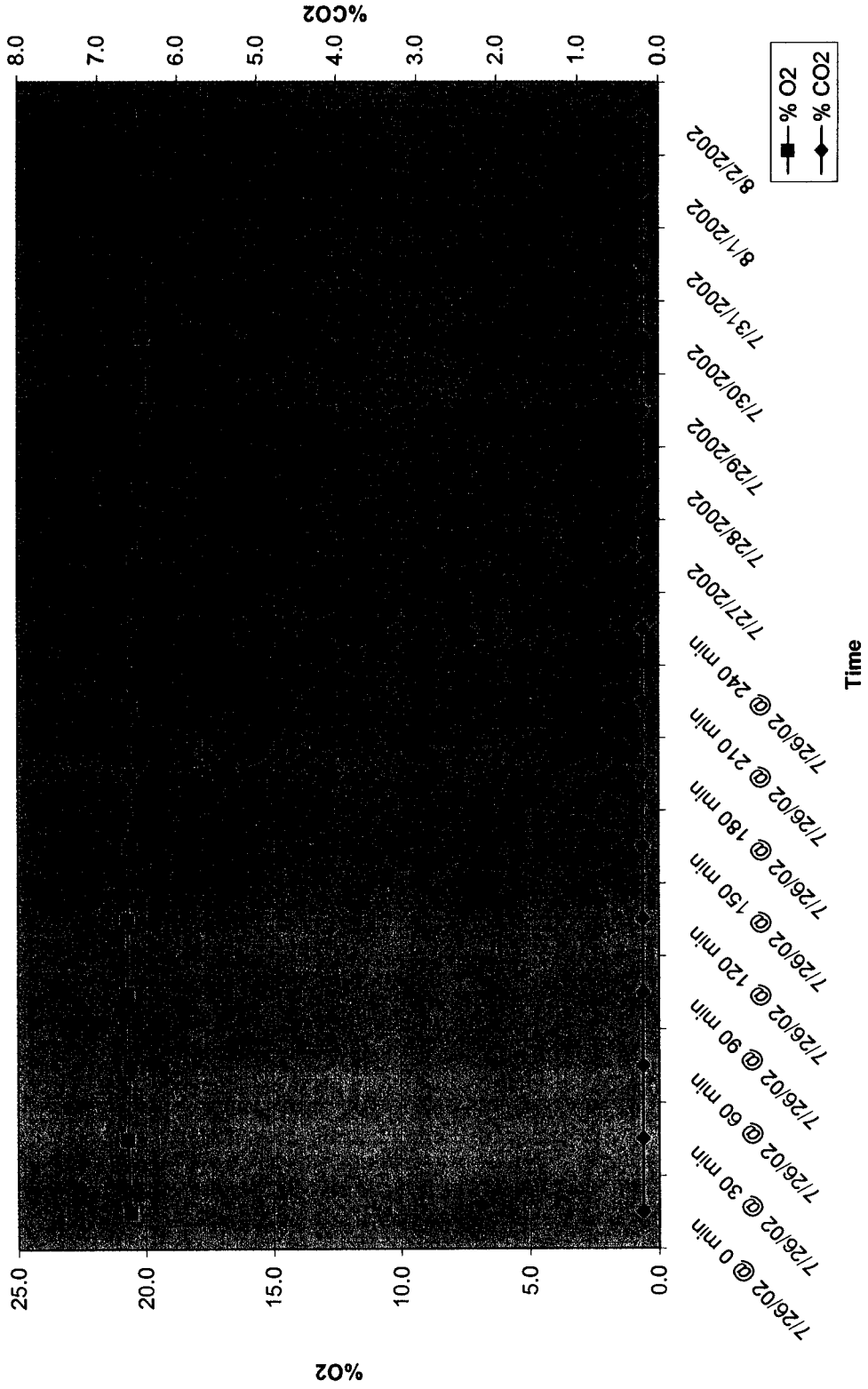
**Quarterly Respirometer Test 3 of 5
MP-2 at 20 ft bgs**



Quarterly Respirometer Test 3 of 5
MP-3 at 10 ft bgs



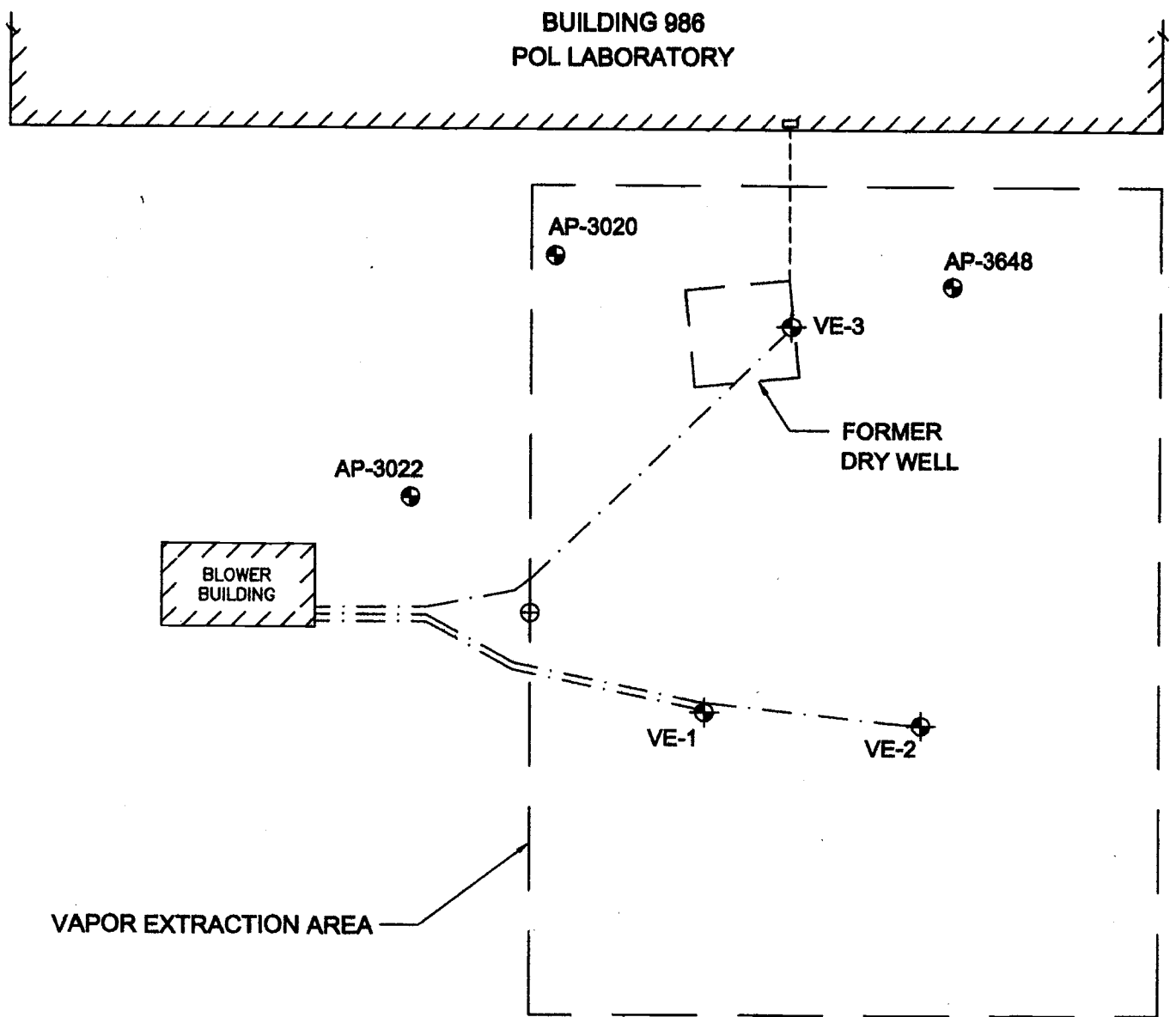
Quarterly Respirometer Test 3 of 5
MP-3 at 20 ft bgs



Appendix C

Site map

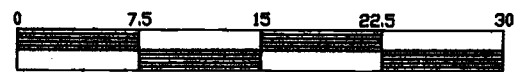
**BUILDING 986
POL LABORATORY**



VAPOR EXTRACTION AREA

LEGEND

- ⊕ MONITORING WELL LOCATION
- ⊕ VAPOR EXTRACTION WELL LOCATION
- ⊕ TYPE A SURVEY MONUMENT
- SUBSURFACE PIPE
- · - SUBSURFACE VE PIPE



APPROXIMATE SCALE IN FEET



2121 Abbott Road
Anchorage, Alaska
99507-4488

DATE DEC. 2001
DWN. TWS
CKD. DML
REV. 1

CONTRACT No. DACA85-01-P-0080

**FORT RICHARDSON, ALASKA
BUILDING 986 OPERATION & MAINTENANCE**

SITE LAYOUT MAP

FIGURE

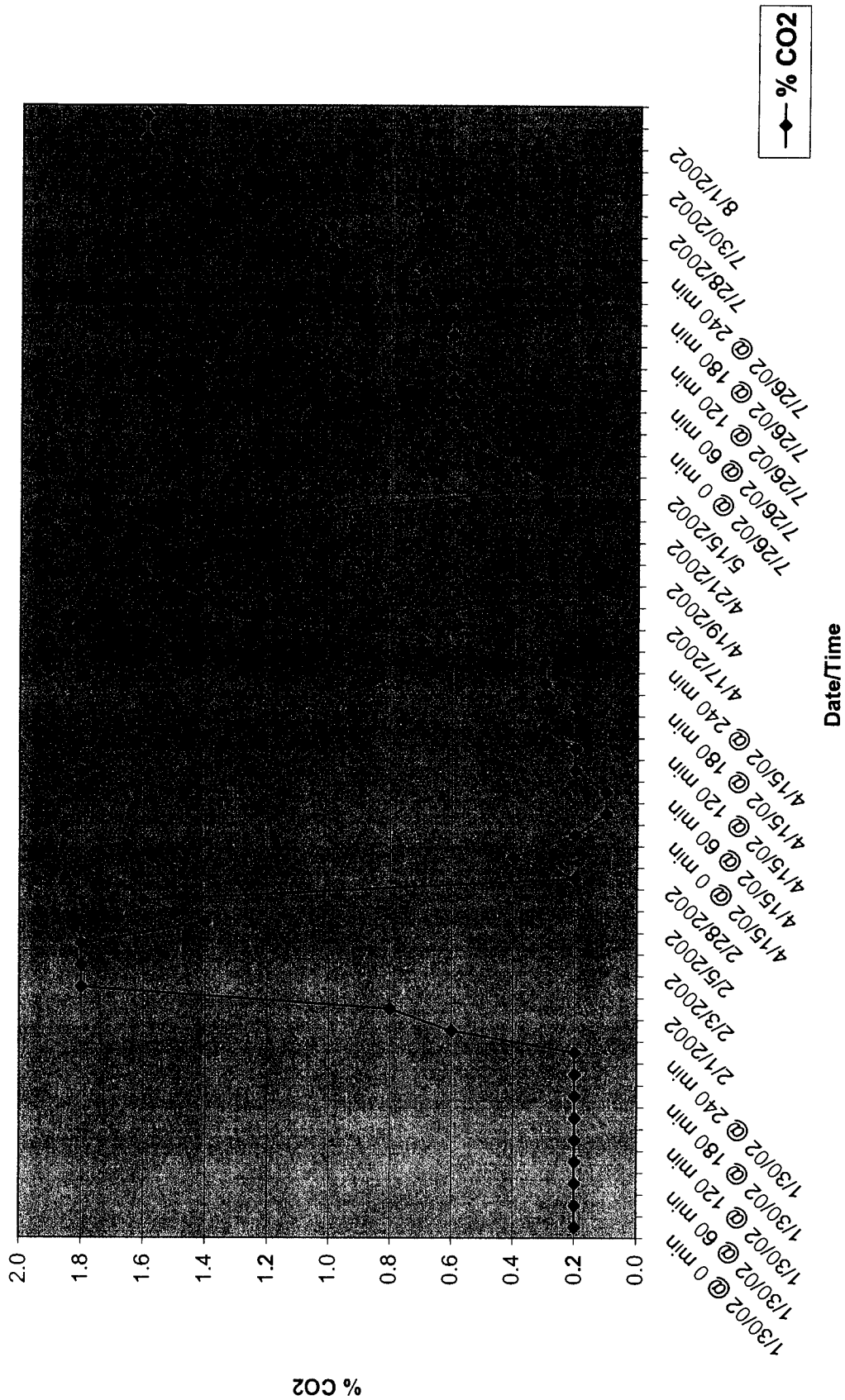
2

Appendix D

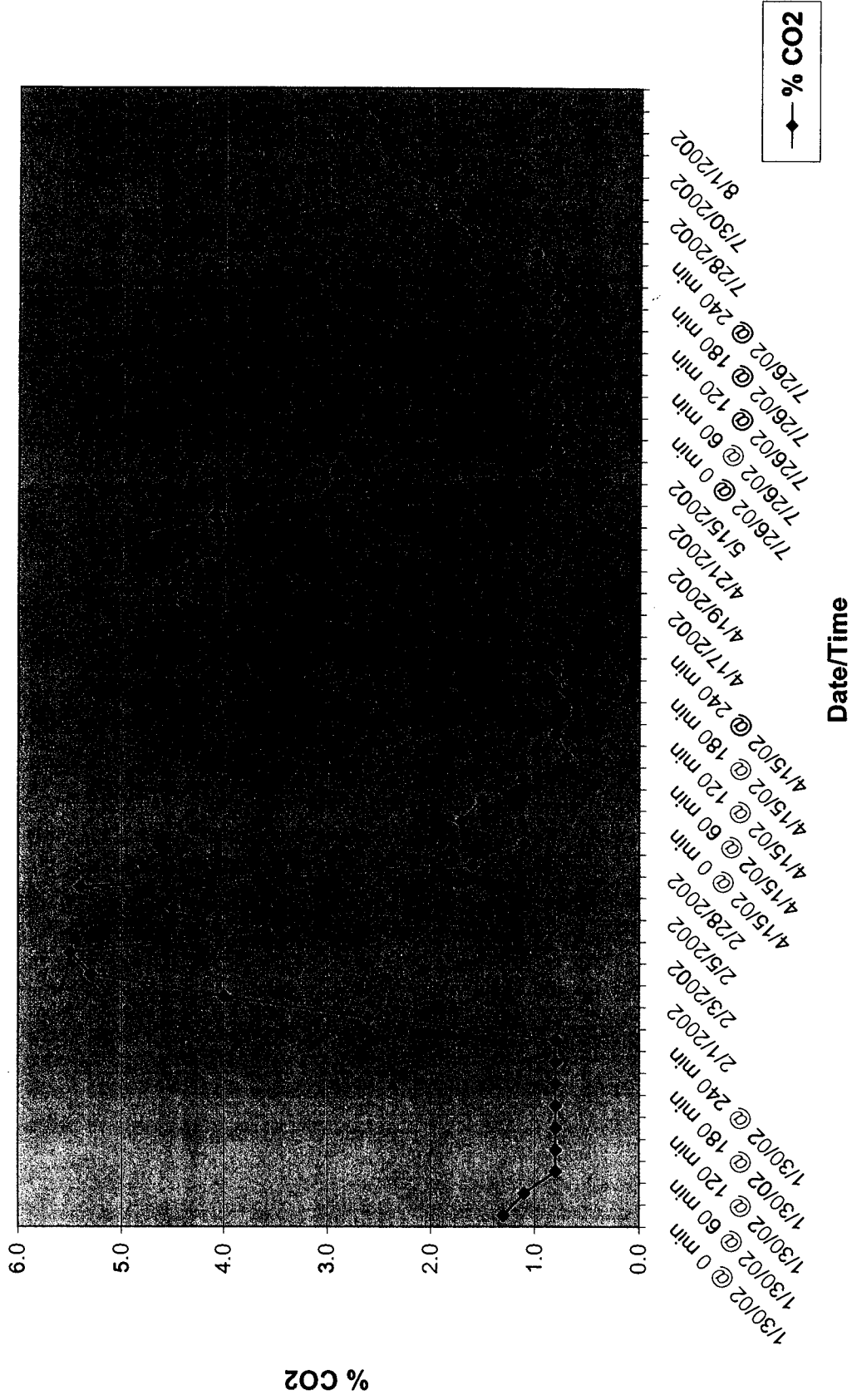
Carbon Dioxide Comparison

DATE	MP - 1		MP - 2		MP - 3	
	10 ft bgs (Blue)	20 ft bgs (Green)	10 ft bgs (Blue)	20 ft bgs (Green)	10 ft bgs (Blue)	20 ft bgs (Green)
	% CO ₂	% CO ₂	% CO ₂	% CO ₂	% CO ₂	% CO ₂
1/30/02 @ 0 min	0.2	1.3	0.0	0.6	0.0	0.1
1/30/02 @ 30 min	0.2	1.1	0.0	0.6	0.0	0.0
1/30/02 @ 60 min	0.2	0.8	0.0	0.6	0.0	0.0
1/30/02 @ 90 min	0.2	0.8	0.0	0.8	0.0	0.2
1/30/02 @ 120 min	0.2	0.8	0.0	0.8	0.0	0.1
1/30/02 @ 150 min	0.2	0.8	0.0	0.8	0.0	0.1
1/30/02 @ 180 min	0.2	0.8	0.0	1.0	0.0	0.1
1/30/02 @ 210 min	0.2	0.8	0.0	1.2	0.0	0.2
1/30/02 @ 240 min	0.2	0.8	0.0	1.4	0.0	0.2
1/31/2002	0.6	2.6	0.2	3.0	0.2	0.2
2/1/2002	0.8	4.0	0.0	3.6	0.0	0.2
2/2/2002	1.8	5.3	0.2	3.7	0.0	0.4
2/3/2002	1.8	5.5	0.1	4.8	0.0	0.4
2/4/2002	1.8	3.6	0.1	5.0	0.2	0.5
2/5/2002	1.4	4.5	0.2	5.6	0.1	0.4
2/6/2002	1.6	5.4	0.1	6.8	0.2	0.4
2/28/2002	0.2	1.6	0.0	0.4	0.0	0.0
3/28/2002	0.4	1.1	0.0	0.4	0.0	0.1
4/15/02 @ 0 min	0.2	1.7	0.0	0.4	0.0	0.0
4/15/02 @ 30 min	0.1	1.5	0.0	0.4	0.0	0.0
4/15/02 @ 60 min	0.1	1.1	0.0	0.6	0.0	0.0
4/15/02 @ 90 min	0.2	0.7	0.0	0.6	0.0	0.1
4/15/02 @ 120 min	0.2	0.8	0.0	0.6	0.0	0.2
4/15/02 @ 150 min	0.3	0.6	0.0	0.7	0.0	0.1
4/15/02 @ 180 min	0.2	0.7	0.0	0.8	0.0	0.2
4/15/02 @ 210 min	0.3	0.8	0.0	1.0	0.0	0.2
4/15/02 @ 240 min	0.3	0.7	0.0	1.2	0.0	0.2
4/16/2002	0.7	2.9	0.0	2.7	0.0	0.3
4/17/2002	1.4	4.4	0.2	3.4	0.0	0.3
4/18/2002	1.4	4.6	0.1	4.2	0.0	0.4
4/19/2002	1.6	4.3	0.0	3.8	0.1	0.3
4/20/2002	1.6	4.8	0.0	3.0	0.0	0.2
4/21/2002	1.3	4.1	0.1	3.5	0.0	0.4
4/22/2002	1.0	3.0	0.0	3.8	0.0	0.2
5/15/2002	0.3	0.9	0.1	0.2	0.1	0.0
6/12/2002	0.4	0.8	0.2	0.4	0.4	0.2
7/26/02 @ 0 min	0.5	0.8	0.2	0.3	0.0	0.2
7/26/02 @ 30 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 60 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 90 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 120 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 150 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 180 min	0.6	0.8	0.2	0.5	0.1	0.2
7/26/02 @ 210 min	0.7	0.8	0.2	0.5	0.2	0.2
7/26/02 @ 240 min	0.7	1.0	0.2	0.5	0.2	0.2
7/27/2002	1.0	1.6	0.2	0.6	0.2	0.3
7/28/2002	1.0	1.9	0.2	0.6	0.2	0.2
7/29/2002	1.2	2.1	0.2	0.8	0.2	0.2
7/30/2002	1.4	2.4	0.2	1.0	0.4	0.2
7/31/2002	1.5	2.6	0.2	1.3	0.4	0.2
8/1/2002	1.6	2.6	0.2	1.5	0.4	0.2
8/2/2002	1.6	2.7	0.2	1.6	0.4	0.2

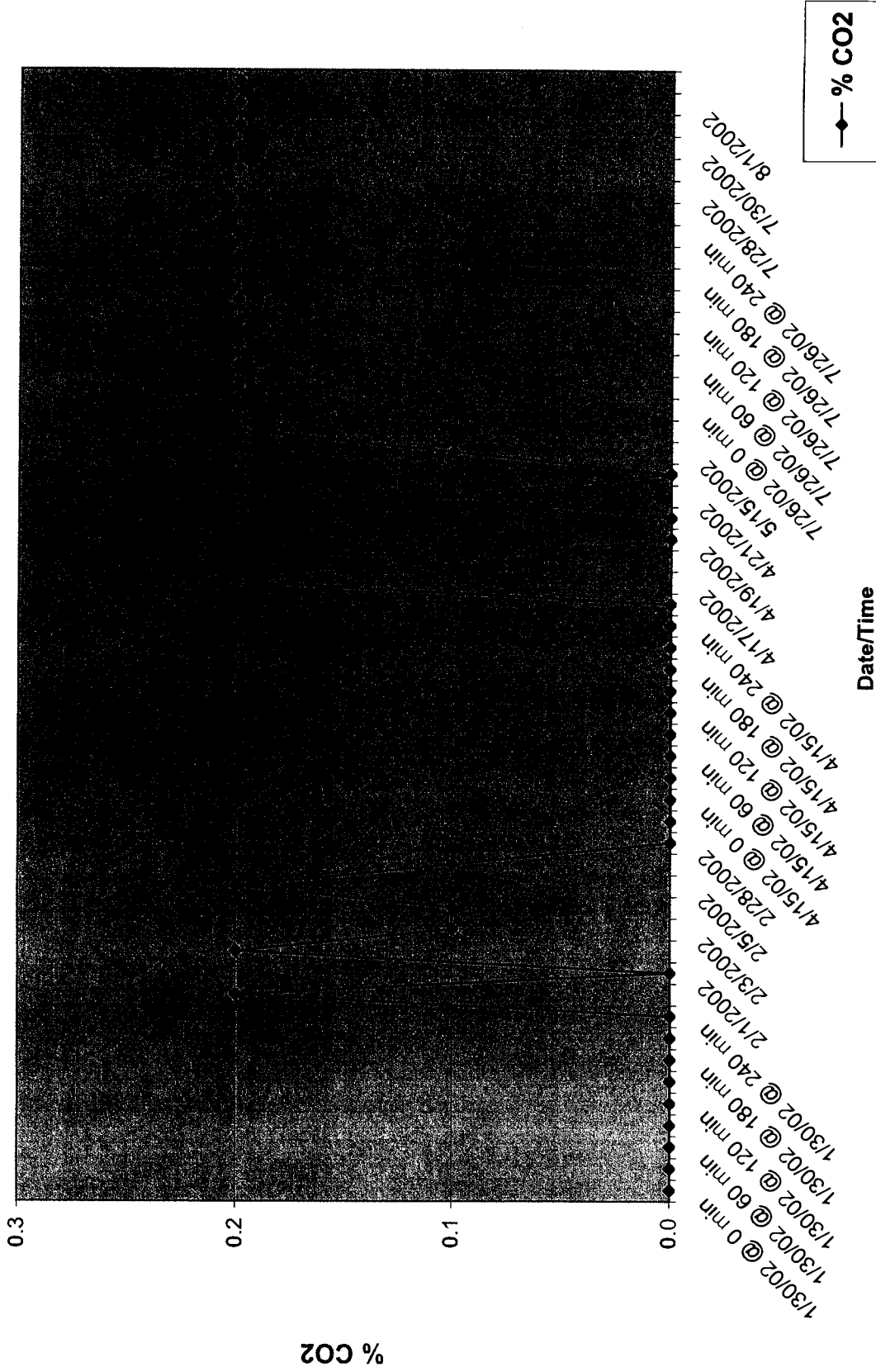
Carbon Dioxide Comparison MP-1 at 10 ft bgs



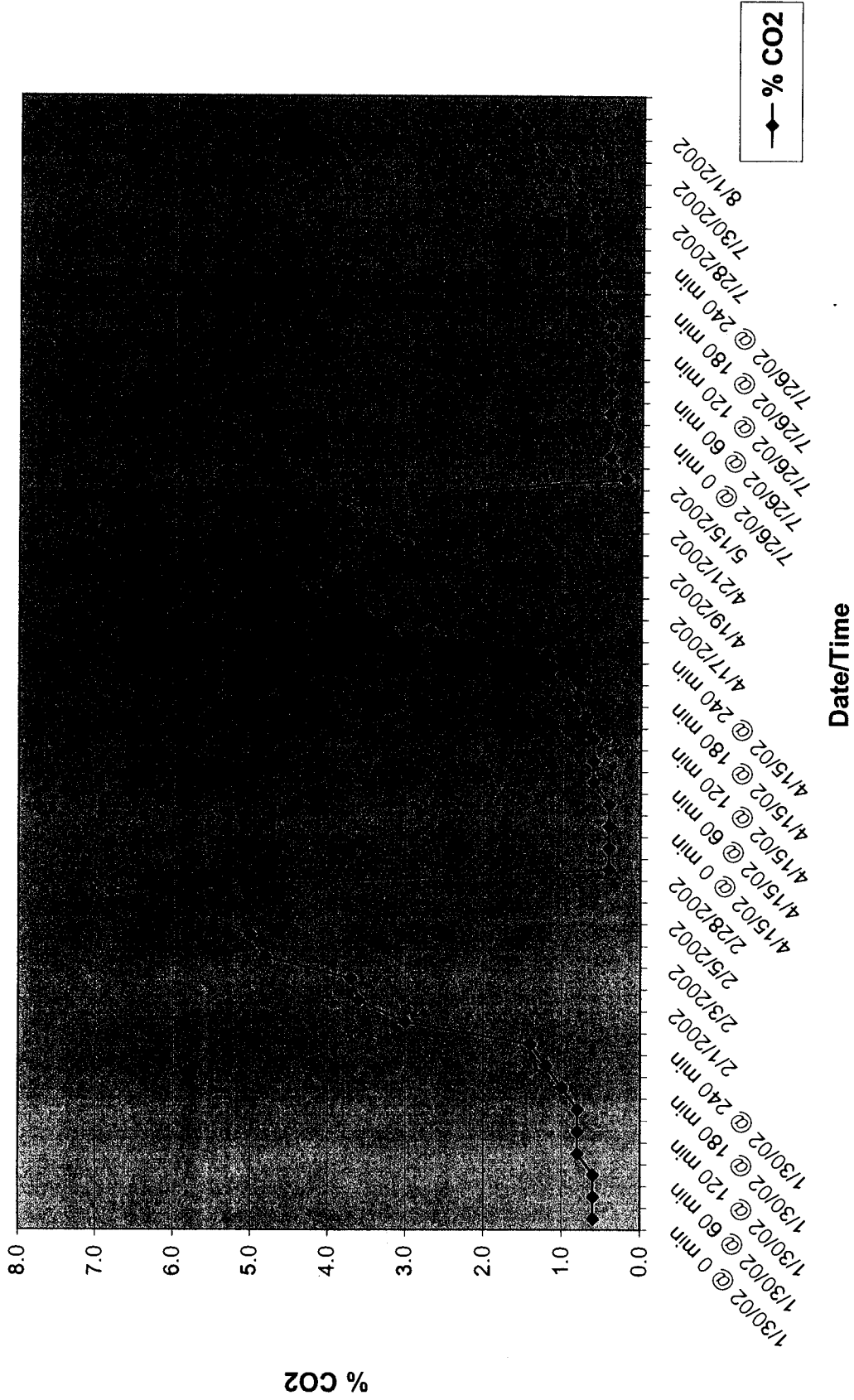
Carbon Dioxide Comparison MP-1 at 20 ft bgs



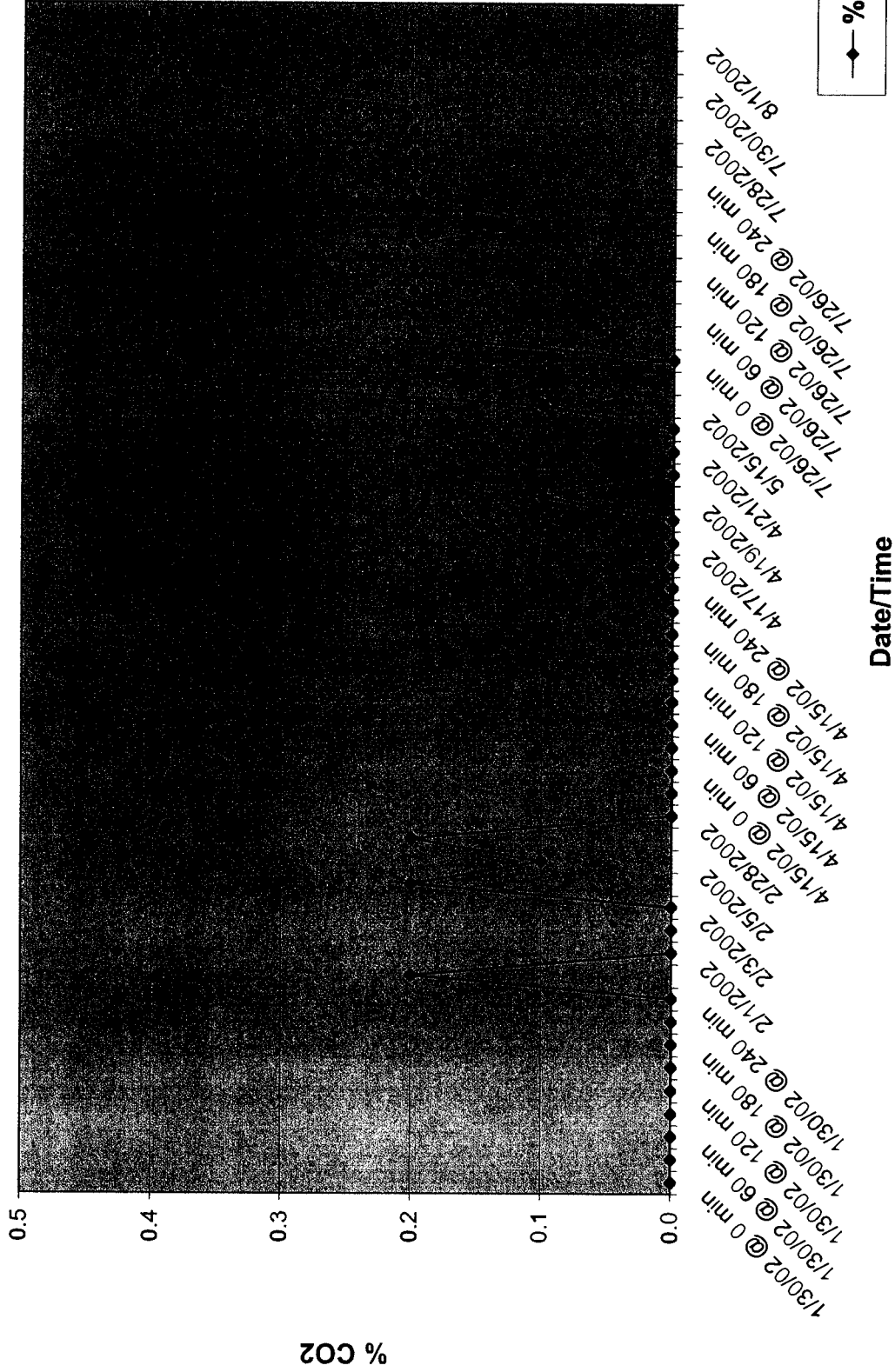
Carbon Dioxide Comparison MP-2 at 10 ft bgs



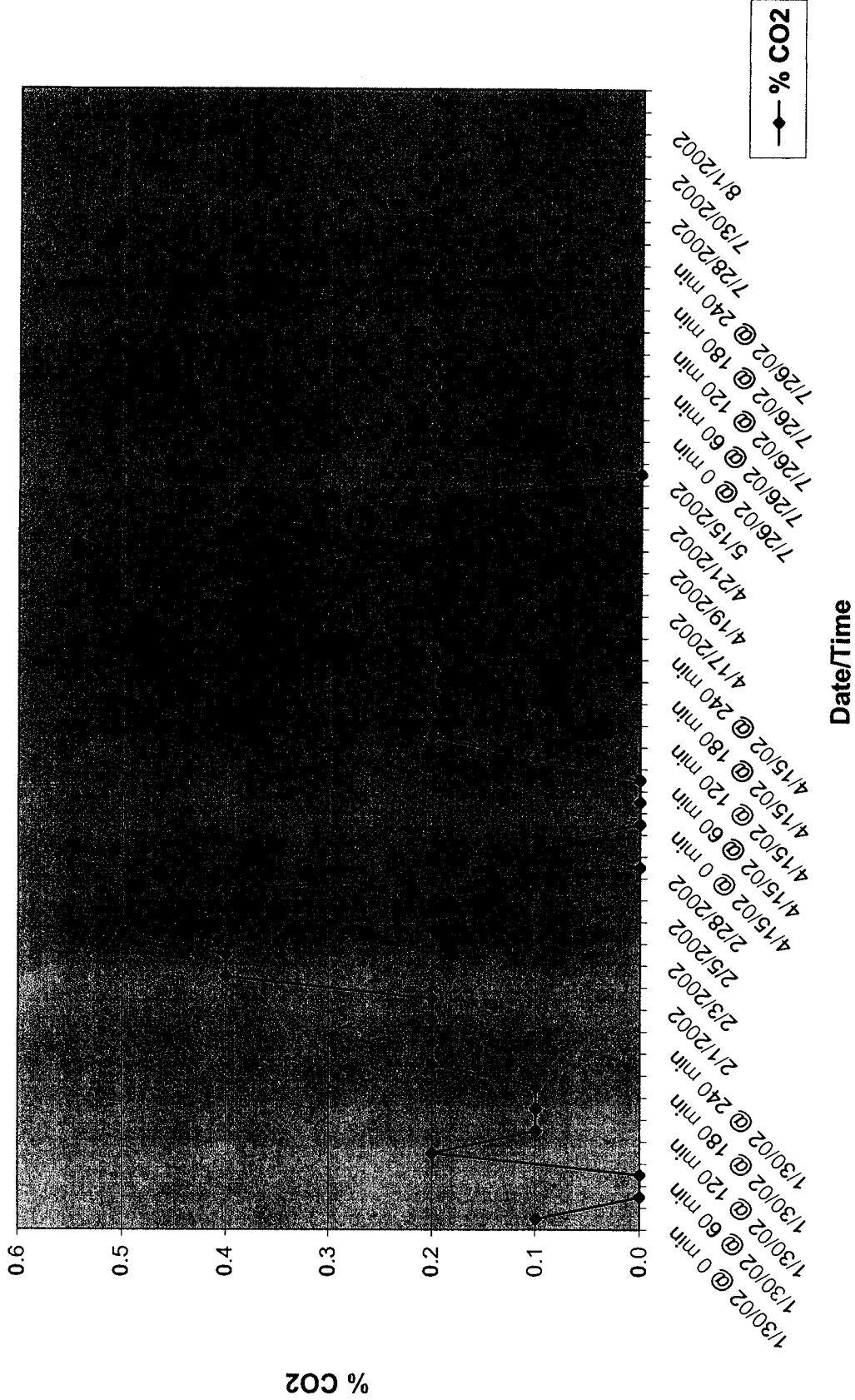
Carbon Dioxide Comparison MP-2 at 20 ft bgs



Carbon Dioxide Comparison MP-3 at 10 ft bgs



Carbon Dioxide Comparison MP-3 at 20 ft bgs

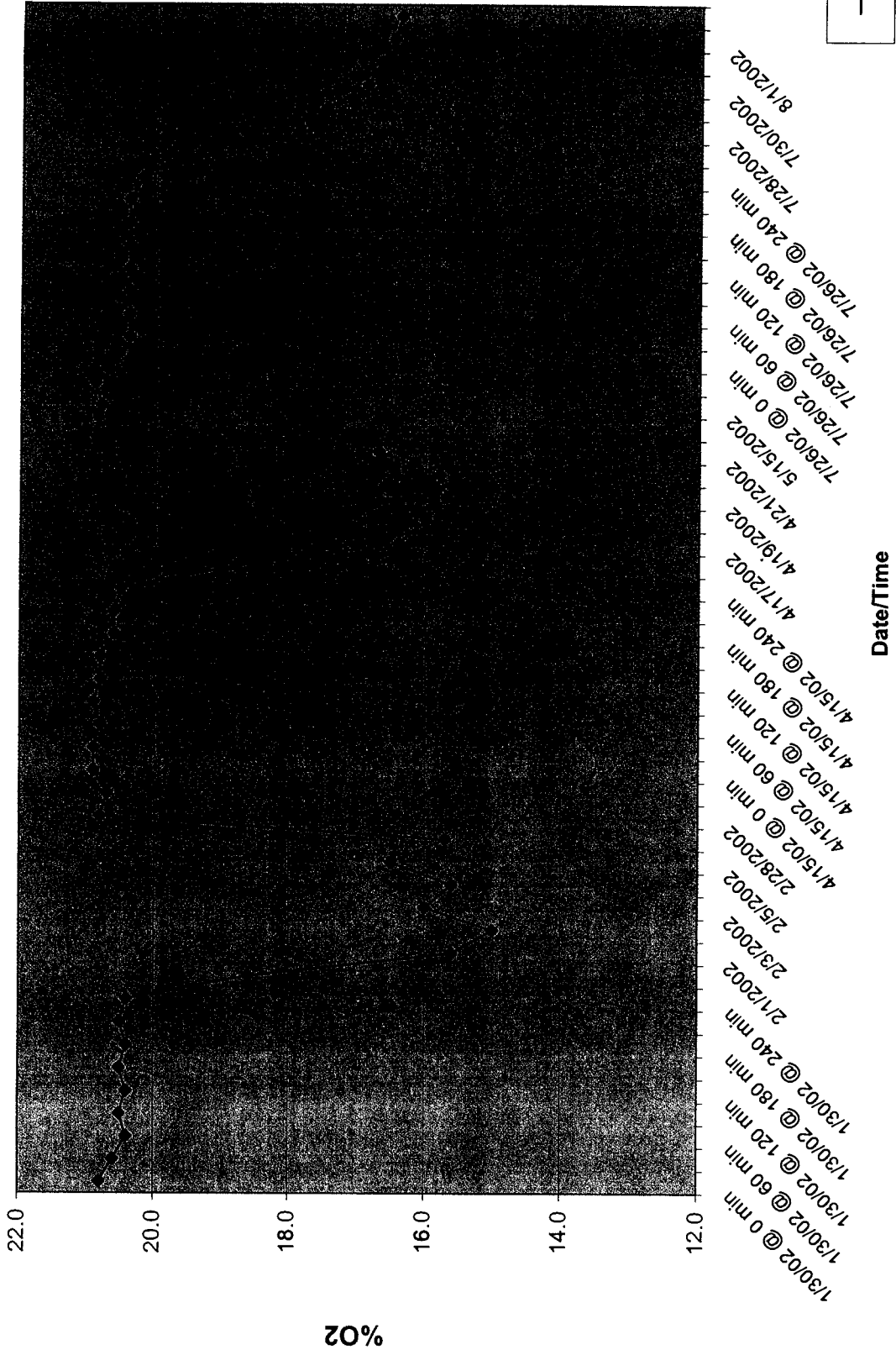


Appendix E

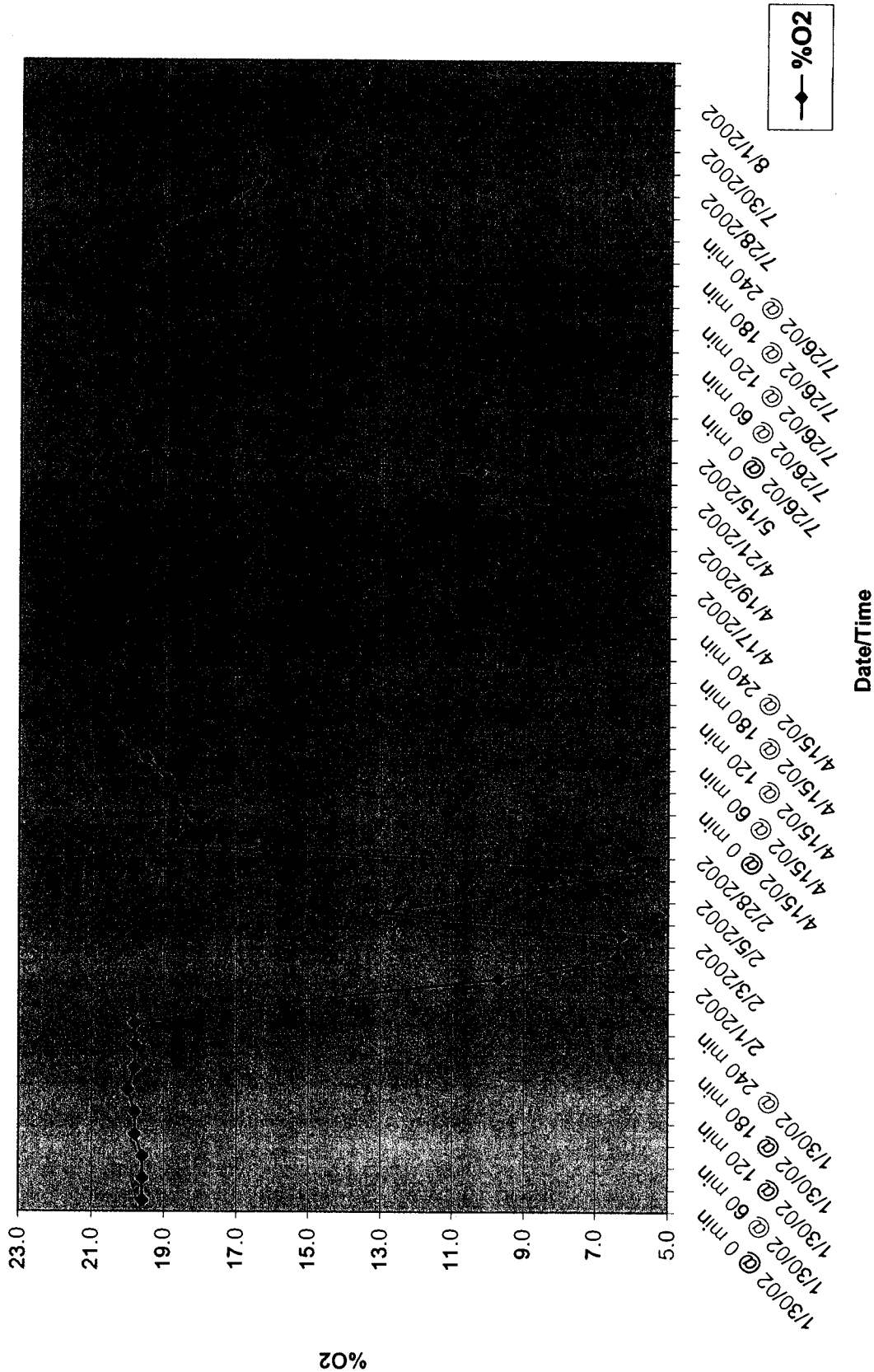
Oxygen Comparison

DATE	MP - 1		MP - 2		MP - 3	
	10 ft bgs (Blue)	20 ft bgs (Green)	10 ft bgs (Blue)	20 ft bgs (Green)	10 ft bgs (Blue)	20 ft bgs (Green)
	% O ₂	% O ₂	% O ₂	% O ₂	% O ₂	% O ₂
1/30/02 @ 0 min	20.8	19.6	20.8	20.2	20.9	20.9
1/30/02 @ 30 min	20.6	19.6	20.6	20.1	20.7	20.7
1/30/02 @ 60 min	20.4	19.6	20.4	19.8	20.7	20.6
1/30/02 @ 90 min	20.5	19.8	20.5	19.7	20.8	20.7
1/30/02 @ 120 min	20.4	19.8	20.5	19.5	20.8	20.7
1/30/02 @ 150 min	20.5	20.0	20.5	19.3	20.8	20.7
1/30/02 @ 180 min	20.4	19.8	20.6	19.2	20.8	20.7
1/30/02 @ 210 min	20.5	19.8	20.2	18.9	20.9	20.6
1/30/02 @ 240 min	20.4	19.8	20.2	18.4	20.7	20.5
1/31/2002	18.6	15.3	19.7	13.5	20.9	20.9
2/1/2002	15.6	9.7	20.5	9.0	20.2	18.9
2/2/2002	15.0	6.4	18.8	7.2	19.6	19.8
2/3/2002	16.0	6.3	19.8	6.2	20.9	20.7
2/4/2002	15.6	13.1	19.5	9.0	20.3	19.7
2/5/2002	16.5	9.2	20.1	8.2	20.4	19.3
2/6/2002	15.7	5.8	20.8	5.4	20.9	20.4
2/28/2002	20.8	18.9	20.9	20.7	20.9	20.9
3/28/2002	20.7	18.4	20.9	20.4	20.9	20.9
4/15/02 @ 0 min	20.9	18.4	20.9	20.4	20.9	20.9
4/15/02 @ 30 min	20.9	18.9	20.9	20.3	20.9	20.9
4/15/02 @ 60 min	20.8	19.5	20.9	20.3	20.9	20.9
4/15/02 @ 90 min	20.9	20.3	20.8	20.1	20.8	20.9
4/15/02 @ 120 min	20.8	20.5	20.9	19.8	20.8	20.9
4/15/02 @ 150 min	20.8	20.6	20.7	19.6	20.8	20.8
4/15/02 @ 180 min	20.6	20.3	20.7	19.5	20.7	20.6
4/15/02 @ 210 min	20.6	20.0	20.3	19.3	20.8	20.7
4/15/02 @ 240 min	20.5	19.9	20.4	19.0	20.8	20.6
4/16/2002	18.8	15.6	20.2	13.0	20.8	20.0
4/17/2002	16.4	10.0	19.8	9.6	20.7	19.7
4/18/2002	16.0	9.6	19.9	8.5	20.8	19.6
4/19/2002	15.7	8.9	20.1	7.9	20.7	20.1
4/20/2002	15.8	9.3	20.2	7.6	20.8	20.7
4/21/2002	16.7	11.4	20.4	7.7	20.6	19.9
4/22/2002	18.6	10.3	20.7	8.3	20.9	20.2
5/15/2002	20.8	19.8	20.8	20.7	20.8	20.9
6/12/2002	20.9	20.3	20.9	20.9	20.9	20.8
7/26/02 @ 0 min	20.4	19.6	20.9	20.5	20.9	20.6
7/26/02 @ 30 min	20.4	19.8	20.8	20.4	20.7	20.7
7/26/02 @ 60 min	20.4	19.7	20.8	20.3	20.8	20.6
7/26/02 @ 90 min	20.4	19.7	20.8	20.3	20.8	20.7
7/26/02 @ 120 min	20.4	19.7	20.8	20.0	20.8	20.7
7/26/02 @ 150 min	20.4	19.7	20.8	19.8	20.7	20.6
7/26/02 @ 180 min	20.4	19.5	20.8	19.8	20.7	20.6
7/26/02 @ 210 min	20.4	19.3	20.8	19.8	20.7	20.6
7/26/02 @ 240 min	20.2	19.1	20.8	19.7	20.7	20.6
7/27/2002	18.5	17.1	20.6	17.0	20.5	20.4
7/28/2002	17.9	16.5	20.6	16.6	20.6	20.2
7/29/2002	17.5	15.0	20.6	15.9	20.5	20.0
7/30/2002	16.9	14.4	20.6	15.6	20.4	20.1
7/31/2002	16.7	13.8	20.4	14.0	20.2	20.0
8/1/2002	16.5	13.5	20.4	13.9	20.2	20.0
8/2/2002	16.4	13.3	20.4	13.9	20.2	20.0

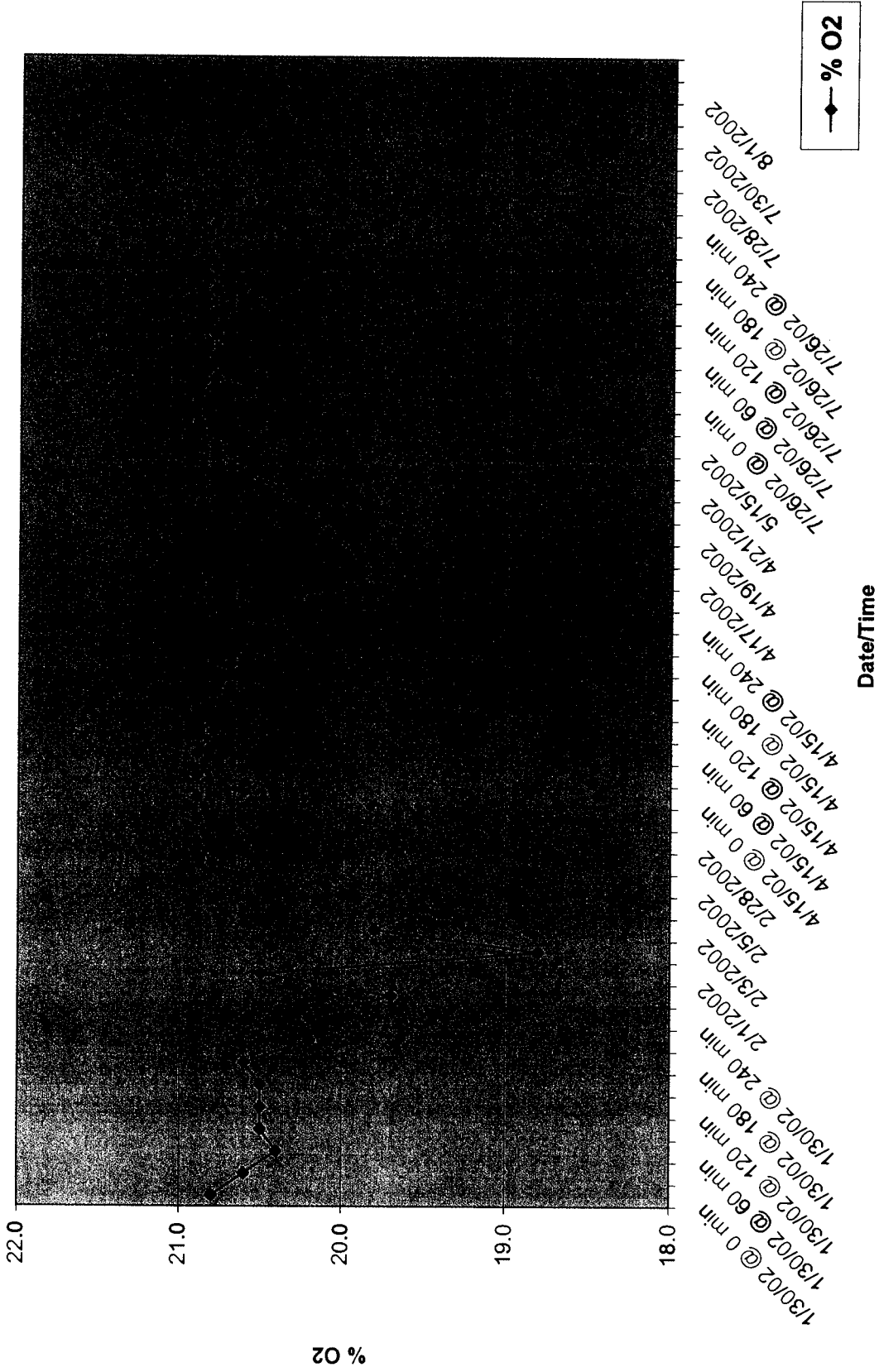
Oxygen Comparison MP-1 at 10 ft bgs



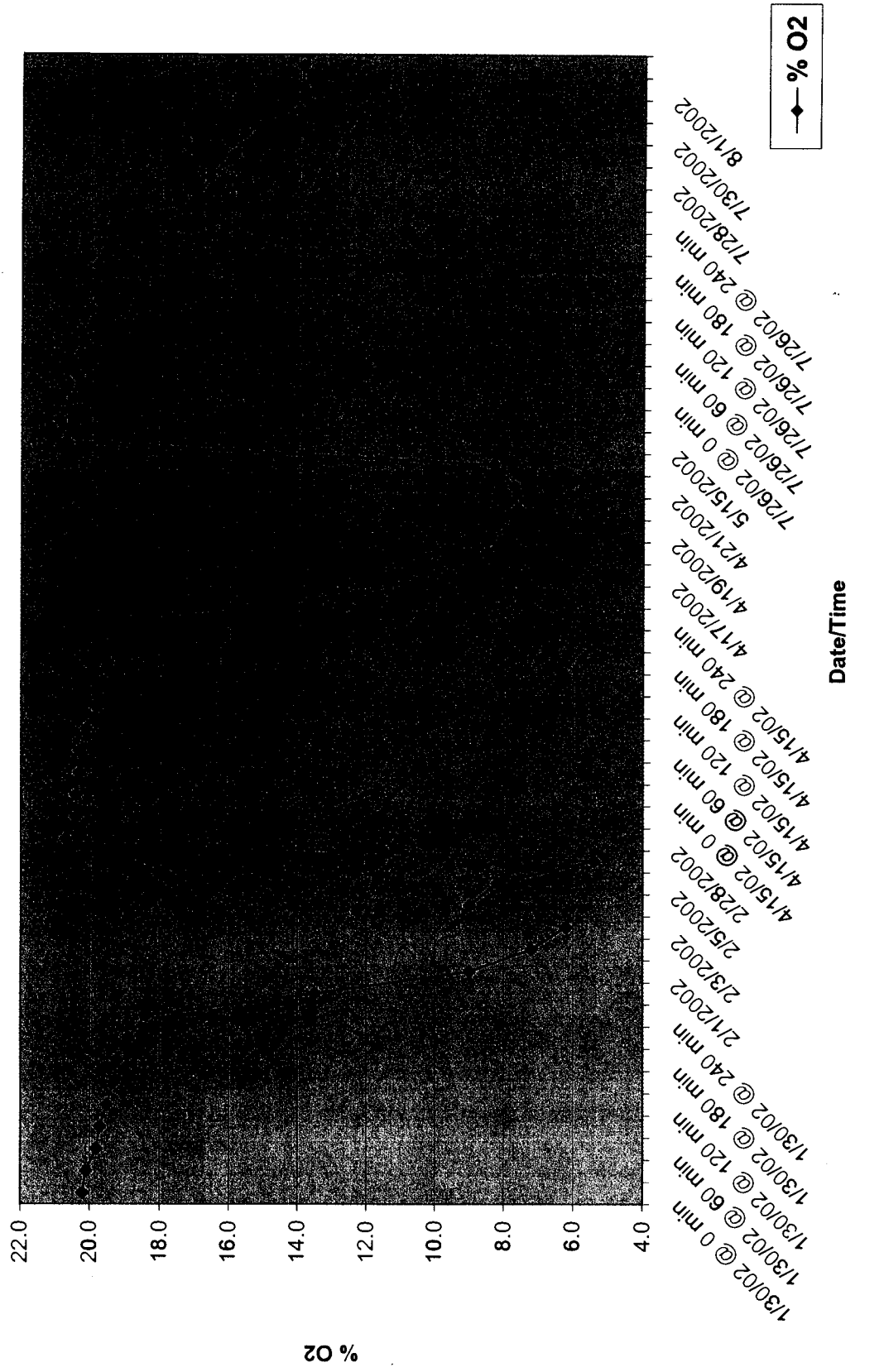
Oxygen Comparison MP-1 at 20 ft bgs



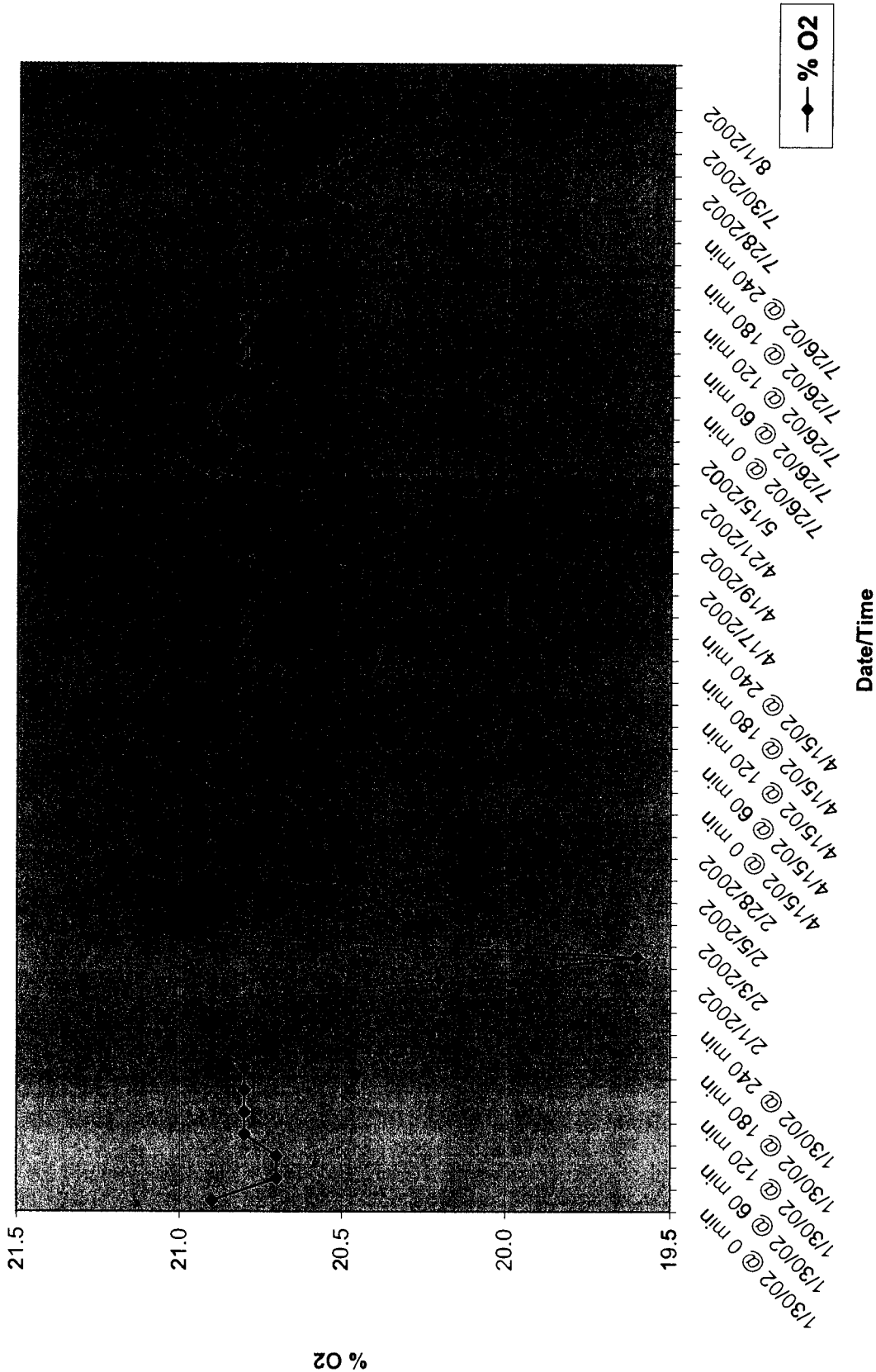
Oxygen Comparison MP-2 at 10 ft bgs



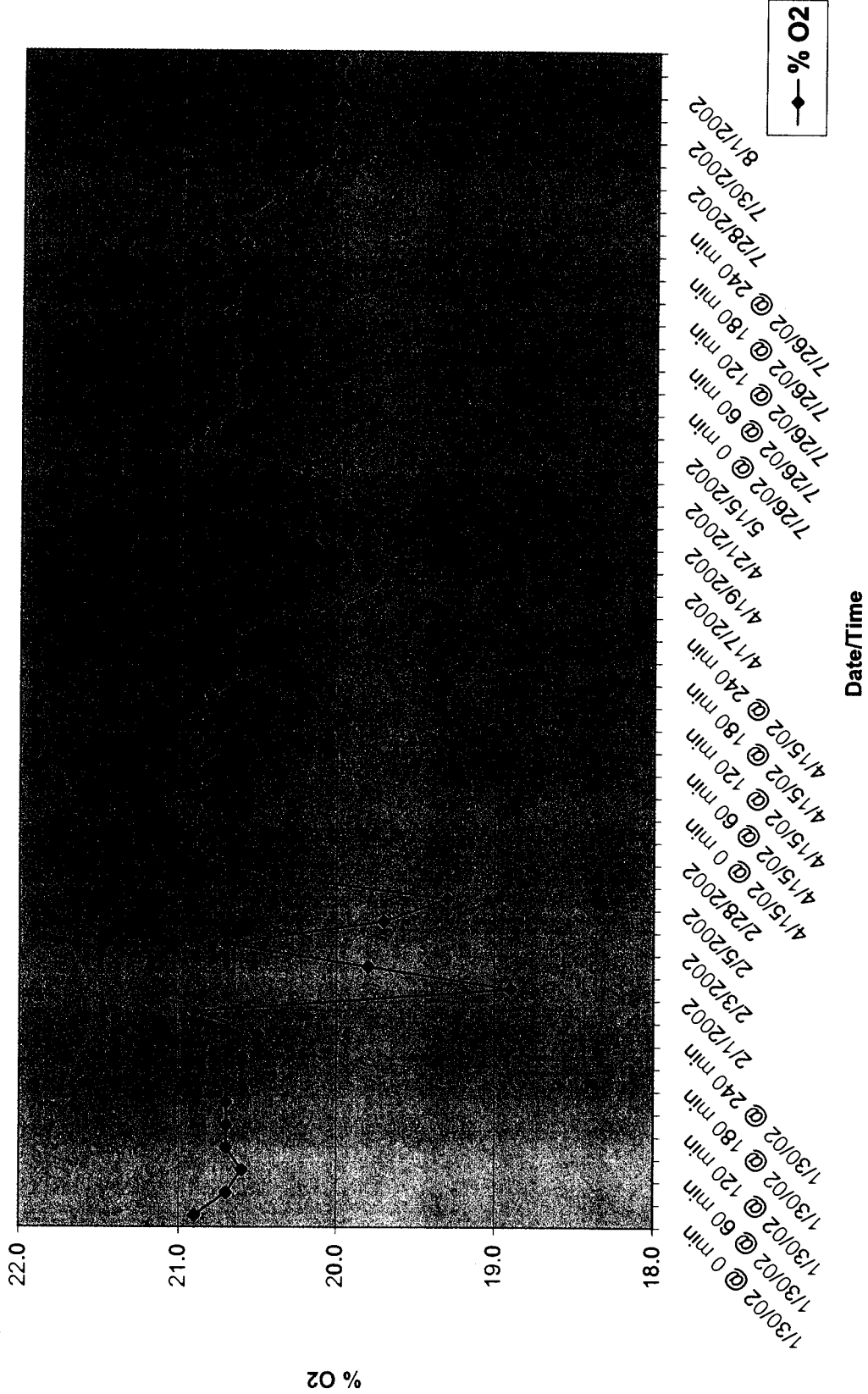
Oxygen Comparison MP-2 at 20 ft bgs



Oxygen Comparison MP-3 at 10ft bgs



Oxygen Comparison MP-3 at 20ft bgs



QUARTERLY RESPIROMETER TEST 4 OF 5

BUILDING 986 POL LABORATORY

SOIL VAPOR EXTRACTION AND BIO-VENTING
OPERATIONS AND MAINTENANCE

FORT RICHARDSON, ALASKA
CONTRACT NO. DACA85-01-P-0080

Prepared for:

U.S. Army Corps of Engineers, Alaska District
CEPOA-PM-M-A
P. O. Box 6898
Elmendorf AFB, Alaska 99506-6898

Prepared By:



AGVIQ, Inc.
2121 Abbott Road Suite 100
Anchorage, Alaska 99507

Project #200110

December 2002

OPERATIONAL MONITORING

AGVIQ, Inc. inspected the soil vapor extraction (VE) and bio-venting (BV) system for proper operational parameters. The system appeared to be operating normally, as designed and was tested as initially configured. Power indicators and alarms were operational. The system airflow was free flowing, did not have excessive vacuum, the lower explosive limit (LEL) concentrations were low and the condensate tank was empty and unobstructed.

RESPIROMETER TESTING

Since the VE/BV system re-start on August 2, 2002, AGVIQ has performed three operational monitoring events at the Building 986 POL Lab. During each of these events, initial soil vapor readings were collected from three (3) monitoring points (MP-1, MP-2 and MP-3). Readings using a Combustible Gas Indicator (CGI) were collected from each of the monitoring points. The first two events took place on August 15 and September 17, 2002. The third monitoring event occurred on October 17, 2002 in conjunction with the quarterly respirometer testing. These monthly monitoring events consisted of soil vapor readings, airflow rates (CFM) and vacuum (inches of H₂O) measurements from each vent well. The concentrations of volatiles (ppm) were measured with a calibrated photo-ionization detector (PID) from each vent well at the VE manifold. On October 17, 2002 the third respiration testing of this yearly sequence of O & M activities was performed for a period of eight (8) days. Prior to shutting off the blower for the respirometer test, the VE system was configured to extract air from VE wells 1, 2 and 3, an initial effluent sample was collected, and initial soil vapor readings were collected from three (3) monitoring points. Soil vapor readings were also collected daily over the next seven (7) days and the blower was restarted on October 24, 2002.

ANALYTICAL SAMPLING PROGRAM

Effluent Sampling

Effluent samples were collected from the VE system exhaust stack, prior to shutdown, to estimate hydrocarbon-mass removal rates for this configuration. The samples were collected from the exhaust stack using laboratory-prepared 1-liter stainless steel canisters. The samples were sent to CT&E of Anchorage, Alaska. The effluent samples were analyzed for the following parameters:

- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) by EPA 8021B
- Gasoline Range Organics (GRO) by AK 101; and
- Methane, carbon dioxide, oxygen and nitrogen by ASTM D-1945

The second sample collected on October 17, 2002 was accidentally analyzed twice for GRO/BTEX by the laboratory. On October 29, 2002, five days after restarting the system, AGVIQ re-sampled for Methane, carbon dioxide, oxygen and nitrogen by ASTM D-1945.

FINDINGS

Effluent Sampling

The reported analytical results for GRO and BTEX constituents in the exhaust air sample were undetectable (Table 1) at levels stated in the laboratory report. The air sample analytical results indicate that the percent levels of oxygen and nitrogen are similar to the concentrations found in the atmosphere. The methane and carbon dioxide results were similar to the previous respirometer test (Table 1). The concentrations of volatiles in the exhaust air at the time of sample collection were low (Table 4). All of the analytical results from the effluent air samples collected during the respirometer sampling event are presented in Appendix A.

Monitoring Events

The CGI results from the monitoring events are presented in Appendix B. The readings at MP-1 suggest biological activity due to the decrease in oxygen and the increase in carbon dioxide, during the extent of the monitoring period. This trend is slightly greater at 20 ft bgs than at 10 ft bgs. This implies that biological activity may be occurring in the vicinity of MP-1 and perhaps a slightly higher amount of activity may be taking place at the greater depth. MP-1 is located in the vicinity of the former dry well (Appendix C).

The readings from MP-2 also exhibited evidence of biological activity; however, there was less evidence of biological activity seen at 10 ft bgs than was exhibited at the same depth at MP-1. Evidence of a considerably higher amount of microbial activity is seen at the 20 ft bgs depth at this location.

MP-3 is located outside of the primary contaminated area at the former dry well location. Some minor activity was observed at both depths in this location.

To assist in assessing the VE/BV system performance, the airflow rates (CFM) and vacuum (inches of H₂O) were measured from each vent well, and concentrations of volatiles (ppm) were measured from each vent well at the exhaust manifold. The airflow rates measured at the VE blower during the fourth respirometer test ranged between 14 and 23 CFM and the applied vacuum levels at the VE blower ranged between 0 and 14.3 inches of H₂O. The concentration of volatiles ranged between 0.0 and 2.8 ppm. The airflow, vacuum and concentration of volatiles results for all three monitoring events are listed in Tables 2-4.

CONCLUSION

Review of the monitoring and analytical data indicates that the VE/BV system is most likely remediating the subsurface soils in the vicinity of the former dry well located at Building 986. The observations indicate that the remediation is progressing by two processes; bioremediation through the utilization of oxygen in the soil gas and, to a lesser degree, physical removal of hydrocarbon vapors. The physical removal is diminished due to the age of the system and remedial process.

Evidence of bioremediation and physical removal is obtained through sampling and analysis of the extracted soil gas. Analysis of the VE system effluent for petroleum hydrocarbons indicates that the VE system is successfully extracting contaminants. The presence of elevated CO₂ concentrations in the soil gas analyzed from the VE system exhaust stack may be an indication of hydrocarbon biodegradation in the site soils. In addition, oxygen concentrations in the soil gas indicate that the oxygen is not currently limiting hydrocarbon biodegradation. Similarly, the data collected from the three soil gas monitoring points indicate by the increase in CO₂ concentrations (Appendix D) and significant decrease in O₂ concentrations (Appendix E) that biodegradation is occurring in the soils at the site where contamination was initially discovered through investigation activities.

Based on the monthly monitoring, respirometer, and analytical test data, the system operational configuration was not changed. The system was configured as listed in Table 4 - Soil Vapor Extraction & Bio-Venting System Operational Data – October 2002.

TABLE 1
 AIR SAMPLE ANALYTICAL RESULTS

----- PARAMETERS -----

SAMPLE ID	GRO ppm	BTEX ppm	Benzene ppm	Toluene ppm	Ethylbenzene ppm	P & M-Xylene ppm	O-Xylene ppm	Oxygen %	Nitrogen %	Methane %	Carbon Dioxide %
Exhaust 02FRA007AG	20.0U	3.18U	0.780U	0.660U	0.580U	0.580U	0.580U	N/A	N/A	N/A	N/A
Exhaust 02FRA008AG	20.0U	3.18U	0.780U	0.660U	0.580U	0.580U	0.580U	N/A	N/A	N/A	N/A
Exhaust 02FRA009AG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17	82	U	0.0020

Note:

- GRO = Gasoline Range Organics
- BTEX = Benzene, Toluene, Ethylbenzene and Total Xylenes
- U = Undetectable as listed in the analytical report
- N/A = Not Applicable as listed in the analytical report
- ppm = parts per million by volume
- % = percent by volume

TABLE 2
SOIL VAPOR EXTRACTION & BIO-VENTING SYSTEM
OPERATIONAL DATA – AUGUST 2002

----- PARAMETERS -----

LOCATION	AIR FLOW (CFM)	VACUUM (inches of H ₂ O)	CONCENTRATION OF VOLATILES (ppm)	% WELLS OPEN
VE - 1	20	12.9	0.5	100 %
VE - 2	17	9.2	2.8	100 %
VE - 3	14	7.2	2.2	100 %
EXHAUST STACK	23	0.0	2.0	N/A

Note:
 CFM = Cubic Feet per Minute
 ppm = Parts Per Million
 N/A = Not Applicable

TABLE 3
SOIL VAPOR EXTRACTION & BIO-VENTING SYSTEM
OPERATIONAL DATA - SEPTEMBER 2002

----- PARAMETERS -----

LOCATION	AIR FLOW (CFM)	VACUUM (inches of H ₂ O)	CONCENTRATION OF VOLATILES (ppm)	% WELLS OPEN
VE - 1	20	12.5	0.0	100 %
VE - 2	16	8.8	0.0	100 %
VE - 3	14	6.8	0.0	100 %
EXHAUST STACK	23	0.0	0.0	N/A

Note:
 CFM = Cubic Feet per Minute
 ppm = Parts Per Million
 N/A = Not Applicable

TABLE 4
SOIL VAPOR EXTRACTION & BIO-VENTING SYSTEM
OPERATIONAL DATA – OCTOBER 2002

----- PARAMETERS -----

LOCATION	AIR FLOW (CFM)	VACUUM (inches of H ₂ O)	CONCENTRATION OF VOLATILES (ppm)	% WELLS OPEN
VE - 1	19	14.3	0.0	100 %
VE - 2	17	9.7	0.0	100 %
VE - 3	15	7.1	0.0	100 %
EXHAUST STACK	21	0.0	0.0	N/A

Note:
 CFM = Cubic Feet per Minute
 ppm = Parts Per Million
 N/A = Not Applicable

Appendix A

Laboratory Analytical Results



CT&E Ref.# 1027162001
Client Name AGVIQ Inc.
Project Name/# Bldg 986 FRA
Client Sample ID 02FRA007AG
Matrix Gas & Air

All Dates/Times are Alaska Standard Time
Printed Date/Time 10/22/2002 15:58
Collected Date/Time 10/17/2002 11:10
Received Date/Time 10/18/2002 16:45
Technical Director Stephen C. Ede
Released By [Signature]

Sample Remarks:

Table with columns: Parameter, Results, PQL, Units, Method, Allowable Limits, Prep Date, Analysis Date, Init. Includes sections for Volatile Fuels Department and Surrogates.



CT&E Ref.# 1027162002
Client Name AGVIQ Inc.
Project Name/# Bldg 986 FRA
Client Sample ID 02FRA008AG
Matrix Gas & Air

All Dates/Times are Alaska Standard Time
Printed Date/Time 10/22/2002 15:58
Collected Date/Time 10/17/2002 11:14
Received Date/Time 10/18/2002 16:45
Technical Director Stephen C. Ede

Released By [Signature]

Sample Remarks:

Table with columns: Parameter, Results, PQL, Units, Method, Allowable Limits, Prep Date, Analysis Date, Init. Rows include Volatile Fuels Department (Gasoline Range Organics, Benzene, Toluene, Ethylbenzene, P & M -Xylene, Xylene) and Surrogates (1,4-Difluorobenzene, 4-Bromofluorobenzene).

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST

Date 10/18/02 Page 1 of 1 Cooler # _____ COC# _____

Client AGUIQ, Inc		Sample Conditions	
Project Site: 31dg 986 FRA	Sampled by: PBD	Seal # _____	Seal # _____
Sampling Company: AGUIQ, Inc	Seal intact upon receipt by sampling company? Yes No		
Sampling Site: BU System Exhaust	Condition of contents:		
Project Manager: Darin Lowless	Sealed for Shipping by:		
Team Leader: Scott Kenda	Initial contents temp(C):		
Project #: 5020011	Sampling status: _____ Continuing unit: _____		
Receiving Lab: CTSE	Seal intact upon receipt by laboratory? Yes No		
Address:	Contents temp upon receipt:		
Purchase Order # DACA-85-01-7-0086	Condition of contents:		

Date	Time	Location ID	Sample ID	Matrix	LabID
10/17/02	11:00	Exhaust	02-FRA007AG	Air	
	14:00		02-FRA008AG		

ANALYTICAL METHOD REQUESTED			
GRO/BTEX AK101/EPA 8021B	Total Organic Carbon EPA 5310B	CH4, CO2, O2, N2 ASTM 1945	Grain Size Dist. ASTM D422
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Relinquished by:		
Signature	Printed Name	Date/Time
<i>[Signature]</i>	Paul D. Davis	10/18/02 1645
AGUIQ, Inc		

Received by:		
Signature	Printed Name	Date/Time
<i>[Signature]</i>	FOREST TAYLOR	10/18/02 1645
CTSE		

Relinquished by:			Received by:		
Signature	Printed Name	Date/Time	Signature	Printed Name	Date/Time
<i>[Signature]</i>	Paul D. Davis	10/18/02 1645	<i>[Signature]</i>	FOREST TAYLOR	10/18/02 1645
AGUIQ, Inc			CTSE		

Turnaround Time Required	Standard (30 days)
24 hr. _____ 48 hr. _____	3-5 days _____ 7 days _____
14 days _____ days _____	Provide verbal preliminary results? Yes _____ No _____
Provide FAX preliminary results? Yes _____ No _____	Requested report date _____
EDF data required? Yes _____ No _____	

Shipping Details	
Delivered to shipper by: AGUIQ, Inc	
Method of shipment: Hand Delivered	Airbill # _____
Received for lab: _____	Signed: _____

Special Instructions/Comments:
COE Data Deliverables

1027162

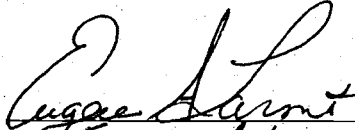
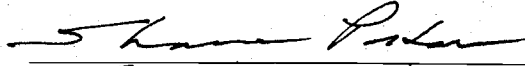
Number of Containers

**CTE Environmental Services
Alaska Division
Laboratory Data Report**

Project: Bldg 986 FRA
Client: AGVIQ Inc.
CTE Work Order: 1027162
NPDL Work Order: NA

All quality assurance/quality control criteria is in compliance with the Alaska Department of Environmental Conservation (ADEC) and/or CTE's Assurance Program Plan.

Additional data is available from the laboratory should more information be required. Please contact the Quality Assurance Manager should any questions occur.

Prepared by	(Signature)	
	(Printed Name)	<u>Eugene A Larmi</u>
	(Date)	<u>11/15/02</u>
Reviewed by	(Signature)	
	(Printed Name)	<u>SHANE POSTON</u>
	(Date)	<u>11-18-02</u>



AIR TOXICS LTD.

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

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

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

Hours 8:00 A.M to 6:00 P.M. Pacific

E-mail to: samplereceiving@airtoxics.com

@ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0210731

Work Order Summary

CLIENT: Ms. Rhonda Strucher
CT & E
200 West Potter
Anchorage, AK 99518

BILL TO: Ms. Rhonda Strucher
CT & E
200 West Potter
Anchorage, AK 99518

PHONE: 907-562-2343
FAX: 907-561-5301
DATE RECEIVED: 10/31/02
DATE COMPLETED: 11/14/02

P.O. #
PROJECT # 5020011
CONTACT: Karen Burden

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	1027350001 (02FRA009AG)	Modified ASTM D-1945	0.0"Hg
02A	Lab Blank	Modified ASTM D-1945	NA
03A	LCS	Modified ASTM D-1945	NA

CERTIFIED BY:

Sandra J. Fumman

Laboratory Director

DATE: 11/14/02

Certification numbers: CA NELAP - 02110CA, NY NELAP - 11291, UT NELAP - 9166389892,
LA NELAP/LELAP- AI 30763, AR DEQ

Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/02, Expiration date: 06/30/03

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LABORATORY NARRATIVE
ASTM D-1945 Modified
CT & E
Workorder# 0210731

One High Pressure Sample Cylinder sample was received on October 31, 2002. The laboratory performed analysis via Modified ASTM Method D-1945 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of up to 1.0 mL of sample. With the exception of analyses conducted in accordance with AFCEE 3.0, all reported compound quantifications were calculated from response factors derived from the first Continuing Calibration Verification of each relevant analytical batch. See the data sheets for the reporting limits for each compound.

<i>Requirement</i>	<i>ASTM D-1945</i>	<i>ATL Modifications</i>
Quantification based on average response factor in the Initial Calibration.	NELAC Standard 5.9.4.2.1(c)	With the exception of samples analyzed under AFCEE 3.0 protocol, all quantification based on the response factor derived from the first Continuing Calibration Verification of each relevant analytical batch.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.

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


- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: 1027350001 (02FRA009AG)

ID#: 0210731-01A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1945



Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	17
Nitrogen	0.20	82
Methane	0.00020	Not Detected
Carbon Dioxide	0.0020	0.66

Container Type: High Pressure Sample Cylinder

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0210731-02A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1945



Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.0010	Not Detected


Container Type: NA - Not Applicable

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0210731-03A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1945



Compound	Rpt. Limit (%)	%Recovery
Oxygen	0.10	91
Nitrogen	0.10	88
Methane	0.00010	95
Carbon Dioxide	0.0010	95

Container Type: NA - Not Applicable

1027350

AGVIO ENVIRONMENTAL SERVICES
 2121 Abbott Rd. Suite 100
 Anchorage, Alaska 99507
 phone (907) 341-6299
 fax (907) 341-6256

HAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST

Date 10/23/02 Page 1 of 1 Cooler # _____ COC# _____

Sample Conditions				ANALYTICAL METHOD REQUESTED				Comments:																																																																																											
Client	AGVIO			Seal #																																																																																															
Project Site:	D64 986 FRA			Sealed by: TBD																																																																																															
Sampling Company:	AGVIO			Seal intact upon receipt by sampling company? Yes No																																																																																															
Sampling Site:	BV System Exhaust			Condition of contents:																																																																																															
Project Manager:	Darrin Leavelle			Sealed for Shipping by:																																																																																															
Team Leader:	Scott Kendall			Initial contents temp(C):																																																																																															
Project #:	50 2-00 11			Sampling status:																																																																																															
Receiving Lab:	CTE			Seal intact upon receipt by laboratory? Yes No																																																																																															
Address:				Contents temp upon receipt:																																																																																															
Purchase Order #	DACA-05-11-7-0080			Condition of contents:																																																																																															
Date	Time	Location ID	Sample ID	Matrix	LabID																																																																																														
10/29/02	10:42	Exhaust	02 FRA009 A6	Air																																																																																															
DRO AK102						GROBTEX AK101/EPA 8021B																																																																																													
Total Organic Carbon EPA 5310B						X CH4, CO2, O2, N2 ASTM 1945																																																																																													
Grain Size Dist. ASTM D422																																																																																																			
Number of Containers						1																																																																																													
<table border="1"> <thead> <tr> <th colspan="2">Relinquished by:</th> <th colspan="2">Relinquished by:</th> <th colspan="2">Relinquished by:</th> <th colspan="4">Shipping Details</th> </tr> </thead> <tbody> <tr> <td>Signature</td> <td><i>PL</i></td> <td>Signature</td> <td></td> <td>Signature</td> <td></td> <td colspan="4">Delivered to shipper by: AGVIO</td> </tr> <tr> <td>Printed Name</td> <td>Paul B. Davis</td> <td>Printed Name</td> <td></td> <td>Printed Name</td> <td></td> <td colspan="4">Method of shipment: Hand Delivered Airbill #</td> </tr> <tr> <td>Firm</td> <td>AGVIO, Inc</td> <td>Firm</td> <td></td> <td>Firm</td> <td></td> <td colspan="4">Received for lab: Signed:</td> </tr> <tr> <td>Date/Time</td> <td>10/29/02 11:15</td> <td>Date/Time</td> <td></td> <td>Date/Time</td> <td></td> <td colspan="4">Special Instructions/Comments:</td> </tr> <tr> <td>Signature</td> <td><i>Scott Kendall</i></td> <td>Signature</td> <td></td> <td>Signature</td> <td></td> <td colspan="4">COE Data Deliverables</td> </tr> <tr> <td>Printed Name</td> <td>SCOTT KENDALL</td> <td>Printed Name</td> <td></td> <td>Printed Name</td> <td></td> <td colspan="4"></td> </tr> <tr> <td>Firm</td> <td>CTE</td> <td>Firm</td> <td></td> <td>Firm</td> <td></td> <td colspan="4"></td> </tr> <tr> <td>Date/Time</td> <td>10/29/02 11:15</td> <td>Date/Time</td> <td></td> <td>Date/Time</td> <td></td> <td colspan="4"></td> </tr> </tbody> </table>										Relinquished by:		Relinquished by:		Relinquished by:		Shipping Details				Signature	<i>PL</i>	Signature		Signature		Delivered to shipper by: AGVIO				Printed Name	Paul B. Davis	Printed Name		Printed Name		Method of shipment: Hand Delivered Airbill #				Firm	AGVIO, Inc	Firm		Firm		Received for lab: Signed:				Date/Time	10/29/02 11:15	Date/Time		Date/Time		Special Instructions/Comments:				Signature	<i>Scott Kendall</i>	Signature		Signature		COE Data Deliverables				Printed Name	SCOTT KENDALL	Printed Name		Printed Name						Firm	CTE	Firm		Firm						Date/Time	10/29/02 11:15	Date/Time		Date/Time					
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Printed Name	Paul B. Davis	Printed Name		Printed Name		Method of shipment: Hand Delivered Airbill #																																																																																													
Firm	AGVIO, Inc	Firm		Firm		Received for lab: Signed:																																																																																													
Date/Time	10/29/02 11:15	Date/Time		Date/Time		Special Instructions/Comments:																																																																																													
Signature	<i>Scott Kendall</i>	Signature		Signature		COE Data Deliverables																																																																																													
Printed Name	SCOTT KENDALL	Printed Name		Printed Name																																																																																															
Firm	CTE	Firm		Firm																																																																																															
Date/Time	10/29/02 11:15	Date/Time		Date/Time																																																																																															

PL



Yes

No

Are samples RUSH, priority, or within 72 hrs. of hold time?
 If yes have you done e-mail notification?
 Are samples within 24 hrs. of hold time or due date?
 If yes, have you spoken with Supervisor?
 Archiving bottles - if required, are they properly marked?
 Are there any problems (e.g., ids, analyses)?
 Were samples preserved correctly and pH verified?

Has Project Manager been notified of problems?
 Is this a DOD project? (USACE, Navy, AFCEE):
 if yes, complete page 2 of Sample Receipt Form
 Will a data package be required?
 If this is for PWS, provide PWSID.
 Is there a quote for this project?
 Will courier charges apply?
 Method of payment?

Completed by (sign): Just Feigh (print): Forest Taylor

Login proof (check one): waived required _____ performed by: _____

Notes:

of each Container Received:

- 950 ml amber unpres'd
- 950 ml amber w / HCl
- 500 ml amber w / H₂SO₄
- 1L cubies unpres'd
- 1L Cubitainers w / HNO₃
- 1L Cubitainers w / H₂SO₄
- 1L Cubitainers w / NaOH + ZnAc
- 250 mL Nalgene NaOH
- 120 ml coli bottles
- 60 ml Nalgene unpres'd
- 60 mL Nalgene w/ H₂SO₄
- 8 oz amber unpres'd
- 4 oz amber unpres'd
- 4 oz w / septa w / MeOH
- 40 ml vials w / HCl
- 40 mL ascorbic acid + HCl

- Other (specify) SS CYLINDER
- Other (specify) _____
- Other (specify) _____
- Other (specify) _____

TO BE COMPLETED IN ANCHORAGE UPON ARRIVAL FROM FAIRBANKS OR HAWAII
 NOTES RECORDED BELOW ARE ACTIONS NEEDED UPON ARRIVAL IN ANCHORAGE.

Notes:

DATE / TIME:

COOLER AND TEMP BLANK READINGS*

Cooler ID	Temp Blank	Cooler	Cooler ID	Temp Blank	Cooler

CUSTODY SEALS INTACT: YES / NO # / WHERE:
 COMPLETED BY (INITIAL): _____

Due Date:

11/13/02

Received Date/Time:

10/29/02 11:5

Received Temperature*: Amalgam

Thermometer ID: N/A

Cooler ID

Temp Blank

Cooler Temp

Matrix of each Sample:

4 " " " " # (

Trip Blank

BMS/BMSD

Additional Sample Remarks

Extra Sample Volume?

Limited Sample Volume?

Field pres'd for volatiles?

Field-filtered for dissolved?

Lab-filtered for dissolved?

Ref Lab required? ASTA 1945

* Temperature readings include thermometer correction factors.



The following *must* be completed for all DOD projects (AFCEE, Navy, and USACE)

Yes _____ No

Is received temperature $4 \pm 2^{\circ}\text{C}$? _____

Exceptions: _____ Samples/Analyses affected: All

Rad Screen performed? Result: _____

Was there an airbill, etc.? Note #: Hand Carried

Was cooler sealed with custody seals? Fax'd to COE? _____

/ where: No cooler

Were seals intact upon arrival? N/A

Was there a COC with cooler?

Was the COC filled out properly?

Did the COC indicate ACOE / AFCEE project? (if applicable)

Did the COC and samples correspond?

Were all samples packed to prevent breakage?

packing material: None; Sample is stainless steel MR cylinder

Were all samples unbroken and clearly labeled?

Were all samples sealed in separate plastic bags?

Were all bottles for volatiles free of headspace? N/A

Were correct container / sample sizes submitted?

Is sample condition good?

Was client notified of problems? (specify below) _____

Individual contacted: _____ Phone / Fax: _____

Date / Time: _____

Completed by (sign): Justin Taylor (print): FOREST TAYLOR

Login proof (check one): waived required performed by: _____

Appendix B

**Combustible Gas Indicator Results
From Quarterly Respirometer Test 4 of 5**

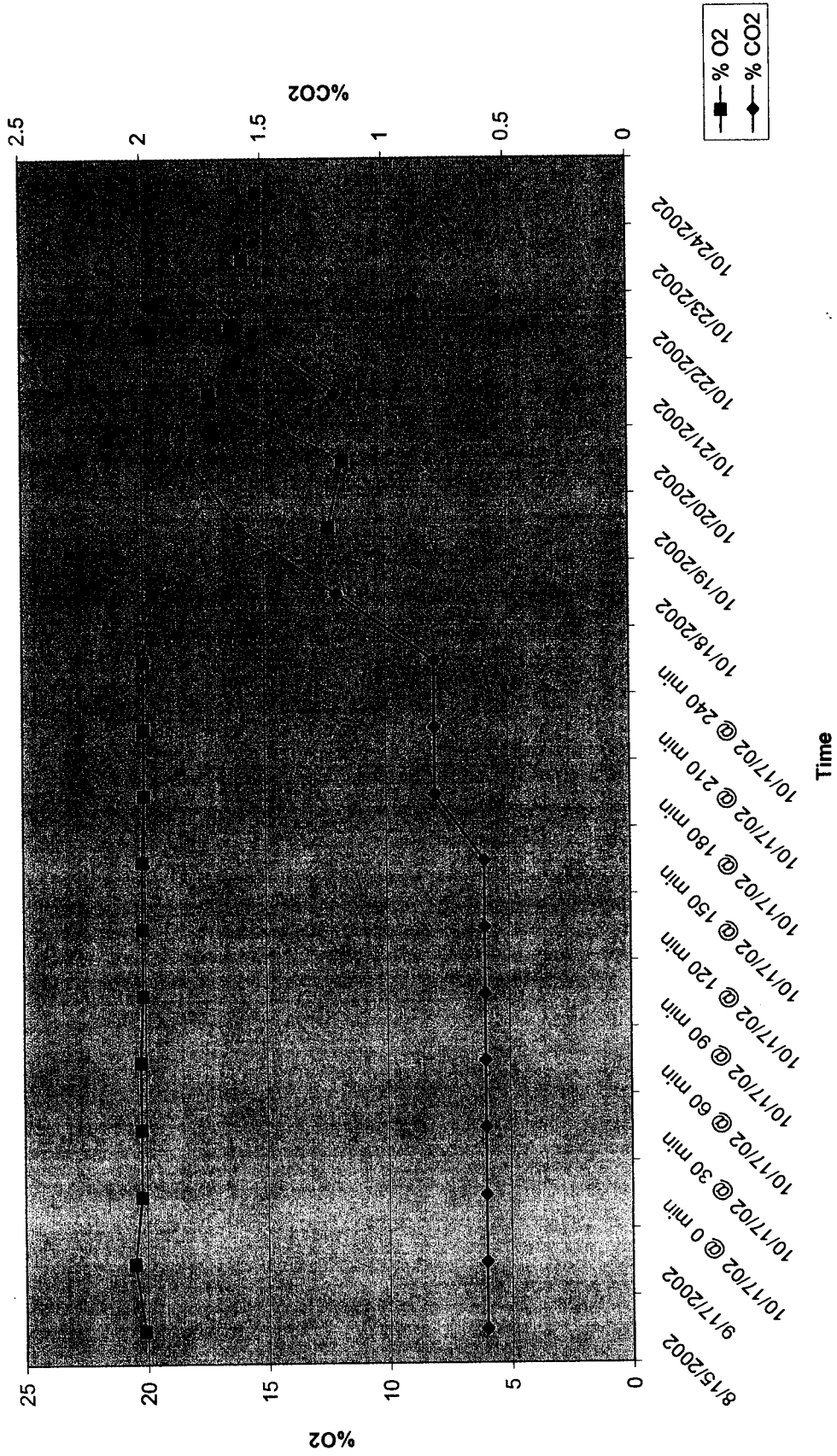
Quarterly Respirometer Test 4 of 5

Soil Vapor Extraction and
Bio-venting Operations and Maintenance
Contract No. DAC485-01-P-0080

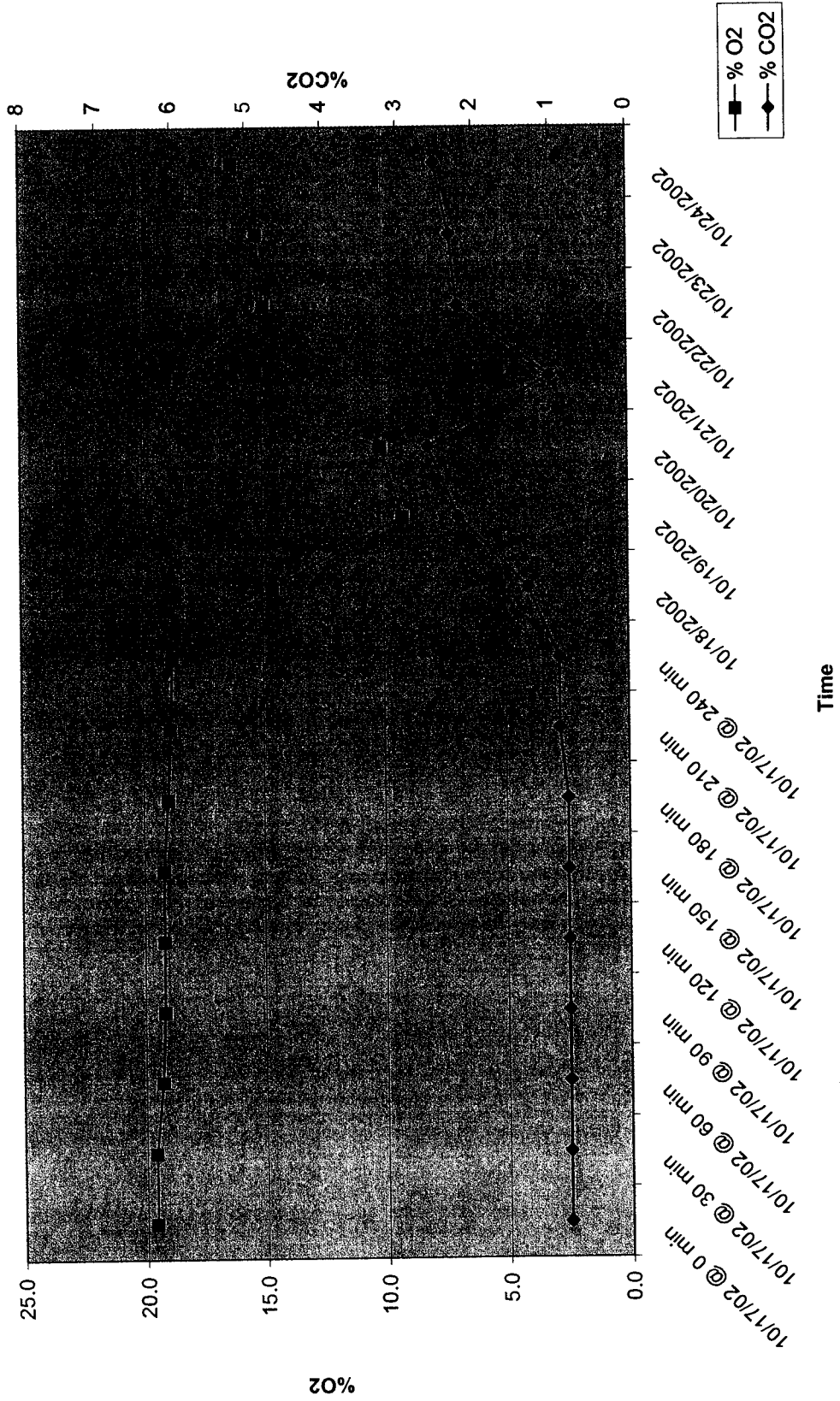
DATE	MP - 1						MP - 2						MP - 3					
	10 ft bgs (Blue)			20 ft bgs (Green)			10 ft bgs (Blue)			20 ft bgs (Green)			10 ft bgs (Blue)			20 ft bgs (Green)		
	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂
8/15/2002	0.6	20.1	0.8	19.7	0.2	20.7	0.2	20.7	0.2	20.7	0.2	20.7	0.4	20.4	0.3	20.4	0.4	20.4
9/17/2002	0.6	20.5	0.8	19.7	0.2	20.8	0.3	20.7	0.3	20.7	0.4	20.7	0.4	20.7	0.6	20.4	0.4	20.4
10/17/02 @ 0 min	0.6	20.2	0.8	19.6	0.2	20.9	0.3	20.6	0.3	20.6	0.3	20.6	0.3	20.8	0.4	20.4	0.4	20.4
10/17/02 @ 30 min	0.6	20.2	0.8	19.6	0.2	20.9	0.3	20.6	0.3	20.6	0.3	20.6	0.3	20.8	0.4	20.4	0.4	20.4
10/17/02 @ 60 min	0.6	20.2	0.8	19.3	0.2	20.9	0.3	20.6	0.3	20.6	0.3	20.6	0.3	20.8	0.4	20.4	0.4	20.4
10/17/02 @ 90 min	0.6	20.1	0.8	19.2	0.2	20.9	0.4	20.3	0.4	20.3	0.3	20.7	0.4	20.4	0.4	20.4	0.4	20.4
10/17/02 @ 120 min	0.6	20.1	0.8	19.2	0.2	20.9	0.4	20.3	0.4	20.3	0.3	20.5	0.4	20.4	0.4	20.4	0.4	20.4
10/17/02 @ 150 min	0.6	20.1	0.8	19.2	0.2	20.9	0.4	20.3	0.4	20.3	0.3	20.5	0.4	20.4	0.4	20.4	0.4	20.4
10/17/02 @ 180 min	0.8	20.0	0.8	19.0	0.2	20.9	0.4	20.2	0.4	20.2	0.5	20.5	0.4	20.4	0.4	20.4	0.4	20.4
10/17/02 @ 210 min	0.8	20.0	0.9	18.9	0.2	20.8	0.5	20.0	0.5	20.0	0.4	20.4	0.4	20.4	0.4	20.4	0.4	20.4
10/17/02 @ 240 min	0.8	20.0	0.9	18.8	0.2	20.8	0.5	20.0	0.5	20.0	0.5	20.0	0.5	20.3	0.5	20.4	0.5	20.4
10/18/2002	1.2	19.6	1.3	14.6	0.2	20.8	0.9	17.3	0.9	17.3	0.6	18.1	0.6	18.1	0.8	20.0	0.8	20.0
10/19/2002	1.6	12.3	2.2	9.2	0.2	20.4	1.2	15.5	1.2	15.5	0.6	15.6	0.6	15.6	1.3	18.4	1.3	18.4
10/20/2002	1.8	11.7	2.6	10.1	0.2	19.0	1.8	14.3	1.8	14.3	0.8	15.3	0.8	15.3	1.2	18.1	1.2	18.1
10/21/2002	1.2	17.2	1.0	18.4	0.2	19.3	1.2	17.9	1.2	17.9	0.8	17.5	0.8	17.5	0.8	19.0	0.8	19.0
10/22/2002	1.6	16.3	2.2	14.9	0.2	19.2	1.8	16.3	1.8	16.3	0.6	20.0	0.6	20.0	0.8	19.3	0.8	19.3
10/23/2002	1.9	15.8	2.3	15.2	0.2	19.4	2.0	15.6	2.0	15.6	0.7	18.1	0.7	18.1	0.8	19.0	0.8	19.0
10/24/2002	2.2	15.2	2.5	16.2	0.2	19.3	2.3	14.7	2.3	14.7	0.6	18.6	0.6	18.6	0.8	18.9	0.8	18.9

Note:
MP = monitoring point
ft = feet
bgs = below ground surface

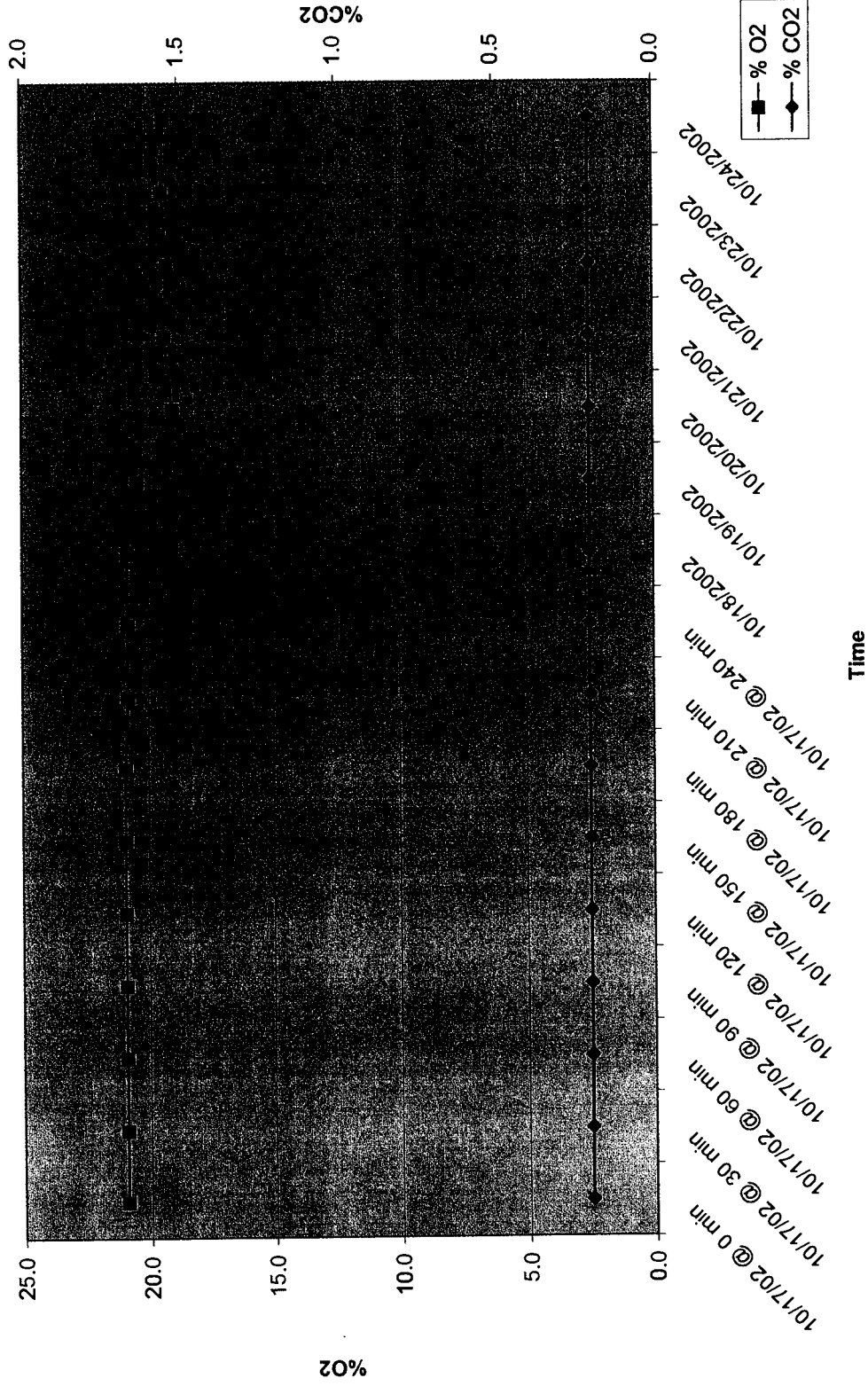
Quarterly Respirometer Test 4 of 5
MP-1 at 10 ft bgs



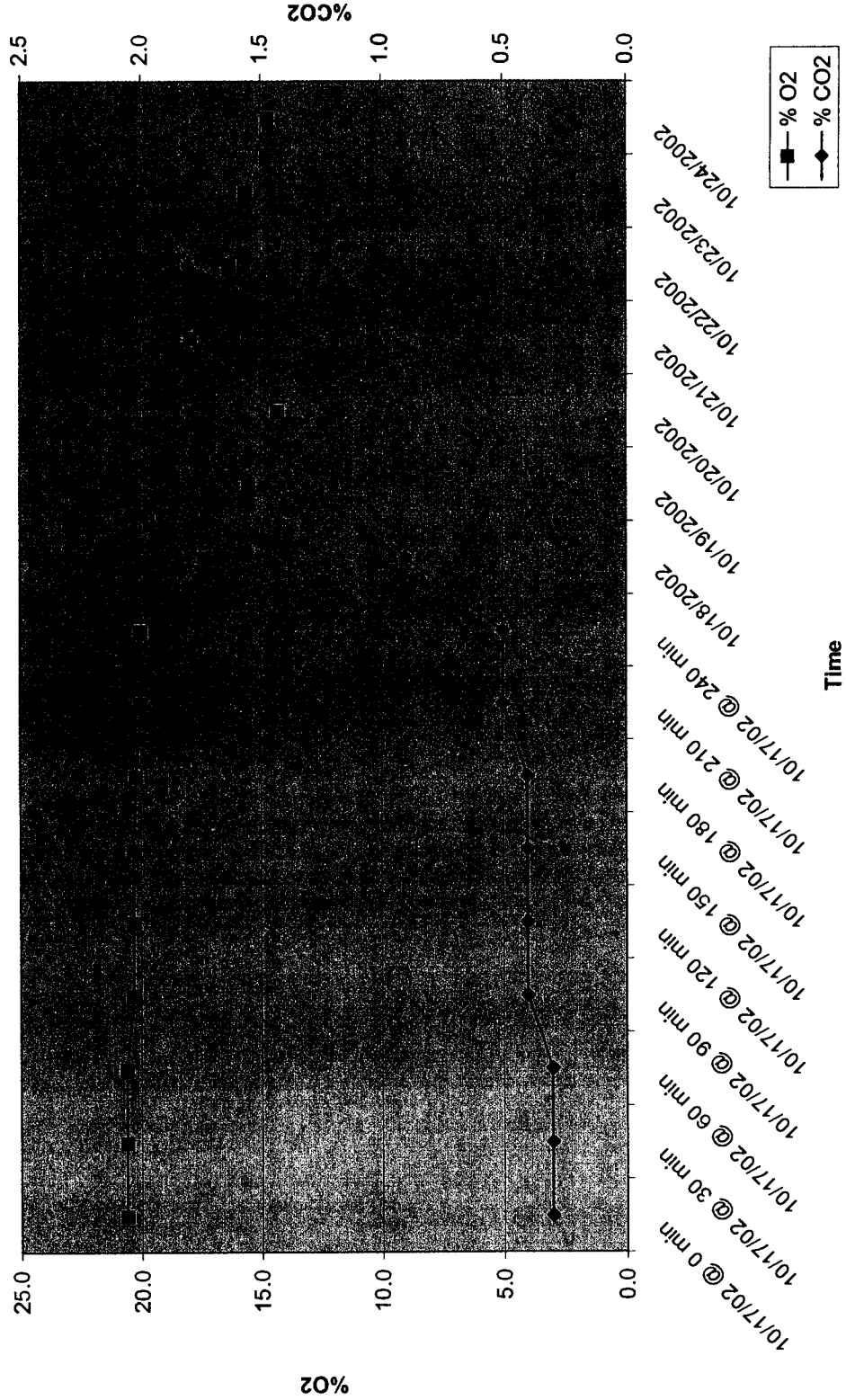
Quarterly Respirometer Test 4 of 5
MP-1 at 20 ft bgs



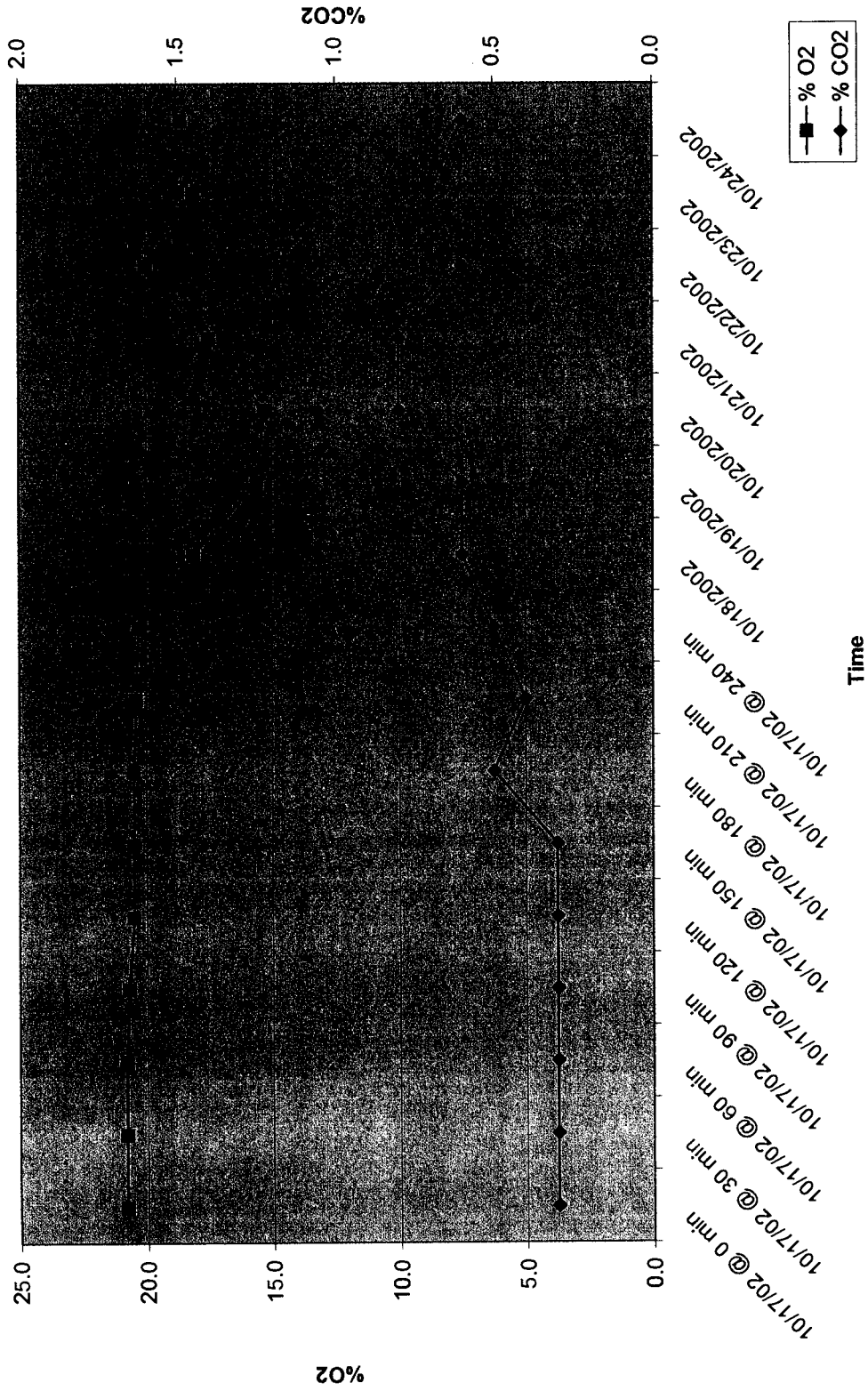
Quarterly Respirometer Test 4 of 5
MP-2 at 10 ft bgs



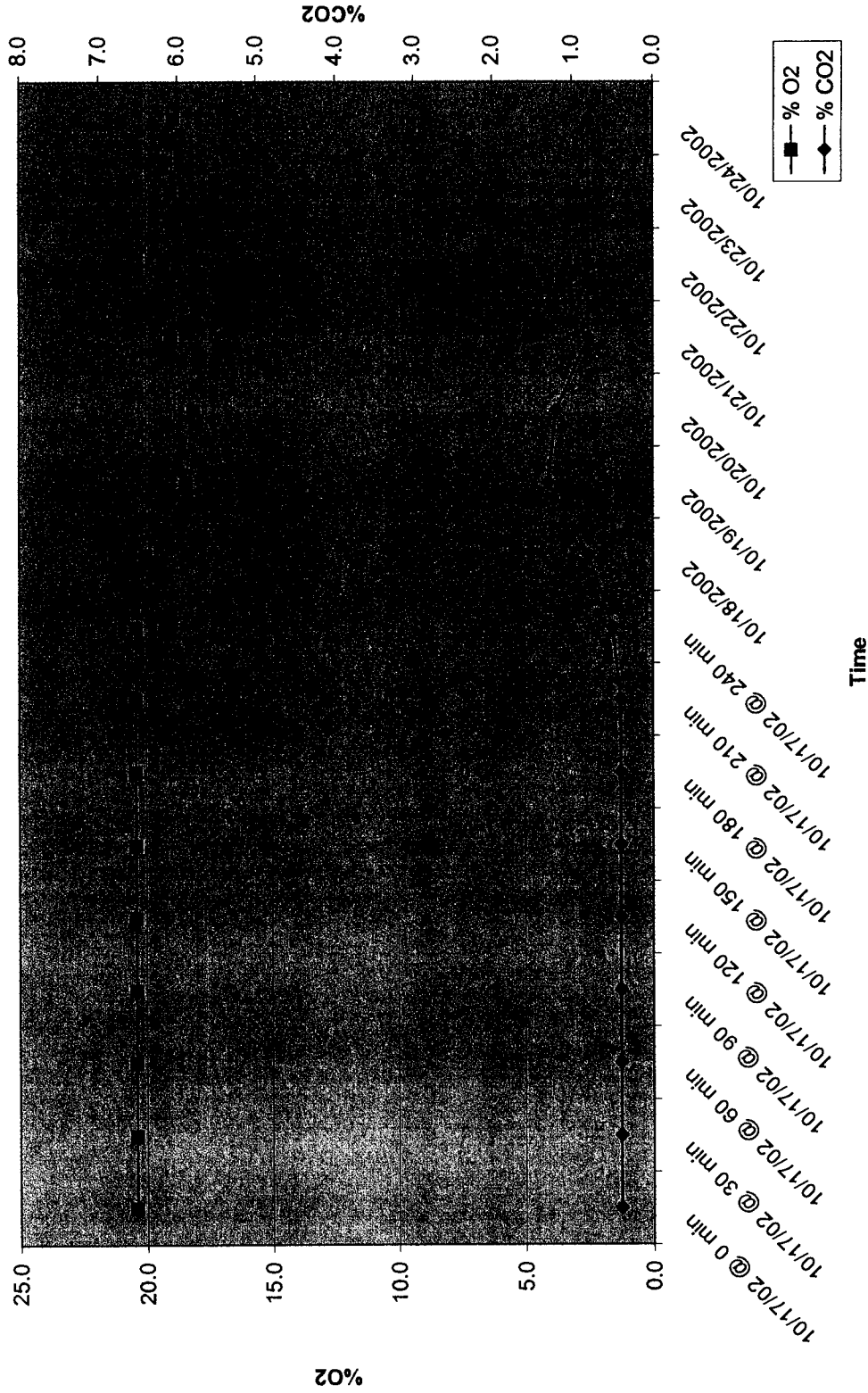
Quarterly Respirometer Test 4 of 5
MP-2 at 20 ft bgs



Quarterly Respirometer Test 4 of 5
MP-3 at 10 ft bgs

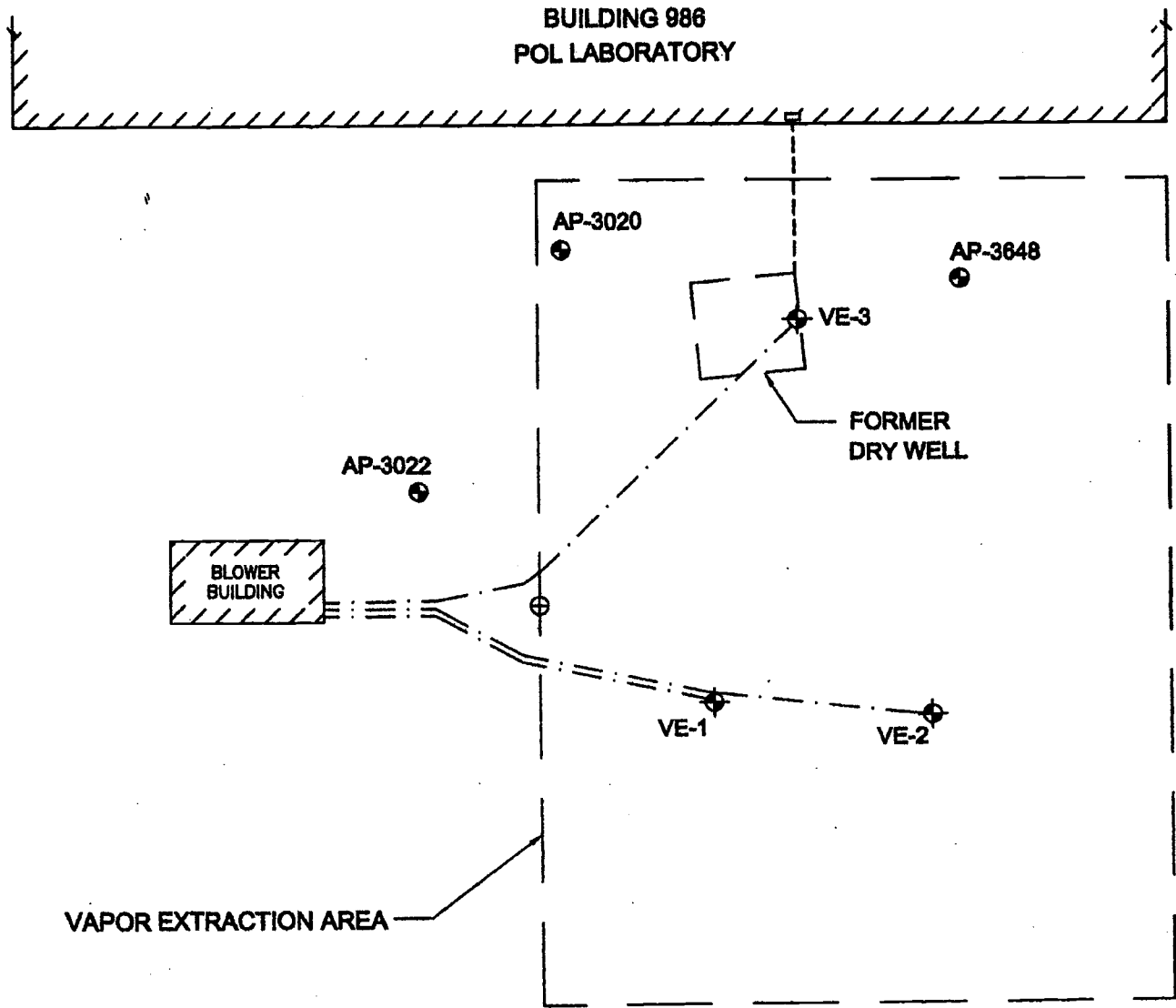


Quarterly Respirometer Test 4 of 5
MP-3 at 20 ft bgs



Appendix C

Site map



LEGEND

- ⊕ MONITORING WELL LOCATION
- ⊕◇ VAPOR EXTRACTION WELL LOCATION
- ⊕ TYPE A SURVEY MONUMENT
- SUBSURFACE PIPE
- - - SUBSURFACE VE PIPE

APPROXIMATE SCALE IN FEET

AVO
ALASKA ENVIRONMENTAL SERVICES
2121 Abbott Road
Anchorage, Alaska
99507-4188

DATE DEC. 2001
 DWN. TWS
 CKD. DML
 REV. 1
 CONTRACT No. DACA85-01-P-0080

FORT RICHARDSON, ALASKA
 BUILDING 986 OPERATION & MAINTENANCE
SITE LAYOUT MAP

FIGURE
2

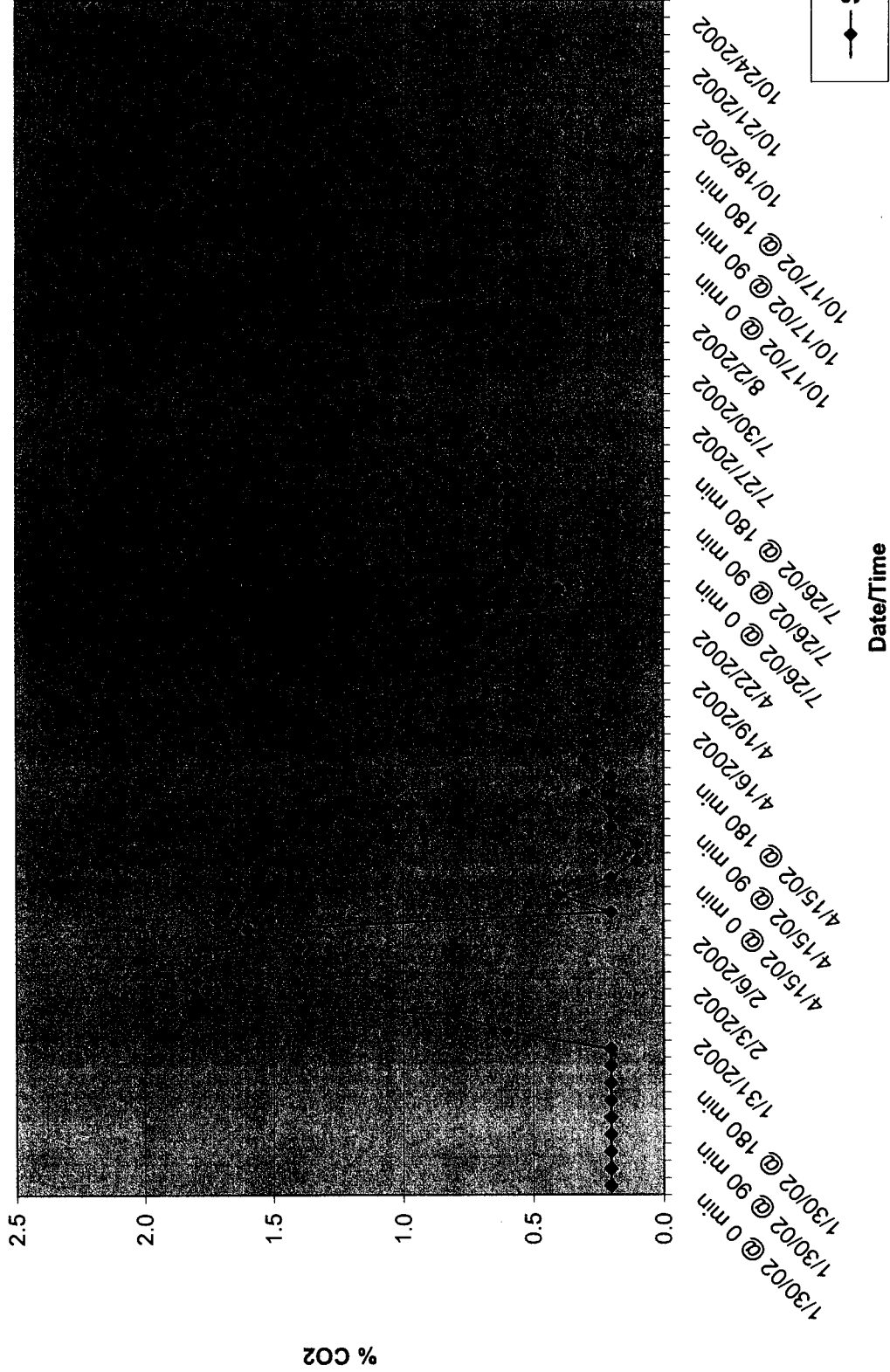
Appendix D

Carbon Dioxide Comparison

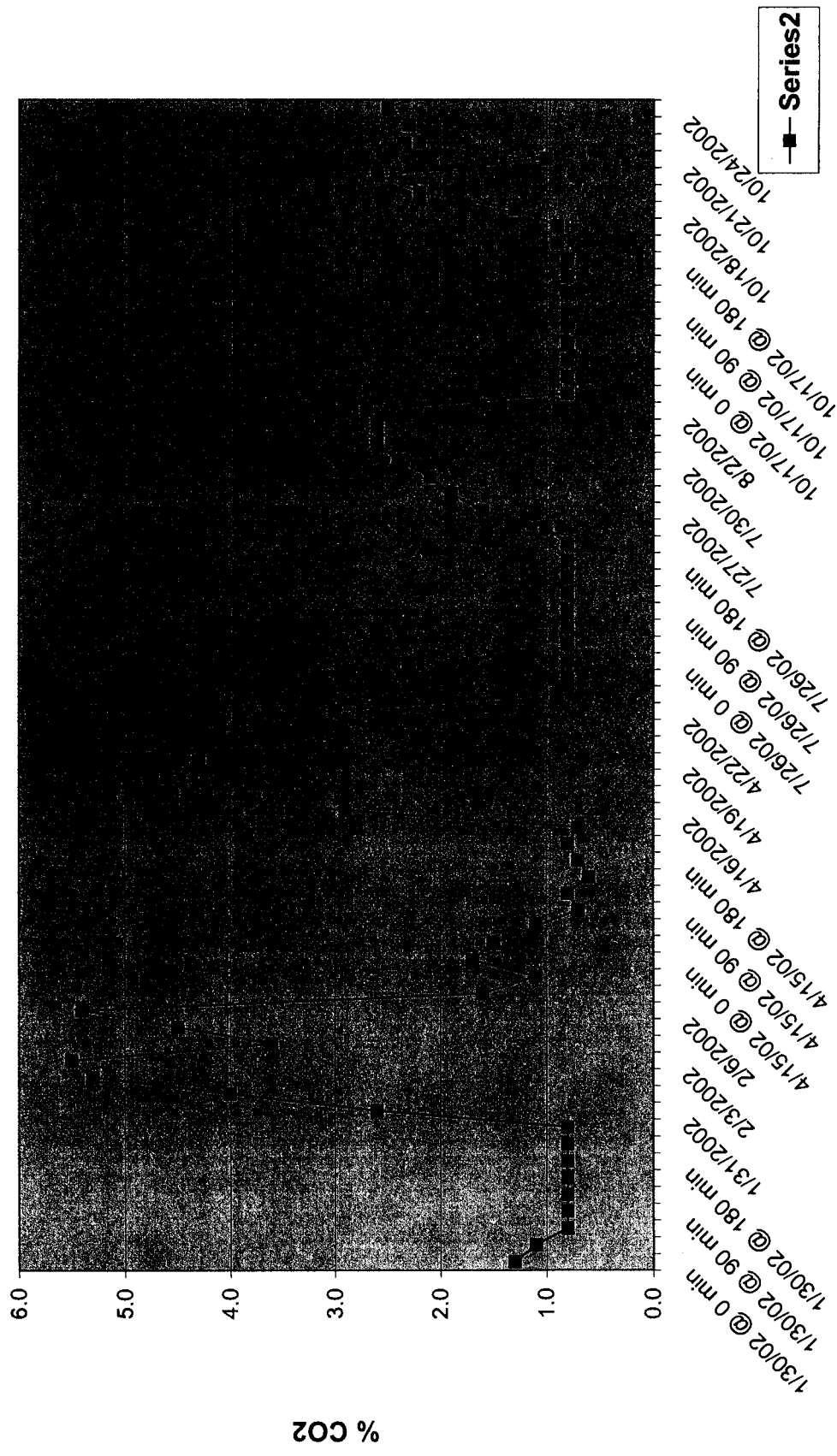
Carbon Dioxide Comparison						
	MP - 1		MP - 2		MP - 3	
DATE	10 ft bgs	20 ft bgs	10 ft bgs	20 ft bgs	10 ft bgs	20 ft bgs
	(Blue)	(Green)	(Blue)	(Green)	(Blue)	(Green)
	% CO2	% CO2	% CO2	% CO2	% CO2	% CO2
1/30/02 @ 0 min	0.2	1.3	0.0	0.6	0.0	0.1
1/30/02 @ 30 min	0.2	1.1	0.0	0.6	0.0	0.0
1/30/02 @ 60 min	0.2	0.8	0.0	0.6	0.0	0.0
1/30/02 @ 90 min	0.2	0.8	0.0	0.8	0.0	0.2
1/30/02 @ 120 min	0.2	0.8	0.0	0.8	0.0	0.1
1/30/02 @ 150 min	0.2	0.8	0.0	0.8	0.0	0.1
1/30/02 @ 180 min	0.2	0.8	0.0	1.0	0.0	0.1
1/30/02 @ 210 min	0.2	0.8	0.0	1.2	0.0	0.2
1/30/02 @ 240 min	0.2	0.8	0.0	1.4	0.0	0.2
1/31/2002	0.6	2.6	0.2	3.0	0.2	0.2
2/1/2002	0.8	4.0	0.0	3.6	0.0	0.2
2/2/2002	1.8	5.3	0.2	3.7	0.0	0.4
2/3/2002	1.8	5.5	0.1	4.8	0.0	0.4
2/4/2002	1.8	3.6	0.1	5.0	0.2	0.5
2/5/2002	1.4	4.5	0.2	5.6	0.1	0.4
2/6/2002	1.6	5.4	0.1	6.8	0.2	0.4
2/28/2002	0.2	1.6	0.0	0.4	0.0	0.0
3/28/2002	0.4	1.1	0.0	0.4	0.0	0.1
4/15/02 @ 0 min	0.2	1.7	0.0	0.4	0.0	0.0
4/15/02 @ 30 min	0.1	1.5	0.0	0.4	0.0	0.0
4/15/02 @ 60 min	0.1	1.1	0.0	0.6	0.0	0.0
4/15/02 @ 90 min	0.2	0.7	0.0	0.6	0.0	0.1
4/15/02 @ 120 min	0.2	0.8	0.0	0.6	0.0	0.2
4/15/02 @ 150 min	0.3	0.6	0.0	0.7	0.0	0.1
4/15/02 @ 180 min	0.2	0.7	0.0	0.8	0.0	0.2
4/15/02 @ 210 min	0.3	0.8	0.0	1.0	0.0	0.2
4/15/02 @ 240 min	0.3	0.7	0.0	1.2	0.0	0.2
4/16/2002	0.7	2.9	0.0	2.7	0.0	0.3
4/17/2002	1.4	4.4	0.2	3.4	0.0	0.3
4/18/2002	1.4	4.6	0.1	4.2	0.0	0.4
4/19/2002	1.6	4.3	0.0	3.8	0.1	0.3
4/20/2002	1.6	4.8	0.0	3.0	0.0	0.2
4/21/2002	1.3	4.1	0.1	3.5	0.0	0.4
4/22/2002	1.0	3.0	0.0	3.8	0.0	0.2
5/15/2002	0.3	0.9	0.1	0.2	0.1	0.0
6/12/2002	0.4	0.8	0.2	0.4	0.4	0.2

7/26/02 @ 0 min	0.5	0.8	0.2	0.3	0.0	0.2
7/26/02 @ 30 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 60 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 90 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 120 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 150 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 180 min	0.6	0.8	0.2	0.5	0.1	0.2
7/26/02 @ 210 min	0.7	0.8	0.2	0.5	0.2	0.2
7/26/02 @ 240 min	0.7	1.0	0.2	0.5	0.2	0.2
7/27/2002	1.0	1.6	0.2	0.6	0.2	0.3
7/28/2002	1.0	1.9	0.2	0.6	0.2	0.2
7/29/2002	1.2	2.1	0.2	0.8	0.2	0.2
7/30/2002	1.4	2.4	0.2	1.0	0.4	0.2
7/31/2002	1.5	2.6	0.2	1.3	0.4	0.2
8/1/2002	1.6	2.6	0.2	1.5	0.4	0.2
8/2/2002	1.6	2.7	0.2	1.6	0.4	0.2
8/15/2002	0.6	0.8	0.2	0.2	0.4	0.3
9/17/2002	0.6	0.8	0.2	0.3	0.4	0.6
10/17/02 @ 0 min	0.6	0.8	0.2	0.3	0.3	0.4
10/17/02 @ 30 min	0.6	0.8	0.2	0.3	0.3	0.4
10/17/02 @ 60 min	0.6	0.8	0.2	0.3	0.3	0.4
10/17/02 @ 90 min	0.6	0.8	0.2	0.4	0.3	0.4
10/17/02 @ 120 min	0.6	0.8	0.2	0.4	0.3	0.4
10/17/02 @ 150 min	0.6	0.8	0.2	0.4	0.3	0.4
10/17/02 @ 180 min	0.8	0.8	0.2	0.4	0.5	0.4
10/17/02 @ 210 min	0.8	0.9	0.2	0.5	0.4	0.4
10/17/02 @ 240 min	0.8	0.9	0.2	0.5	0.5	0.5
10/18/2002	1.2	1.3	0.2	0.9	0.6	0.8
10/19/2002	1.6	2.2	0.2	1.2	0.6	1.3
10/20/2002	1.8	2.6	0.2	1.8	0.8	1.2
10/21/2002	1.2	1.0	0.2	1.2	0.8	0.8
10/22/2002	1.6	2.2	0.2	1.8	0.6	0.8
10/23/2002	1.9	2.3	0.2	2.0	0.7	0.8
10/24/2002	2.2	2.5	0.2	2.3	0.6	0.8

Carbon Dioxide Comparison MP-1 at 10 ft bgs



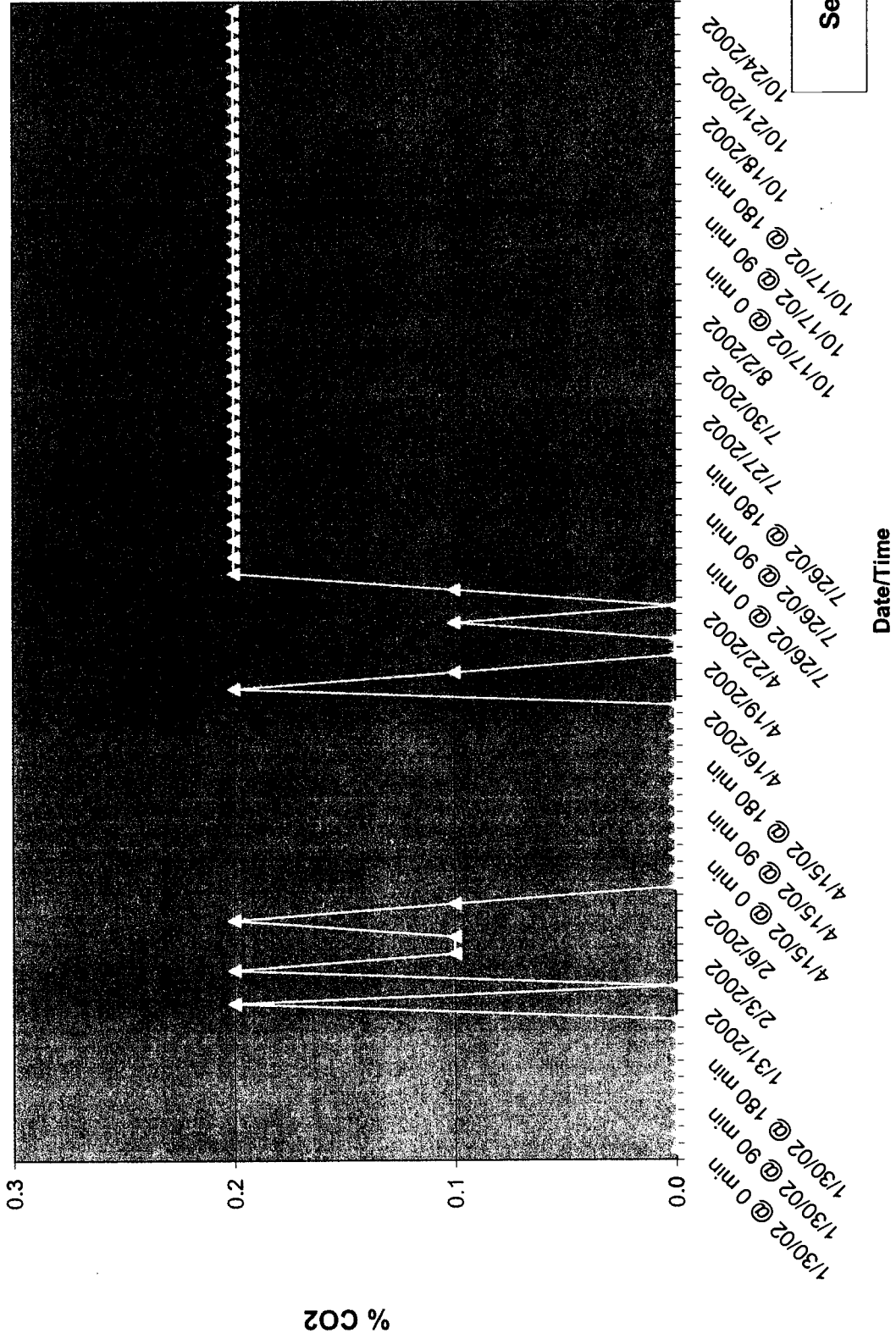
Carbon Dioxide Comparison MP-1 at 20 ft bgs



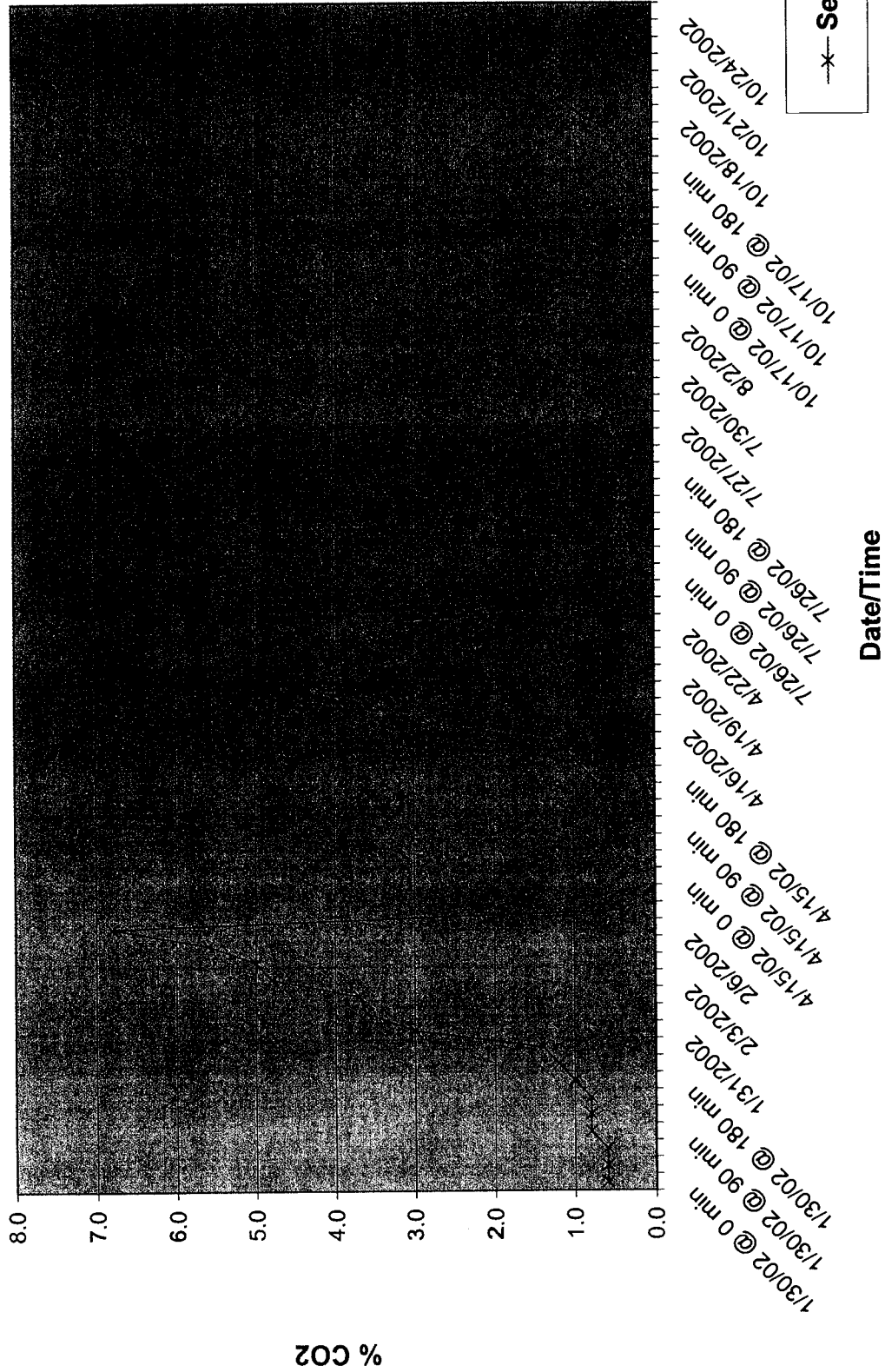
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Series2

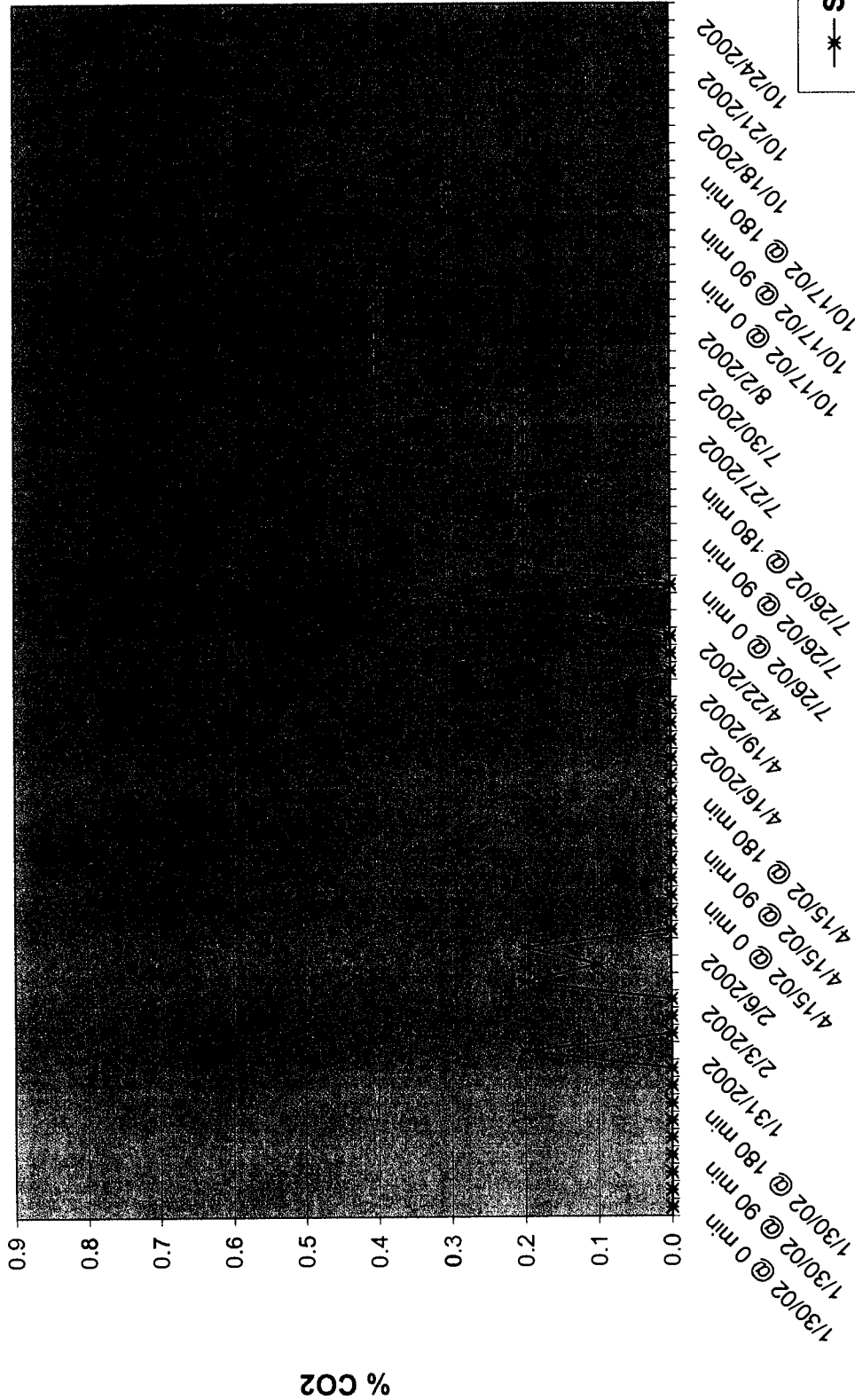
Carbon Dioxide Comparison MP-2 at 10 ft bgs



Carbon Dioxide Comparison MP-2 at 20 ft bgs



Carbon Dioxide Comparison MP-3 at 10 ft bgs



*—Series5

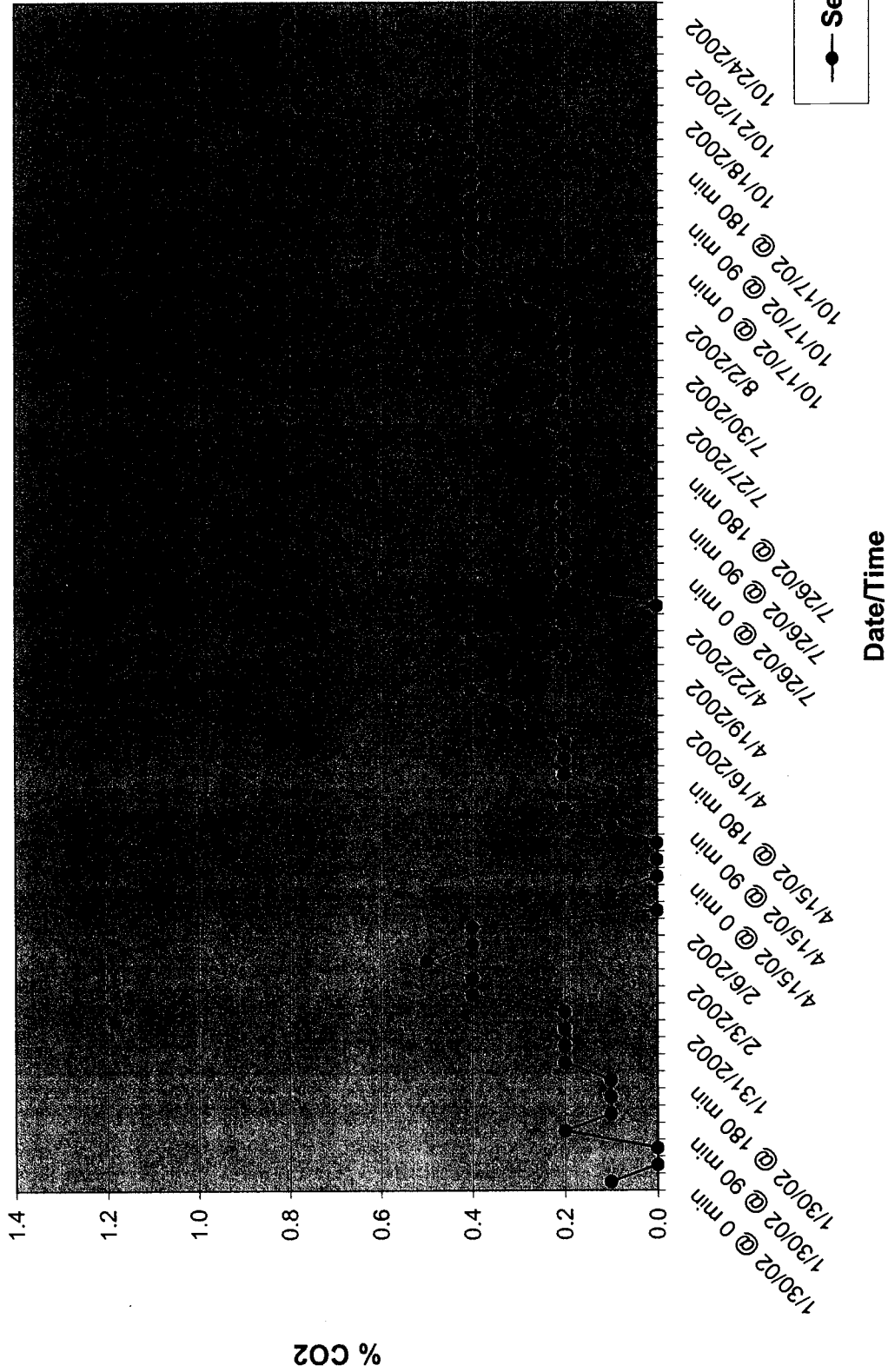
Date/Time

Soil Extraction and
Bio-venting Operations and Maintenance
Contract No. DACA85-01-P-0080

Quarterly Respiration Test 4 of 5

Project No. 5020011
AGVIQ, Inc.

Carbon Dioxide Comparison MP-3 at 20 ft bgs



Appendix E

Oxygen Comparison

Oxygen Comparison						
DATE	MP - 1		MP - 2		MP - 3	
	10 ft bgs (Blue)	20 ft bgs (Green)	10 ft bgs (Blue)	20 ft bgs (Green)	10 ft bgs (Blue)	20 ft bgs (Green)
	% O ₂	% O ₂	% O ₂	% O ₂	% O ₂	% O ₂
1/30/02 @ 0 min	20.8	19.6	20.8	20.2	20.9	20.9
1/30/02 @ 30 min	20.6	19.6	20.6	20.1	20.7	20.7
1/30/02 @ 60 min	20.4	19.6	20.4	19.8	20.7	20.6
1/30/02 @ 90 min	20.5	19.8	20.5	19.7	20.8	20.7
1/30/02 @ 120 min	20.4	19.8	20.5	19.5	20.8	20.7
1/30/02 @ 150 min	20.5	20.0	20.5	19.3	20.8	20.7
1/30/02 @ 180 min	20.4	19.8	20.6	19.2	20.8	20.7
1/30/02 @ 210 min	20.5	19.8	20.2	18.9	20.9	20.6
1/30/02 @ 240 min	20.4	19.8	20.2	18.4	20.7	20.5
1/31/2002	18.6	15.3	19.7	13.5	20.9	20.9
2/1/2002	15.6	9.7	20.5	9.0	20.2	18.9
2/2/2002	15.0	6.4	18.8	7.2	19.6	19.8
2/3/2002	16.0	6.3	19.8	6.2	20.9	20.7
2/4/2002	15.6	13.1	19.5	9.0	20.3	19.7
2/5/2002	16.5	9.2	20.1	8.2	20.4	19.3
2/6/2002	15.7	5.8	20.8	5.4	20.9	20.4
2/28/2002	20.8	18.9	20.9	20.7	20.9	20.9
3/28/2002	20.7	18.4	20.9	20.4	20.9	20.9
4/15/02 @ 0 min	20.9	18.4	20.9	20.4	20.9	20.9
4/15/02 @ 30 min	20.9	18.9	20.9	20.3	20.9	20.9
4/15/02 @ 60 min	20.8	19.5	20.9	20.3	20.9	20.9
4/15/02 @ 90 min	20.9	20.3	20.8	20.1	20.8	20.9
4/15/02 @ 120 min	20.8	20.5	20.9	19.8	20.8	20.9
4/15/02 @ 150 min	20.8	20.6	20.7	19.6	20.8	20.8
4/15/02 @ 180 min	20.6	20.3	20.7	19.5	20.7	20.6
4/15/02 @ 210 min	20.6	20.0	20.3	19.3	20.8	20.7
4/15/02 @ 240 min	20.5	19.9	20.4	19.0	20.8	20.6
4/16/2002	18.8	15.6	20.2	13.0	20.8	20.0
4/17/2002	16.4	10.0	19.8	9.6	20.7	19.7
4/18/2002	16.0	9.6	19.9	8.5	20.8	19.6
4/19/2002	15.7	8.9	20.1	7.9	20.7	20.1
4/20/2002	15.8	9.3	20.2	7.6	20.8	20.7
4/21/2002	16.7	11.4	20.4	7.7	20.6	19.9
4/22/2002	18.6	10.3	20.7	8.3	20.9	20.2
5/15/2002	20.8	19.8	20.8	20.7	20.8	20.9
6/12/2002	20.9	20.3	20.9	20.9	20.9	20.8

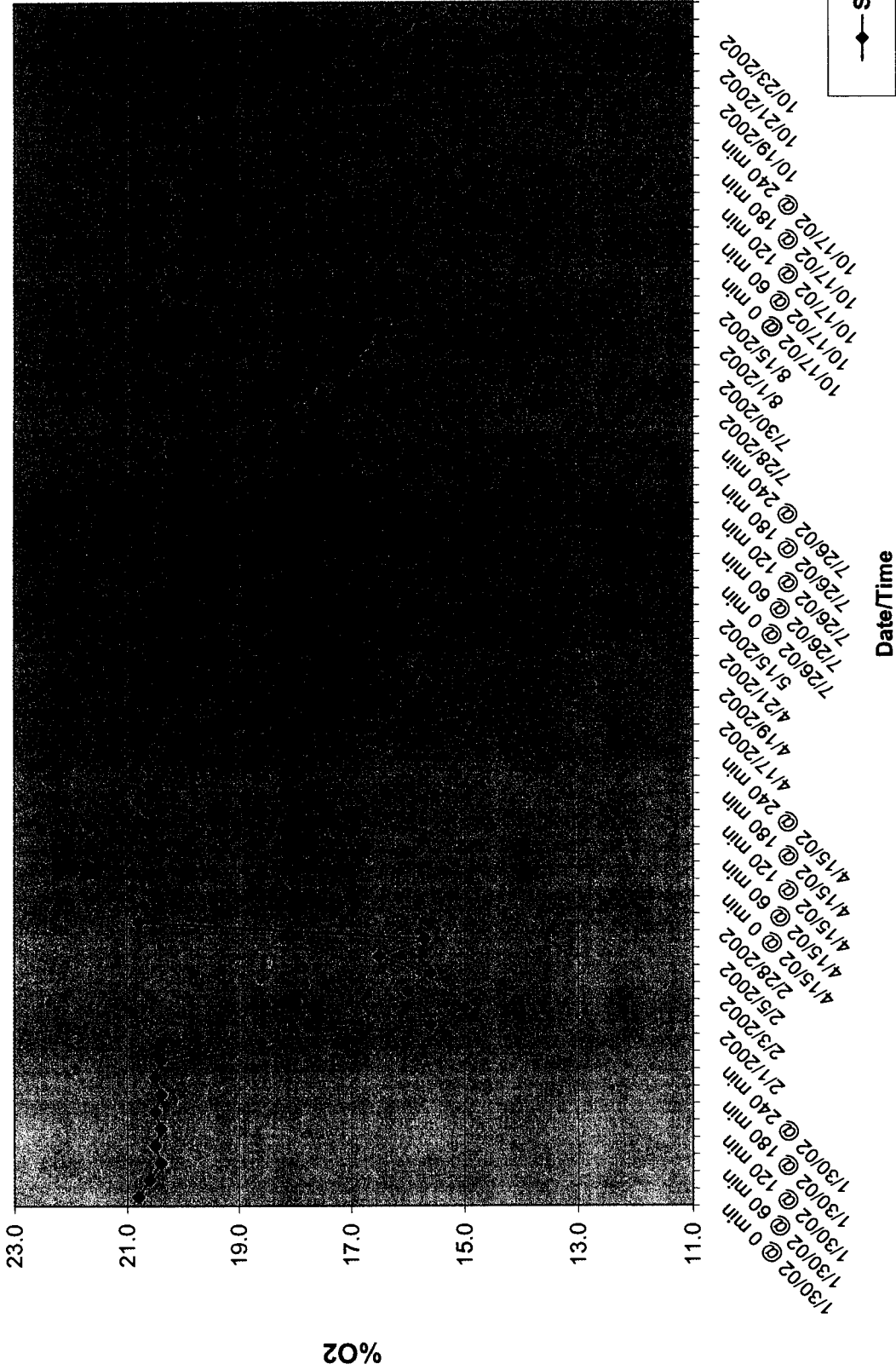
7/26/02 @ 0 min	20.4	19.6	20.9	20.5	20.9	20.6
7/26/02 @ 30 min	20.4	19.8	20.8	20.4	20.7	20.7
7/26/02 @ 60 min	20.4	19.7	20.8	20.3	20.8	20.6
7/26/02 @ 90 min	20.4	19.7	20.8	20.3	20.8	20.7
7/26/02 @ 120 min	20.4	19.7	20.8	20.0	20.8	20.7
7/26/02 @ 150 min	20.4	19.7	20.8	19.8	20.7	20.6
7/26/02 @ 180 min	20.4	19.5	20.8	19.8	20.7	20.6
7/26/02 @ 210 min	20.4	19.3	20.8	19.8	20.7	20.6
7/26/02 @ 240 min	20.2	19.1	20.8	19.7	20.7	20.6
7/27/2002	18.5	17.1	20.6	17.0	20.5	20.4
7/28/2002	17.9	16.5	20.6	16.6	20.6	20.2
7/29/2002	17.5	15.0	20.6	15.9	20.5	20.0
7/30/2002	16.9	14.4	20.6	15.6	20.4	20.1
7/31/2002	16.7	13.8	20.4	14.0	20.2	20.0
8/1/2002	16.5	13.5	20.4	13.9	20.2	20.0
8/2/2002	16.4	13.3	20.4	13.9	20.2	20.0
8/15/2002	20.1	19.7	20.7	20.7	20.4	20.4
9/17/2002	20.5	19.7	20.8	20.7	20.7	20.4
10/17/02 @ 0 min	20.2	19.6	20.9	20.6	20.8	20.4
10/17/02 @ 30 min	20.2	19.6	20.9	20.6	20.8	20.4
10/17/02 @ 60 min	20.2	19.3	20.9	20.6	20.8	20.4
10/17/02 @ 90 min	20.1	19.2	20.9	20.3	20.7	20.4
10/17/02 @ 120 min	20.1	19.2	20.9	20.3	20.5	20.4
10/17/02 @ 150 min	20.1	19.2	20.9	20.3	20.5	20.4
10/17/02 @ 180 min	20.0	19.0	20.9	20.2	20.5	20.4
10/17/02 @ 210 min	20.0	18.9	20.8	20.0	20.4	20.4
10/17/02 @ 240 min	20.0	18.8	20.8	20.0	20.3	20.4
10/18/2002	19.6	14.6	20.8	17.3	18.1	20.0
10/19/2002	12.3	9.2	20.4	15.5	15.6	18.4
10/20/2002	11.7	10.1	19.0	14.3	15.3	18.1
10/21/2002	17.2	18.4	19.3	17.9	17.5	19.0
10/22/2002	16.3	14.9	19.2	16.3	20.0	19.3
10/23/2002	15.8	15.2	19.4	15.6	18.1	19.0
10/24/2002	15.2	16.2	19.3	14.7	18.6	18.9

Soil Extraction and
Bio-verruing Operations and Maintenance
Contract No. DACA85-01-P-0080

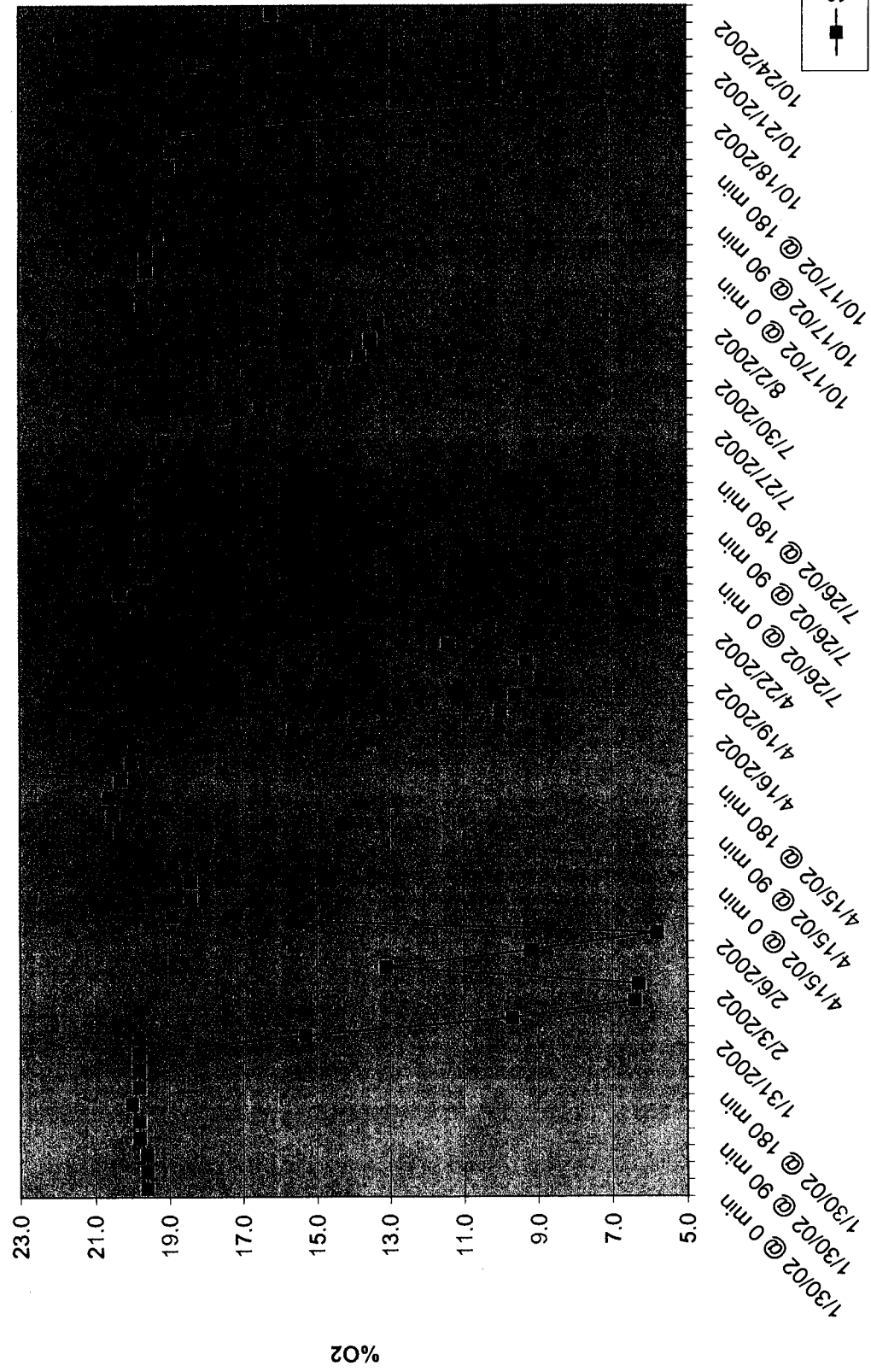
Quarterly Res. Meter Test 4 of 5

Project: 020011
AGVIQ, Inc.

Oxygen Comparison MP-1 at 10 ft bgs

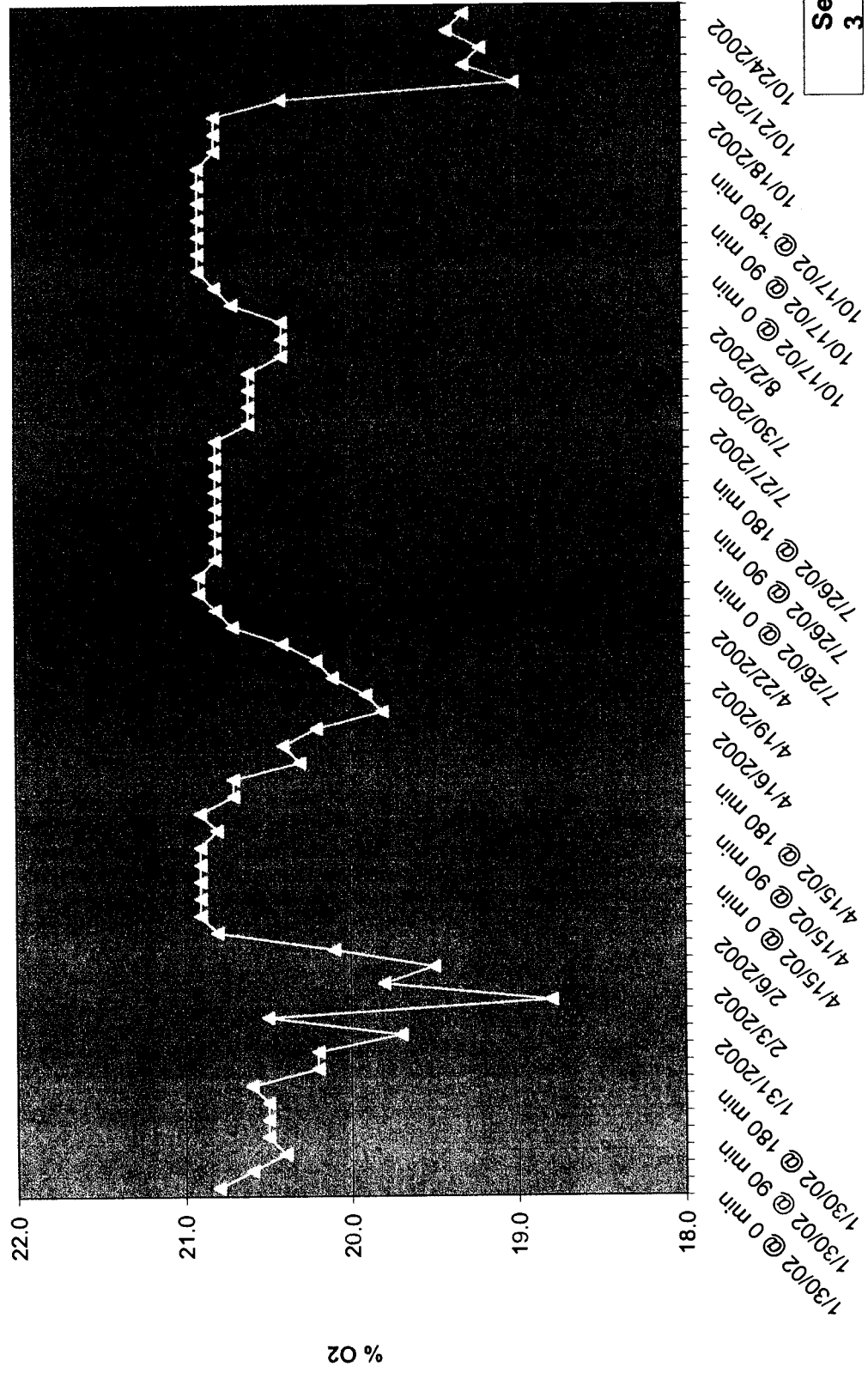


Oxygen Comparison MP-1 at 20 ft bgs

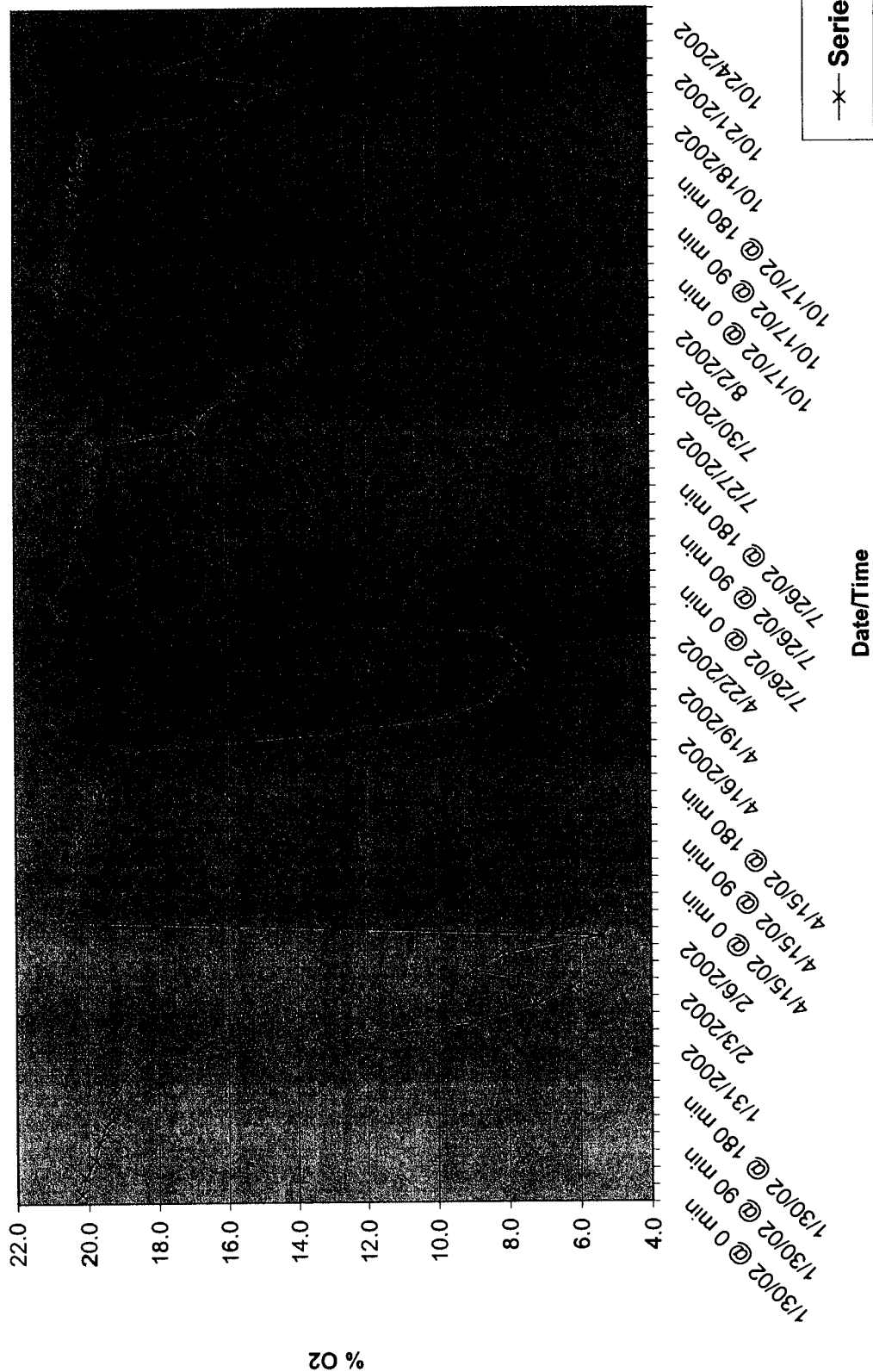


Series 2

Oxygen Comparison MP-2 at 10 ft bgs



Oxygen Comparison MP-2 at 20 ft bgs

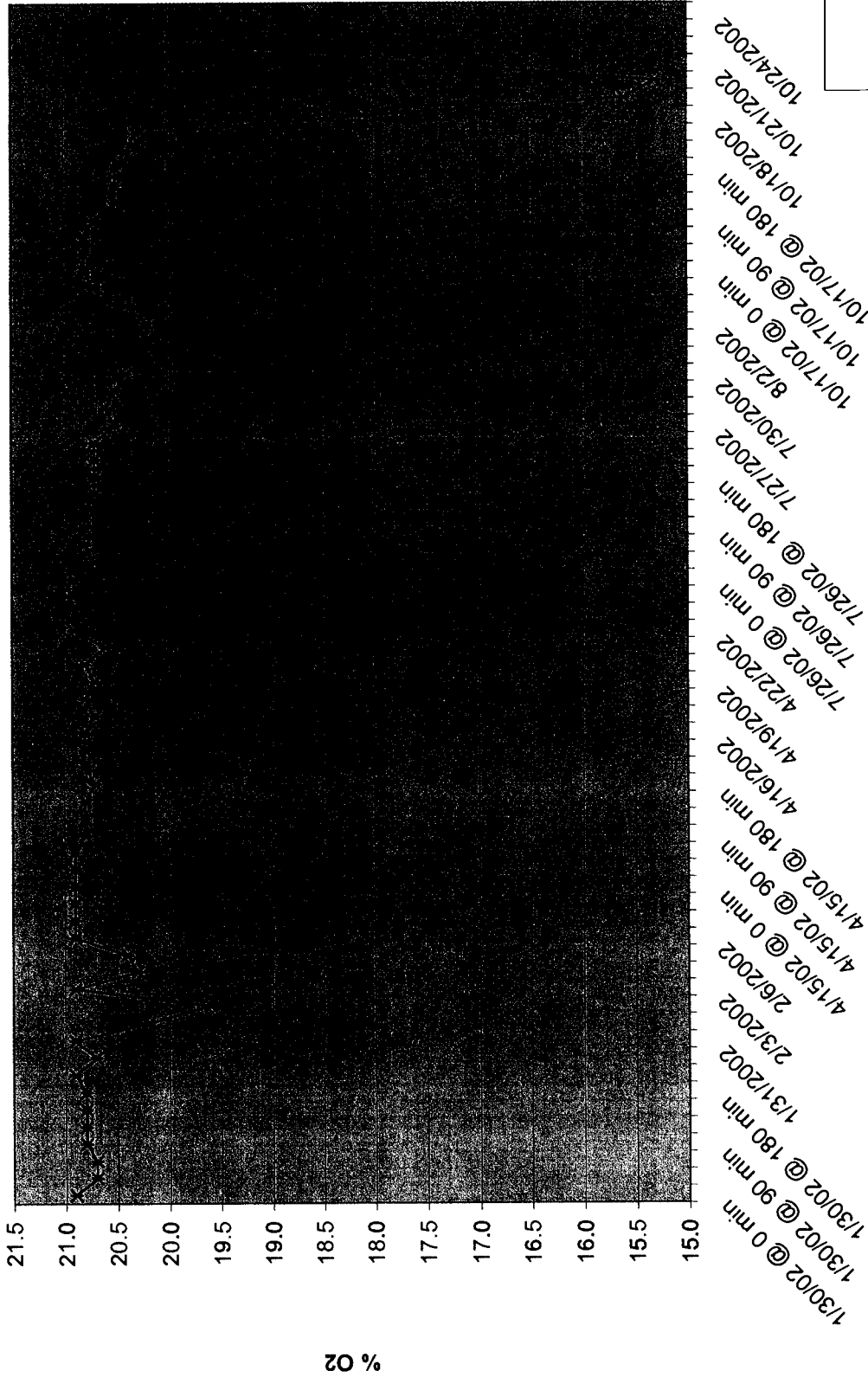


Soil : Extraction and
Bio-venting Operations and Maintenance
Contract No. DACA85-01-P-0080

Quarterly Res. Meter Test 4 of 5

Project #020011
AGVIQ, Inc.

Oxygen Comparison MP-3 at 10ft bgs



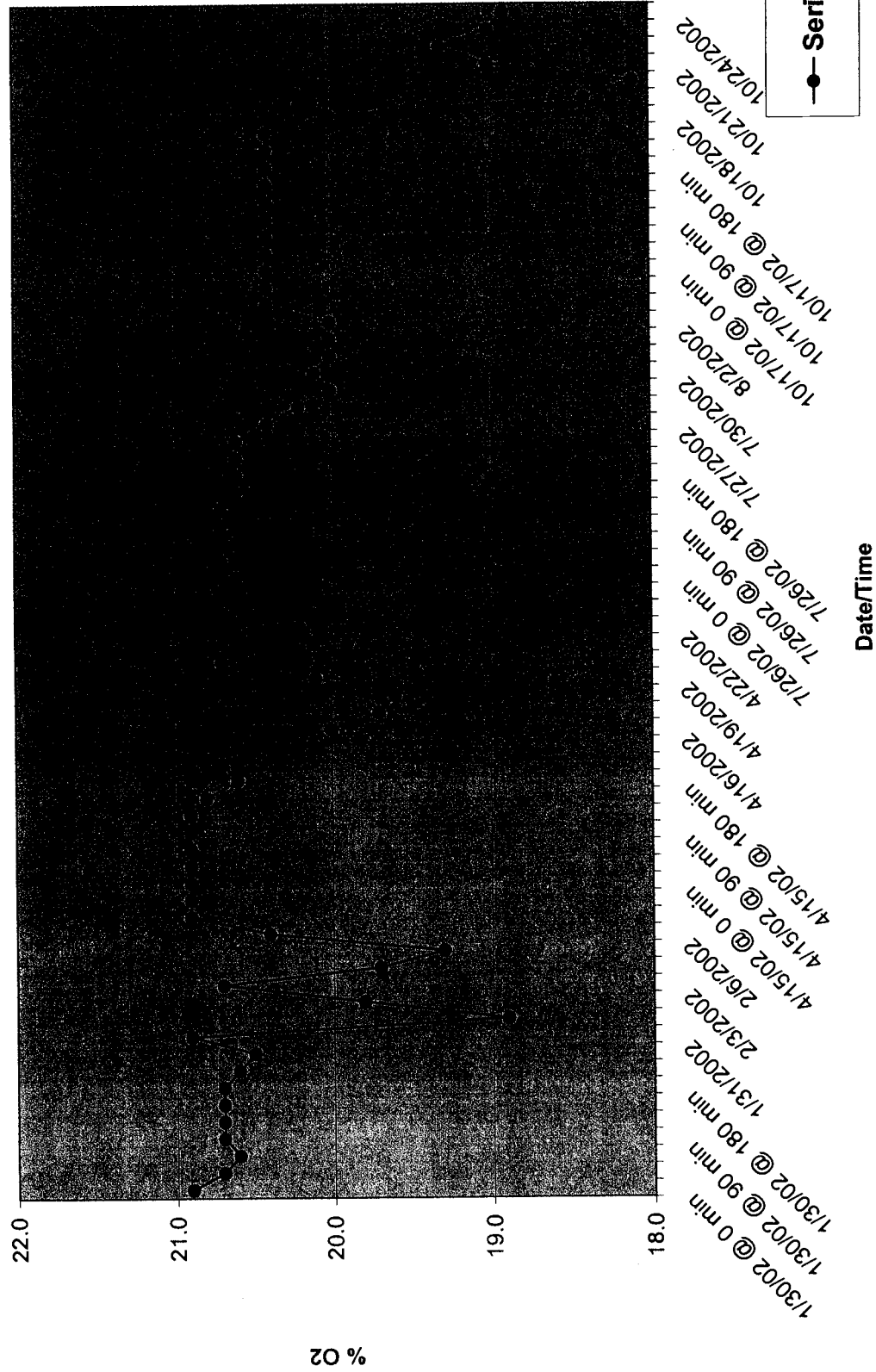
* Series 5

Soil : Extraction and
Bio-venting Operations and Maintenance
Contract No. DACA85-01-P-0080

Quarterly Res. : Meter Test 4 of 5

Project : J020011
AGVIC, Inc.

Oxygen Comparison MP-3 at 20ft bgs



QUARTERLY RESPIROMETER TEST 5 OF 5

BUILDING 986 POL LABORATORY

**SOIL VAPOR EXTRACTION AND BIO-VENTING
OPERATIONS AND MAINTENANCE**

**FORT RICHARDSON, ALASKA
CONTRACT NO. DACA85-01-P-0080**

Prepared for:

U.S. Army Corps of Engineers, Alaska District
CEPOA-PM-M-A
P. O. Box 6898
Elmendorf AFB, Alaska 99506-6898

Prepared By:

A G V I Q
AGVIQ ENVIRONMENTAL SERVICES

AGVIQ, LLC
2121 Abbott Road Suite 100
Anchorage, Alaska 99507

Project #200110

March 2003

OPERATIONAL MONITORING

AGVIQ, LLC inspected the soil vapor extraction (VE) and bio-venting (BV) system for proper operational parameters. The system appeared to be operating normally, as designed and was tested as initially configured. Power indicators and alarms were operational. The system airflow was free flowing, did not have excessive vacuum, the lower explosive limit (LEL) concentrations were low, and the condensate tank was empty and unobstructed.

RESPIROMETER TESTING

Since the VE/BV system re-start on October 24, 2002, AGVIQ has performed three operational monitoring events at the Building 986 POL Lab. During each of these events, initial soil vapor readings were collected from three (3) monitoring points (MP-1, MP-2 and MP-3). Readings using a Combustible Gas Indicator (CGI) were collected from each of the monitoring points. The first two events took place on November 17 and December 20, 2002. The third monitoring event occurred on January 30, 2003 in conjunction with the quarterly respirometer testing. These monthly monitoring events consisted of soil vapor readings, airflow rates (CFM) and vacuum (inches of H₂O) measurements from each vent well. The concentrations of volatiles (ppm) were measured with a calibrated photo-ionization detector (PID) from each vent well at the VE manifold. On January 30, 2003 the third respiration testing of this yearly sequence of O & M activities was performed for a period of eight (8) days. Prior to shutting off the blower for the respirometer test, the VE system was configured to extract air from VE wells 1, 2 and 3, an initial effluent sample was collected, and initial soil vapor readings were collected from three (3) monitoring points. Soil vapor readings were also collected daily over the next seven (7) days and the blower was restarted on February 6, 2003.

ANALYTICAL SAMPLING PROGRAM

Effluent Sampling

Effluent samples were collected from the VE system exhaust stack, prior to shutdown, to estimate hydrocarbon-mass removal rates for this configuration. The samples were collected from the exhaust stack using laboratory-prepared 1-liter stainless steel canisters. The samples were sent to CT&E of Anchorage, Alaska. The effluent samples were analyzed for the following parameters:

- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) by EPA 8021B
- Gasoline Range Organics (GRO) by AK 101; and
- Methane, carbon dioxide, oxygen and nitrogen by ASTM D-1945

FINDINGS

Effluent Sampling

The reported analytical results for GRO and BTEX constituents in the exhaust air sample were undetectable (Table 1) at levels stated in the laboratory report. The methane and carbon dioxide results were similar to the previous respirometer test (Table 1). The concentrations of volatiles in the exhaust air at the time of sample collection were low (Table 4). All of the analytical results from the effluent air samples collected during the respirometer sampling event are presented in Appendix A.

Monitoring Events

The CGI results from the monitoring events are presented in Appendix B. The readings at MP-1 suggest biological activity due to the decrease in oxygen and the increase in carbon dioxide, during the extent of the monitoring period. This trend is slightly greater at 20 ft bgs than at 10 ft bgs. This implies that biological activity may be occurring in the vicinity of MP-1 and perhaps a slightly higher amount of activity may be taking place at the greater depth. MP-1 is located in the vicinity of the former dry well (Appendix C).

The readings from MP-2 also exhibited evidence of biological activity; however, there was less evidence of biological activity seen at 10 ft bgs than was exhibited at the same depth at MP-1. Evidence of a considerably higher amount of microbial activity is seen at the 20 ft bgs depth at this location.

MP-3 is located outside of the primary contaminated area at the former dry well location. Some minor activity was observed at both depths in this location.

To assist in assessing the VE/BV system performance, the airflow rates (CFM) and vacuum (inches of H₂O) were measured from each vent well, and concentrations of volatiles (ppm) were measured from each vent well at the exhaust manifold. The airflow rates measured at the VE blower during the fifth respirometer test ranged between 12 and 25 CFM and the applied vacuum levels at the VE blower ranged between 0 and 16.2 inches of H₂O. The concentration of volatiles were all measured as 0.0 ppm during all three (3) monitoring periods. The airflow, vacuum, and concentration of volatiles results for all three monitoring events are listed in Tables 2-4.

CONCLUSION

Review of the monitoring and analytical data indicates that the VE/BV system is most likely remediating the subsurface soils in the vicinity of the former dry well located at Building 986. The observations indicate that the remediation is likely progressing by two processes; bioremediation through the utilization of oxygen in the soil gas and, to a lesser degree, physical removal of hydrocarbon vapors. The physical removal is diminished due to the age of the system and remedial process.

Evidence of bioremediation and physical removal is obtained through sampling and analysis of the extracted soil gas. Analysis of the VE system effluent for petroleum hydrocarbons indicates that the VE system is successfully extracting contaminants. The presence of elevated CO₂ concentrations in the soil gas analyzed from the VE system exhaust stack may be an indication of hydrocarbon biodegradation in the site soils. In addition, oxygen concentrations in the soil gas indicate that the oxygen is not currently limiting hydrocarbon biodegradation. Similarly, the data collected from the three soil gas monitoring points indicate by the increase in CO₂ concentrations (Appendix D) and significant decrease in O₂ concentrations (Appendix E) that biodegradation is occurring in the soils at the site where contamination was initially discovered through investigation activities.

Based on the monthly monitoring, respirometer, and analytical test data, the system operational configuration was not changed. The system was configured as listed in Table 4 - Soil Vapor Extraction & Bio-Venting System Operational Data – January 2003.

TABLE 1
AIR SAMPLE ANALYTICAL RESULTS

SAMPLE ID	PARAMETERS										
	GRO ppm	BTEX ppm	Benzene ppm	Toluene ppm	Ethylbenzene ppm	P & M-Xylene ppm	O-Xylene ppm	Oxygen %	Nitrogen %	Methane %	Carbon Dioxide %
Exhaust 03FRA010AG	20.0 U	3.18 U	0.780 U	0.660 U	0.580 U	0.580 U	0.580 U	N/A	N/A	N/A	N/A
Exhaust 03FRA011AG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14	85	0.018	0.58

Note:
 GRO = Gasoline Range Organics
 BTEX = Benzene, Toluene, Ethylbenzene and Total Xylenes
 U = Undetectable as listed in the analytical report
 N/A = Not Applicable as listed in the analytical report
 ppm = parts per million by volume
 % = percent by volume

TABLE 2
SOIL VAPOR EXTRACTION & BIO-VENTING SYSTEM
OPERATIONAL DATA – NOVEMBER 2002

----- PARAMETERS -----

LOCATION	AIR FLOW (CFM)	VACUUM (inches of H ₂ O)	CONCENTRATION OF VOLATILES (ppm)	% WELLS OPEN
VE - 1	23	16.2	0.0	100 %
VE - 2	19	11.8	0.0	100 %
VE - 3	17	9.6	0.0	100 %
EXHAUST STACK	25	0.0	0.0	N/A

Note:
 CFM = Cubic Feet per Minute
 ppm = Parts Per Million
 N/A = Not Applicable

TABLE 3
SOIL VAPOR EXTRACTION & BIO-VENTING SYSTEM
OPERATIONAL DATA – DECEMBER 2002

----- PARAMETERS -----

LOCATION	AIR FLOW (CFM)	VACUUM (inches of H ₂ O)	CONCENTRATION OF VOLATILES (ppm)	% WELLS OPEN
VE - 1	24	14.3	0.0	100 %
VE - 2	19	10.0	0.0	100 %
VE - 3	17	9.1	0.0	100 %
EXHAUST STACK	25	0.8	0.0	N/A

Note:
 CFM = Cubic Feet per Minute
 ppm = Parts Per Million
 N/A = Not Applicable

TABLE 4
SOIL VAPOR EXTRACTION & BIO-VENTING SYSTEM
OPERATIONAL DATA – JANUARY 2003

----- PARAMETERS -----

LOCATION	AIR FLOW (CFM)	VACUUM (inches of H ₂ O)	CONCENTRATION OF VOLATILES (ppm)	% WELLS OPEN
VE - 1	24	14.9	0.0	100 %
VE - 2	19	10.1	0.0	100 %
VE - 3	12	9.4	0.0	100 %
EXHAUST STACK	25	0.0	0.0	N/A

Note:
 CFM = Cubic Feet per Minute
 ppm = Parts Per Million
 N/A = Not Applicable

Appendix A

Laboratory Analytical Results



CT&E Environmental Services Inc.

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: <http://www.cteesi.com>

Darrin Lawless
AGVIQ Inc.
2121 Abbott Road Suite 100
Anchorage, AK 995074453

Work Order: 1030554
Bldg 986-POL Lab-Fra 5020011
Client: AGVIQ Inc.
Report Date: March 04, 2003

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by CT&E. A copy of our Quality Control Manual that outlines this program is available at your request.

As specifically noted, all statements and data in this report are in conformance to the provisions set forth in our Quality Assurance Program Plan.

If you have any questions regarding this report or if we can be of any other assistance, please call your CT&E Project Manager at (907) 562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

- PQL Practical Quantitation Limit (reporting limit).
- U Indicates the analyte was analyzed for but not detected.
- F Indicates an estimated value that falls below PQL, but is greater than the MDL.
- J Indicates an estimated value that falls below PQL, but is greater than the MDL.
- B Indicates the analyte is found in the blank associated with the sample.
- * The analyte has exceeded allowable limits.
- GT Greater Than
- D Secondary Dilution
- LT Less Than
- ! Surrogate out of range


CT&E Environmental Services Inc.

CT&E Ref.# 1030554001
Client Name AGVIQ Inc.
Project Name/# Bldg 986-POL Lab-Fra 5020011
Client Sample ID 03FRA010AG
Matrix Gas & Air

All Dates/Times are Alaska Standard Time

Printed Date/Time 03/04/2003 12:30
Collected Date/Time 01/30/2003 11:05
Received Date/Time 01/30/2003 16:50
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department								
Gasoline Range Organics	20.0 U	20.0	ppm	CTE 8015M/8021B		02/07/03	02/07/03	SCL
Benzene	0.780 U	0.780	ppm	CTE 8015M/8021B		02/07/03	02/07/03	SCL
Toluene	0.660 U	0.660	ppm	CTE 8015M/8021B		02/07/03	02/07/03	SCL
Ethylbenzene	0.580 U	0.580	ppm	CTE 8015M/8021B		02/07/03	02/07/03	SCL
P & M -Xylene	0.580 U	0.580	ppm	CTE 8015M/8021B		02/07/03	02/07/03	SCL
o-Xylene	0.580 U	0.580	ppm	CTE 8015M/8021B		02/07/03	02/07/03	SCL
Polycyclic Aromatic Hydrocarbons								
1,2-Difluorobenzene <Surr>	94.9		%	CTE 8015M/8021B	60-120	02/07/03	02/07/03	SCL
4-Bromofluorobenzene <Surr>	63		%	CTE 8015M/8021B	50-150	02/07/03	02/07/03	SCL



Air Toxics Ltd. Introduces the Electronic Report

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

This electronic report includes the following:

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

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

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

Hours 8:00 A.M to 6:00 P.M. Pacific

E-mail to:samplereceiving@airtoxics.com



AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0302204

Work Order Summary

CLIENT:	Ms. Rhonda Strucher CT & E 200 West Potter Anchorage, AK 99518	BILL TO:	Ms. Rhonda Strucher CT & E 200 West Potter Anchorage, AK 99518
PHONE:	907-562-2343	P.O. #	
FAX:	907-561-5301	PROJECT #	
DATE RECEIVED:	2/11/2003	CONTACT:	Karen Burden
DATE COMPLETED:	2/25/2003		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC/PRES</u>
01A	1030554002	Modified ASTM D-1945	0.0 "Hg
02A	Lab Blank	Modified ASTM D-1945	NA
03A	LCS	Modified ASTM D-1945	NA

CERTIFIED BY:

Laboratory Director

DATE: 02/25/03

Certification numbers: AR DEQ, CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892

Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/02, Expiration date: 06/30/03

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 ASTM D-1945
CT & E
Workorder# 0302204

One High Pressure Sample Cylinder sample was received on February 11, 2003. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of up to 1.0 mL of sample. With the exception of analyses conducted in accordance with AFCEE 3.0, all reported compound quantifications were calculated from response factors derived from the first Continuing Calibration Verification of each relevant analytical batch. See the data sheets for the reporting limits for each compound.

<i>Requirement</i>	<i>ASTM D-1945</i>	<i>ATL Modifications</i>
Normalization	Sum of original values Should not differ from 100.0% by more than 1.0%	Sum of original values may range between 75-125%.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C5 and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Standard preparation	Prepared by blending pure standards	Purchased blend certified to $\pm 5\%$ accuracy or better

Receiving Notes

The chain of custody information for sample 1030554002 did not match the entry on the sample tag. The discrepancy was noted in the Login email and the information on the chain of custody was used to process and report the sample.

Analytical Notes

Results were normalized to equal 100% by making up the difference with Nitrogen.

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Six qualifiers may have been used on the data analysis sheets and indicate as follows:

- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.

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

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

SAMPLE NAME: 1030554002

ID#: 0302204-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name	3021205	Date of Collection	1/20/03
Oil Factor	2.02	Date of Analysis	2/12/03

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	14
Nitrogen	0.20	85
Carbon Monoxide	0.0020	Not Detected
Methane	0.00020	0.018
Carbon Dioxide	0.0020	0.58
Ethane	0.0020	Not Detected
Propane	0.0020	Not Detected
Isobutane	0.0020	Not Detected
Butane	0.0020	Not Detected
Neopentane	0.0020	Not Detected
Isopentane	0.0020	Not Detected
Pentane	0.0020	Not Detected
C6+	0.020	Not Detected

Total BTU/Cu.F. = 0.18

Total Sp. Gravity = 1.0

Container Type: High Pressure Sample Cylinder

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0302204-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name	302-204	Date of Collection	NA
Dil Factor	100	Date of Analysis	2/2/03

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	Not Detected
Carbon Monoxide	0.0010	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.0010	Not Detected
Ethane	0.0010	Not Detected
Propane	0.0010	Not Detected
Isobutane	0.0010	Not Detected
Butane	0.0010	Not Detected
Neopentane	0.0010	Not Detected
Isopentane	0.0010	Not Detected
Pentane	0.0010	Not Detected
C6+	0.010	Not Detected

Container Type: NA - Not Applicable

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0302204-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name	002204	Date of Selection	NA
Dil. Factor	100	Date of Analysis	2/12/03

Compound	Rpt. Limit (%)	%Recovery
Oxygen	0.10	99
Nitrogen	0.10	98
Carbon Monoxide	0.0010	100
Methane	0.00010	98
Carbon Dioxide	0.0010	98
Ethane	0.0010	99
Propane	0.0010	98
Isobutane	0.0010	103
Butane	0.0010	99
Neopentane	0.0010	95
Isopentane	0.0010	92
Pentane	0.0010	97
C6+	0.010	98

Container Type: NA - Not Applicable

- Alaska
- Michigan
- West Virginia
- Maryland
- New Jersey
- New Orleans

0302204

CHAIN OF CUSTODY RECORD

CT&E Environmental Services Inc.
Laboratory Division



CLIENT: SGS Environmental

CONTACT: Rhonda Struchiner PHONE NO: 907-519-2343 DIVISION:

PROJECT: 200 W. POHLE DR

REPORTS TO: ANCH, AK 99517 FAX NO: 907-519-5301

INVOICE TO: QUOTE# P.O. NUMBER:

LAB NO: 1030554002 DATE: 11/03/03 TIME: 11:05 AM MATRIX: AK

DATE RECEIVED BY: Rhonda Struchiner DATE: 9/10/03 TIME: 11:30

DATE REQUESTED BY: Rhonda Struchiner DATE: 9/10/03 TIME: 10:30

REINQUIRED BY: (3)

REINQUIRED BY: (4)

NO. OF CONTAINERS: 1

SAMPLE TYPE: ASTM 1915

PREPARATION: ASTM 1915

ANALYSIS: ASTM 1915

PACKAGING: ASTM 1915

TEMPERATURE C: 03 FERRIMAG

Shipping Carrier: UPS

Shipping Ticket No: 1030554002

Date Deliverables: CDE + type data pack

Level: Level II Level III Level III (DET.)

Requestor Turnaround Time and Special Instructions: INTACT BROKEN - ABSENT

Temperature C: INTACT BROKEN - ABSENT

Chain of Custody Seal (SIC): INTACT BROKEN - ABSENT

CUSTOMER SEAL INTACT: Y

NONE TEMP: ---

200 W. POHLE DRIVE, ANCHORAGE, AK 99518 TEL: (907) 562-2243 FAX: (907) 561-5808
3180 PAGER ROAD, FAIRBANKS, AK 99701 TEL: (907) 474-3556 FAX: (907) 474-5005

Appendix B

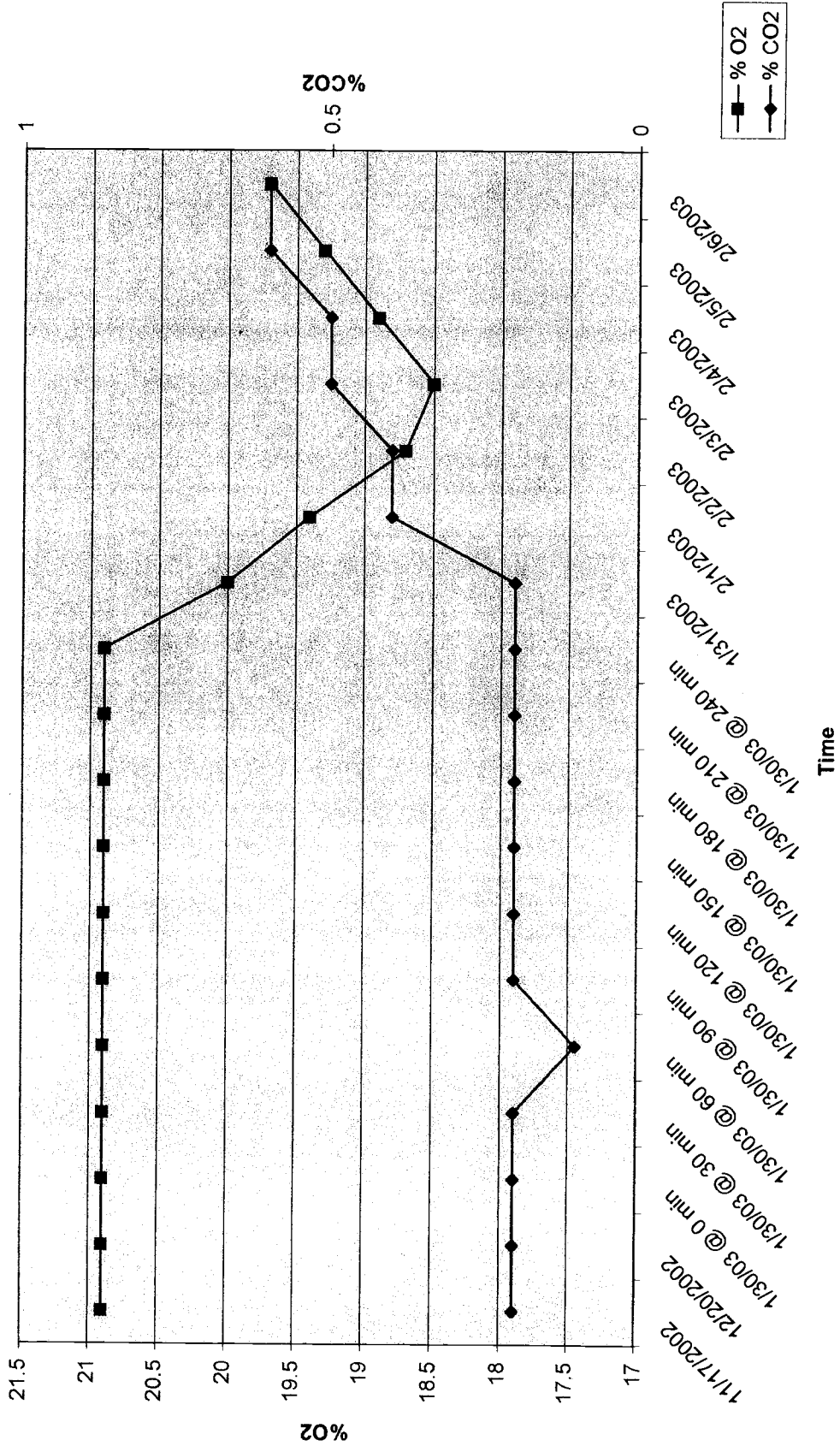
**Combustible Gas Indicator Results
From Quarterly Respirometer Test 5 of 5**

Quarterly Respirometer Test 5 of 5

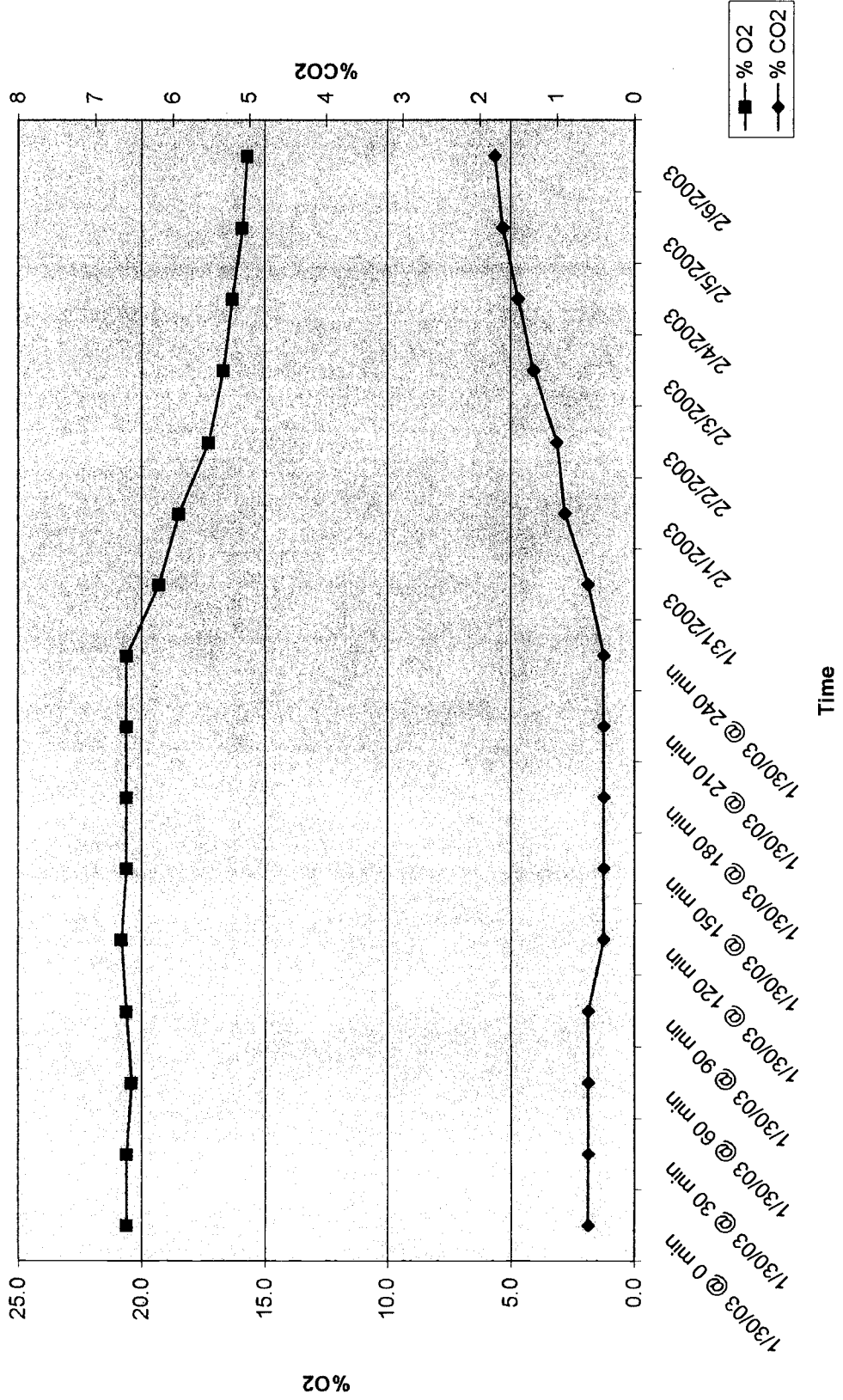
DATE	MP - 1				MP - 2				MP - 3			
	10 ft bgs (Blue)		20 ft bgs (Green)		10 ft bgs (Blue)		20 ft bgs (Green)		10 ft bgs (Blue)		20 ft bgs (Green)	
	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂	% CO ₂	% O ₂
11/17/2002	0.2	20.9	0.6	20.5	0.2	20.9	0.2	20.9	0.2	20.9	0.2	20.9
12/20/2002	0.2	20.9	0.6	20.4	0.0	20.9	0.1	20.9	0.0	20.9	0.4	20.8
1/30/03 @ 0 min	0.2	20.9	0.6	20.6	0.0	20.9	0.1	20.9	0.0	20.9	0.1	20.8
1/30/03 @ 30 min	0.2	20.9	0.6	20.6	0.0	20.9	0.2	20.9	0.0	20.9	0.2	20.9
1/30/03 @ 60 min	0.1	20.9	0.6	20.4	0.0	20.9	0.2	20.9	0.0	20.9	0.2	20.9
1/30/03 @ 90 min	0.2	20.9	0.6	20.6	0.0	20.9	0.2	20.9	0.0	20.9	0.2	20.9
1/30/03 @ 120 min	0.2	20.9	0.4	20.8	0.0	20.9	0.2	20.9	0.0	20.9	0.2	20.9
1/30/03 @ 150 min	0.2	20.9	0.4	20.6	0.0	20.9	0.2	20.9	0.0	20.9	0.2	20.9
1/30/03 @ 180 min	0.2	20.9	0.4	20.6	0.0	20.9	0.2	20.9	0.0	20.9	0.2	20.9
1/30/03 @ 210 min	0.2	20.9	0.4	20.6	0.0	20.9	0.2	20.9	0.0	20.9	0.2	20.9
1/30/03 @ 240 min	0.2	20.9	0.4	20.6	0.0	20.9	0.2	20.9	0.0	20.9	0.2	20.9
1/31/2003	0.2	20.0	0.6	19.3	0.0	20.9	0.3	19.9	0.2	20.9	0.2	20.9
2/1/2003	0.4	19.4	0.9	18.5	0.0	20.9	0.4	18.6	0.2	20.9	0.2	20.9
2/2/2003	0.4	18.7	1.0	17.3	0.0	20.9	0.6	17.2	0.1	20.9	0.4	20.9
2/3/2003	0.5	18.5	1.3	16.7	0.0	20.9	0.6	17.0	0.1	20.9	0.4	19.9
2/4/2003	0.5	18.9	1.5	16.3	0.0	20.9	0.7	17.1	0.2	20.9	0.4	19.7
2/5/2003	0.6	19.3	1.7	15.9	0.0	20.9	0.8	17.7	0.1	20.9	0.3	19.5
2/6/2003	0.6	19.7	1.8	15.7	0.0	20.9	0.8	18.1	0.2	20.9	0.4	19.4

Note:
MP = monitoring point
ft = feet
bgs = below ground surface

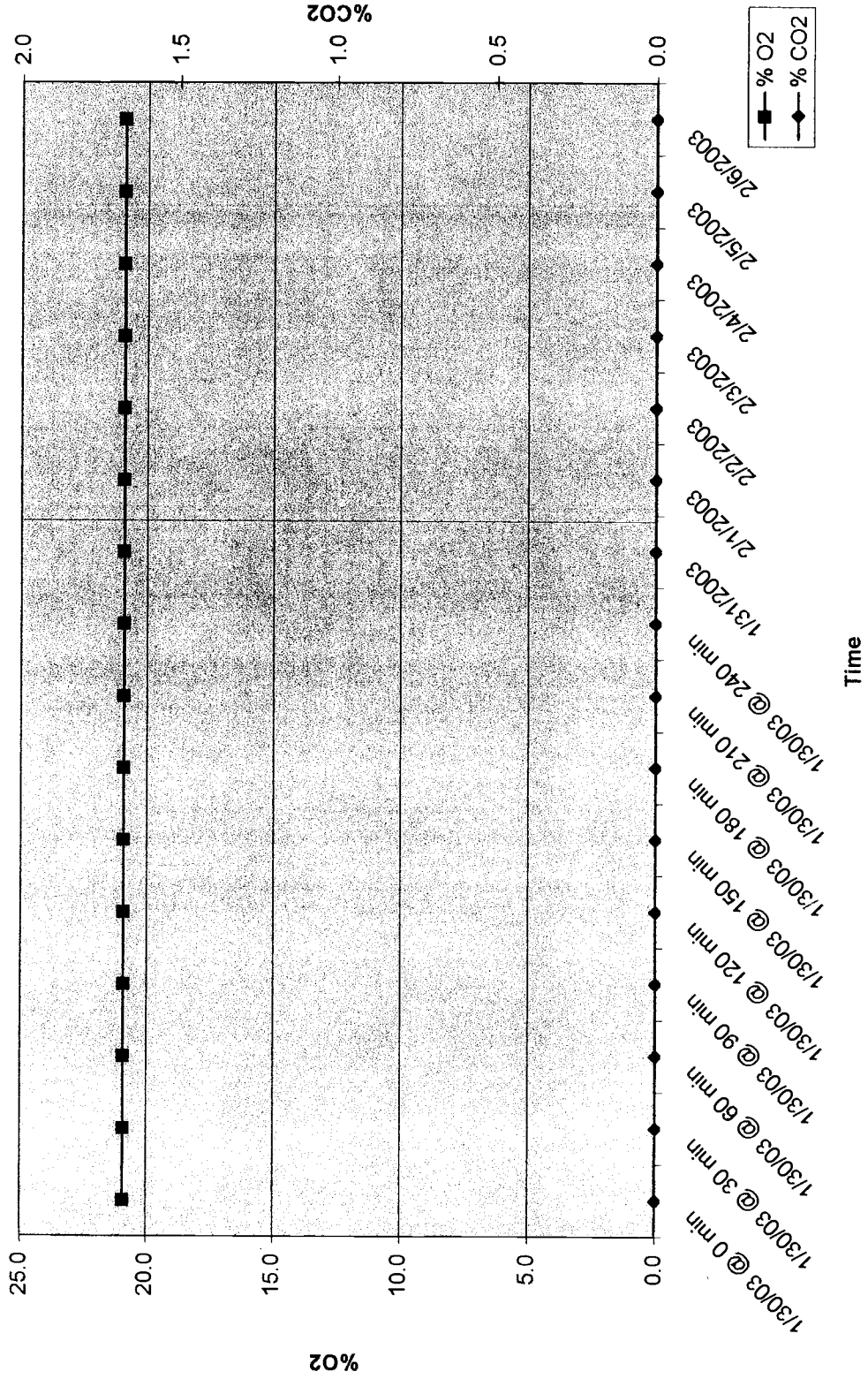
Quarterly Respirometer Test 5 of 5
MP-1 at 10 ft bgs



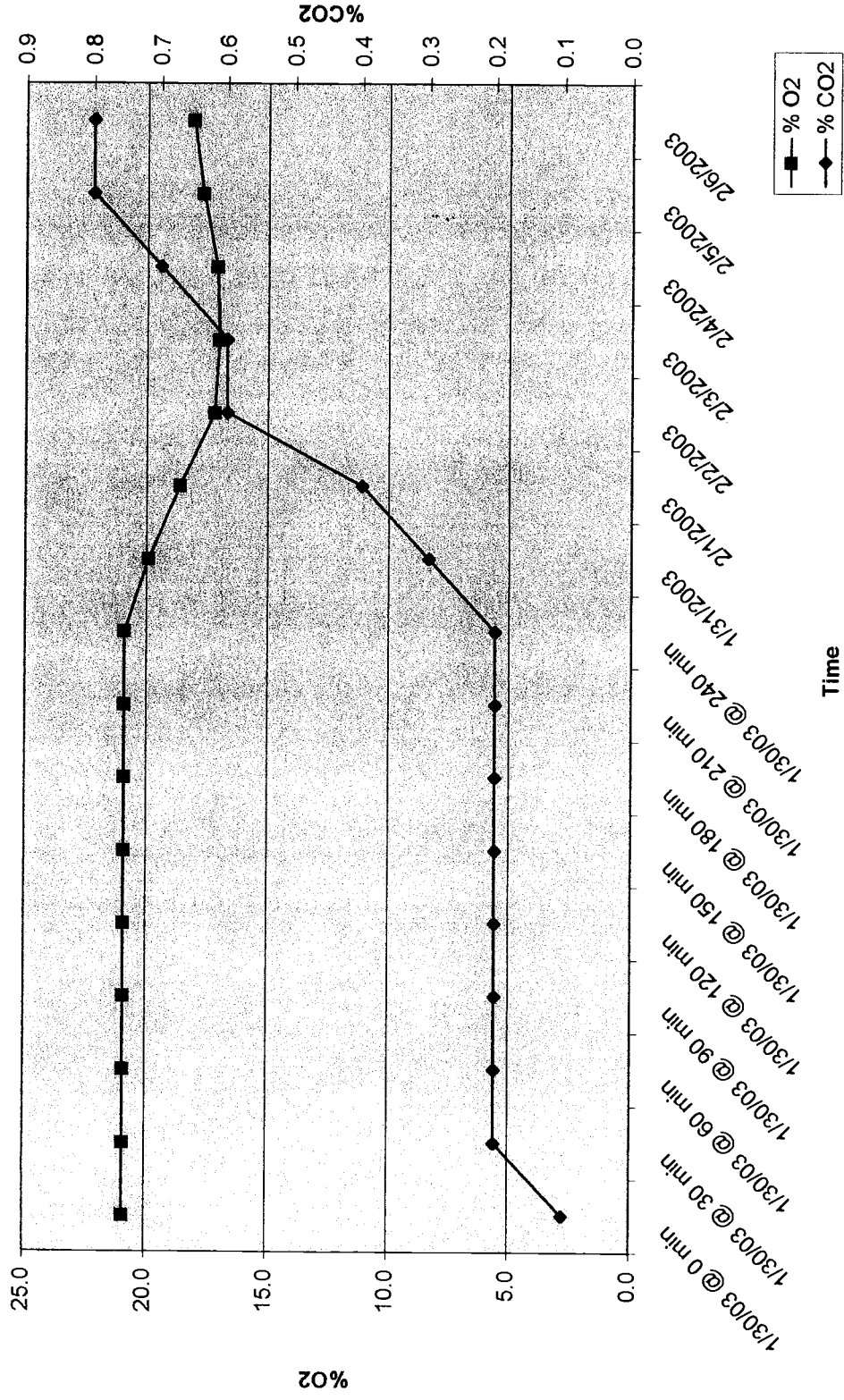
Quarterly Respirometer Test 5 of 5
 MP-1 at 20 ft bgs



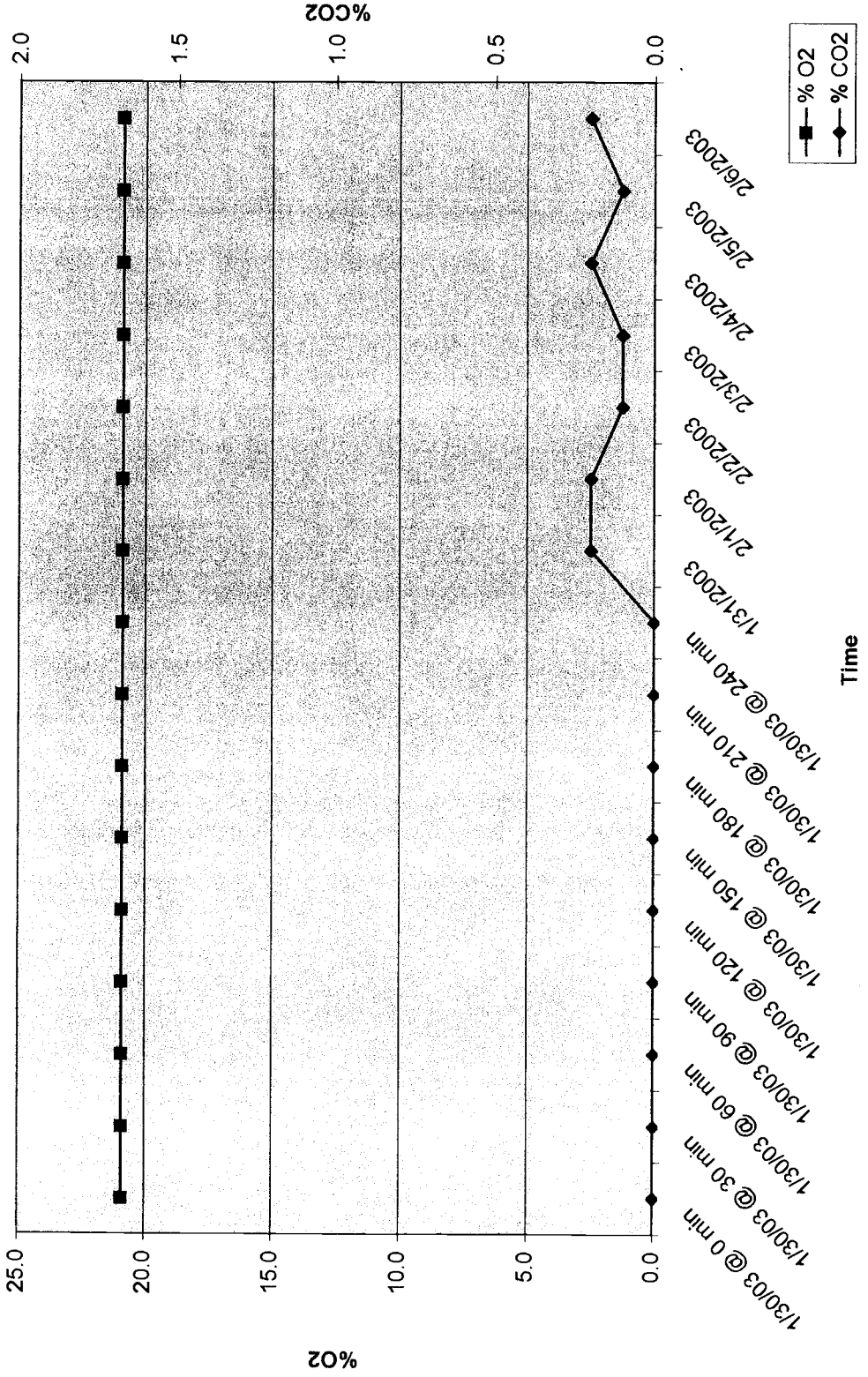
Quarterly Respirometer Test 5 of 5
MP-2 at 10 ft bgs



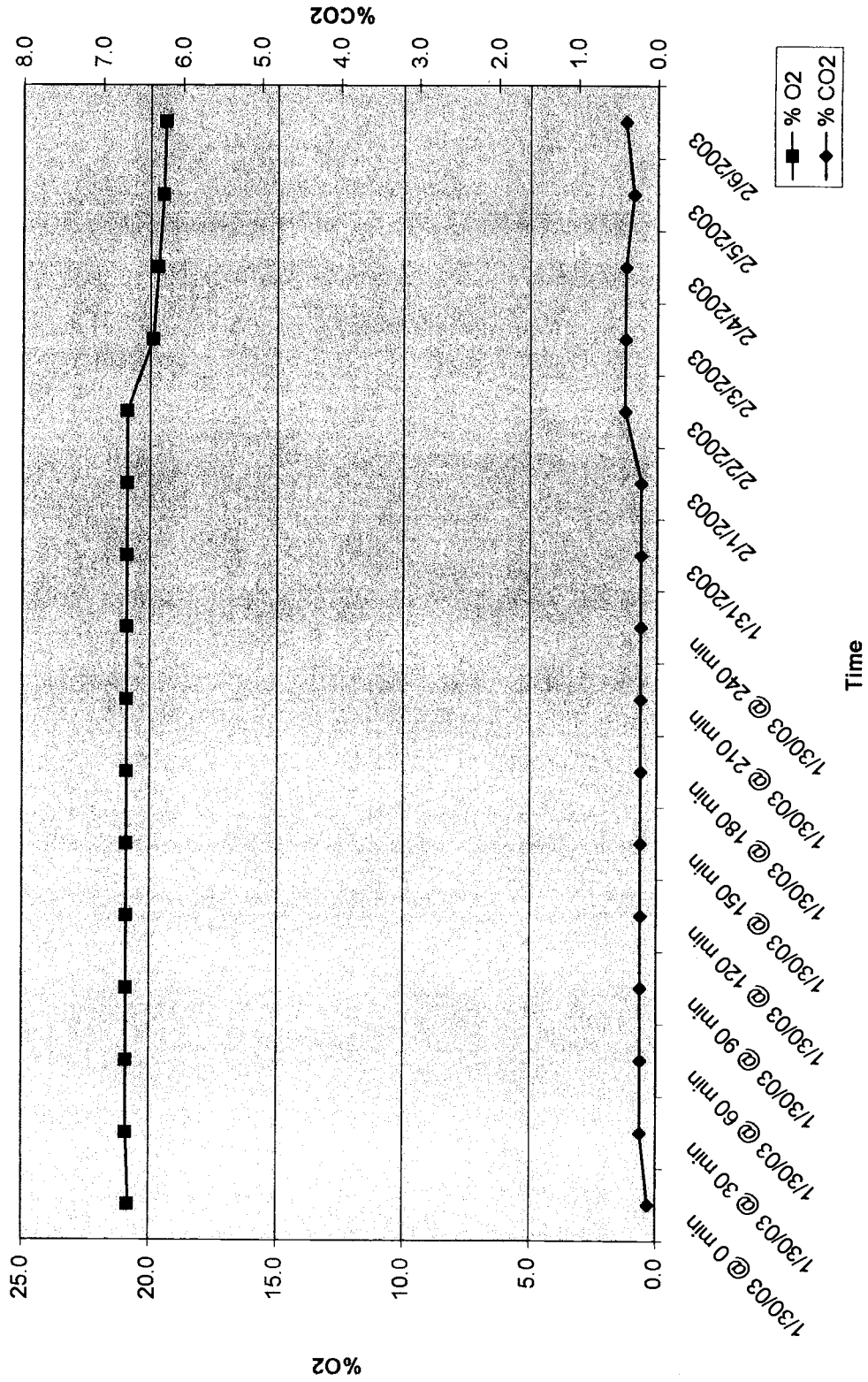
Quarterly Respirometer Test 5 of 5
MP-2 at 20 ft bgs



Quarterly Respirometer Test 5 of 5
 MP-3 at 10 ft bgs

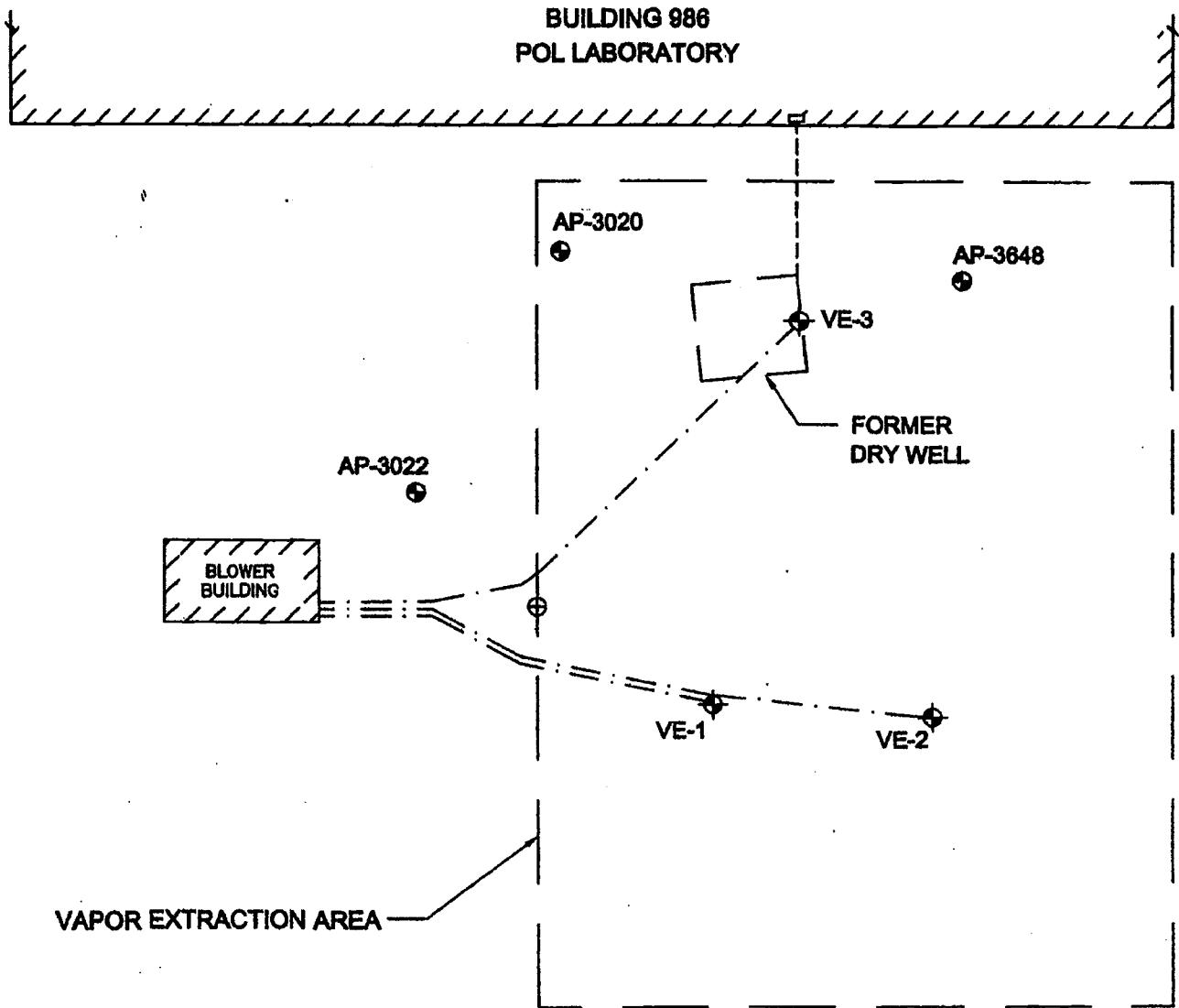


Quarterly Respirometer Test 5 of 5
MP-3 at 20 ft bgs



Appendix C

Site map



LEGEND

- ⊕ MONITORING WELL LOCATION
- ⊕ VAPOR EXTRACTION WELL LOCATION
- ⊕ TYPE A SURVEY MONUMENT
- SUBSURFACE PIPE
- - - SUBSURFACE VE PIPE

APPROXIMATE SCALE IN FEET

	DATE <u>DEC. 2001</u> DWN. <u>TWS</u> CKD. <u>DML</u> REV. <u>1</u> CONTRACT No. <u>DACAB6-01-P-0080</u>	FORT RICHARDSON, ALASKA BUILDING 986 OPERATION & MAINTENANCE	FIGURE 2
	SITE LAYOUT MAP		

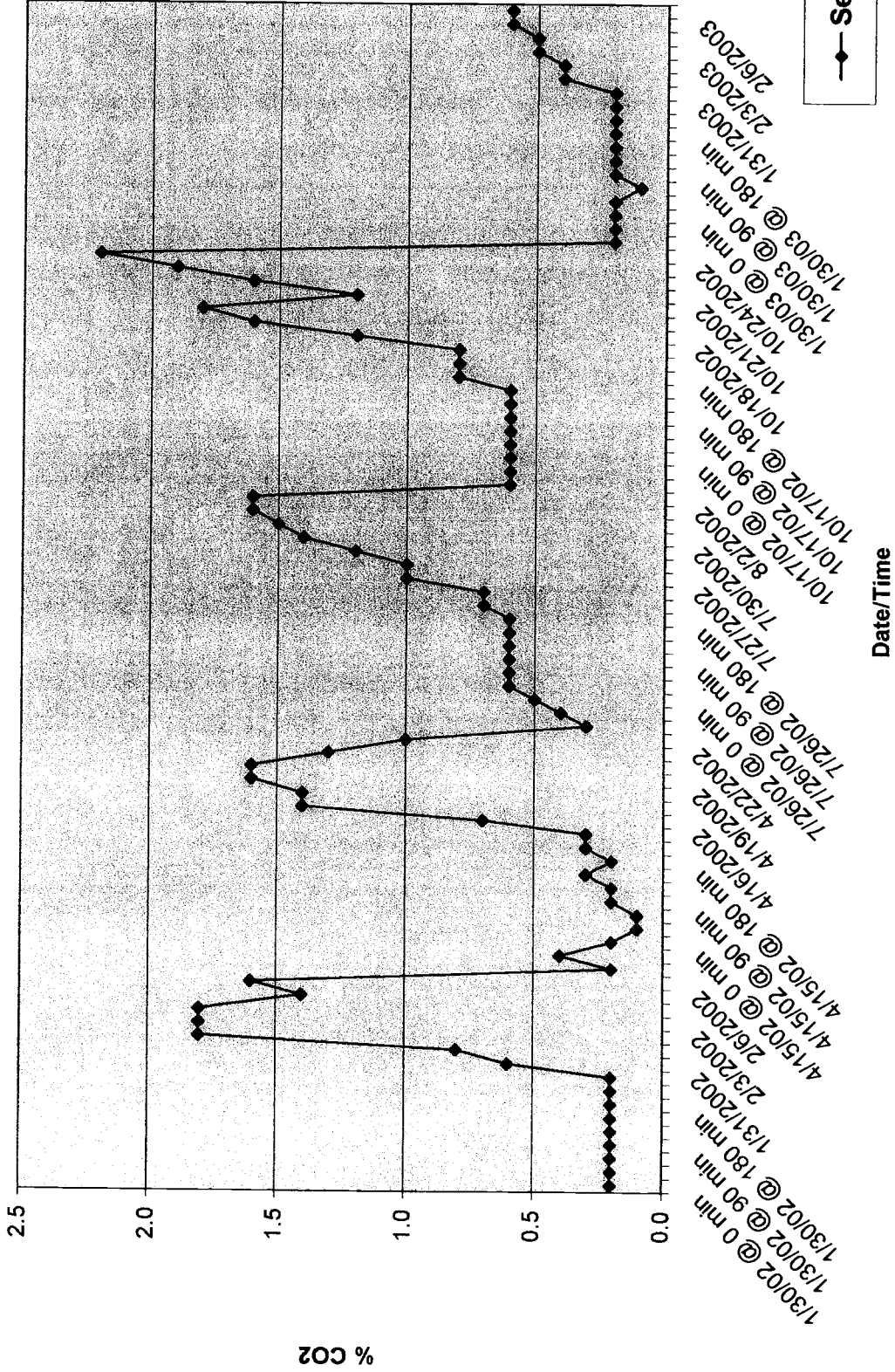
Appendix D

Carbon Dioxide Comparison

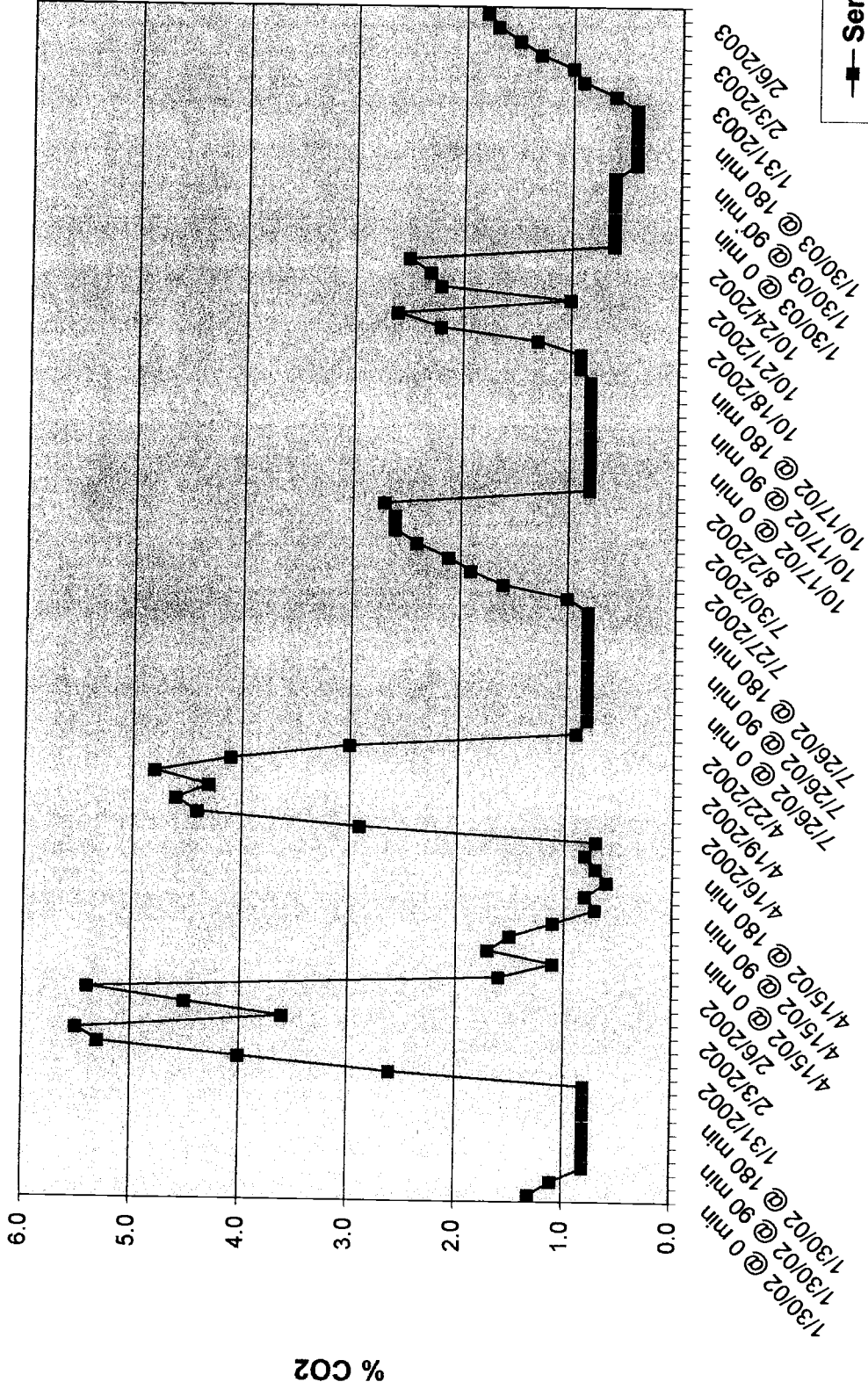
Carbon Dioxide Comparison						
DATE	MP - 1		MP - 2		MP - 3	
	10 ft bgs (Blue)	20 ft bgs (Green)	10 ft bgs (Blue)	20 ft bgs (Green)	10 ft bgs (Blue)	20 ft bgs (Green)
	% CO ₂	% CO ₂	% CO ₂	%CO ₂	% CO ₂	% CO ₂
1/30/02 @ 0 min	0.2	1.3	0.0	0.6	0.0	0.1
1/30/02 @ 30 min	0.2	1.1	0.0	0.6	0.0	0.0
1/30/02 @ 60 min	0.2	0.8	0.0	0.6	0.0	0.0
1/30/02 @ 90 min	0.2	0.8	0.0	0.8	0.0	0.2
1/30/02 @ 120 min	0.2	0.8	0.0	0.8	0.0	0.1
1/30/02 @ 150 min	0.2	0.8	0.0	0.8	0.0	0.1
1/30/02 @ 180 min	0.2	0.8	0.0	1.0	0.0	0.1
1/30/02 @ 210 min	0.2	0.8	0.0	1.2	0.0	0.2
1/30/02 @ 240 min	0.2	0.8	0.0	1.4	0.0	0.2
1/31/2002	0.6	2.6	0.2	3.0	0.2	0.2
2/1/2002	0.8	4.0	0.0	3.6	0.0	0.2
2/2/2002	1.8	5.3	0.2	3.7	0.0	0.4
2/3/2002	1.8	5.5	0.1	4.8	0.0	0.4
2/4/2002	1.8	3.6	0.1	5.0	0.2	0.5
2/5/2002	1.4	4.5	0.2	5.6	0.1	0.4
2/6/2002	1.6	5.4	0.1	6.8	0.2	0.4
2/28/2002	0.2	1.6	0.0	0.4	0.0	0.0
3/28/2002	0.4	1.1	0.0	0.4	0.0	0.1
4/15/02 @ 0 min	0.2	1.7	0.0	0.4	0.0	0.0
4/15/02 @ 30 min	0.1	1.5	0.0	0.4	0.0	0.0
4/15/02 @ 60 min	0.1	1.1	0.0	0.6	0.0	0.0
4/15/02 @ 90 min	0.2	0.7	0.0	0.6	0.0	0.1
4/15/02 @ 120 min	0.2	0.8	0.0	0.6	0.0	0.2
4/15/02 @ 150 min	0.3	0.6	0.0	0.7	0.0	0.1
4/15/02 @ 180 min	0.2	0.7	0.0	0.8	0.0	0.2
4/15/02 @ 210 min	0.3	0.8	0.0	1.0	0.0	0.2
4/15/02 @ 240 min	0.3	0.7	0.0	1.2	0.0	0.2
4/16/2002	0.7	2.9	0.0	2.7	0.0	0.3
4/17/2002	1.4	4.4	0.2	3.4	0.0	0.3
4/18/2002	1.4	4.6	0.1	4.2	0.0	0.4
4/19/2002	1.6	4.3	0.0	3.8	0.1	0.3
4/20/2002	1.6	4.8	0.0	3.0	0.0	0.2
4/21/2002	1.3	4.1	0.1	3.5	0.0	0.4
4/22/2002	1.0	3.0	0.0	3.8	0.0	0.2
5/15/2002	0.3	0.9	0.1	0.2	0.1	0.0
6/12/2002	0.4	0.8	0.2	0.4	0.4	0.2

7/26/02 @ 0 min	0.5	0.8	0.2	0.3	0.0	0.2
7/26/02 @ 30 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 60 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 90 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 120 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 150 min	0.6	0.8	0.2	0.4	0.2	0.2
7/26/02 @ 180 min	0.6	0.8	0.2	0.5	0.1	0.2
7/26/02 @ 210 min	0.7	0.8	0.2	0.5	0.2	0.2
7/26/02 @ 240 min	0.7	1.0	0.2	0.5	0.2	0.2
7/27/2002	1.0	1.6	0.2	0.6	0.2	0.3
7/28/2002	1.0	1.9	0.2	0.6	0.2	0.2
7/29/2002	1.2	2.1	0.2	0.8	0.2	0.2
7/30/2002	1.4	2.4	0.2	1.0	0.4	0.2
7/31/2002	1.5	2.6	0.2	1.3	0.4	0.2
8/1/2002	1.6	2.6	0.2	1.5	0.4	0.2
8/2/2002	1.6	2.7	0.2	1.6	0.4	0.2
8/15/2002	0.6	0.8	0.2	0.2	0.4	0.3
9/17/2002	0.6	0.8	0.2	0.3	0.4	0.6
10/17/02 @ 0 min	0.6	0.8	0.2	0.3	0.3	0.4
10/17/02 @ 30 min	0.6	0.8	0.2	0.3	0.3	0.4
10/17/02 @ 60 min	0.6	0.8	0.2	0.3	0.3	0.4
10/17/02 @ 90 min	0.6	0.8	0.2	0.4	0.3	0.4
10/17/02 @ 120 min	0.6	0.8	0.2	0.4	0.3	0.4
10/17/02 @ 150 min	0.6	0.8	0.2	0.4	0.3	0.4
10/17/02 @ 180 min	0.8	0.8	0.2	0.4	0.5	0.4
10/17/02 @ 210 min	0.8	0.9	0.2	0.5	0.4	0.4
10/17/02 @ 240 min	0.8	0.9	0.2	0.5	0.5	0.5
10/18/2002	1.2	1.3	0.2	0.9	0.6	0.8
10/19/2002	1.6	2.2	0.2	1.2	0.6	1.3
10/20/2002	1.8	2.6	0.2	1.8	0.8	1.2
10/21/2002	1.2	1.0	0.2	1.2	0.8	0.8
10/22/2002	1.6	2.2	0.2	1.8	0.6	0.8
10/23/2002	1.9	2.3	0.2	2.0	0.7	0.8
10/24/2002	2.2	2.5	0.2	2.3	0.6	0.8
11/17/2002	0.2	0.6	0.2	0.2	0.2	0.6
12/20/2002	0.2	0.6	0.0	0.1	0.0	0.4
1/30/03 @ 0 min	0.2	0.6	0.0	0.1	0.0	0.1
1/30/03 @ 30 min	0.2	0.6	0.0	0.2	0.0	0.2
1/30/03 @ 60 min	0.1	0.6	0.0	0.2	0.0	0.2
1/30/03 @ 90 min	0.2	0.6	0.0	0.2	0.0	0.2
1/30/03 @ 120 min	0.2	0.4	0.0	0.2	0.0	0.2
1/30/03 @ 150 min	0.2	0.4	0.0	0.2	0.0	0.2
1/30/03 @ 180 min	0.2	0.4	0.0	0.2	0.0	0.2
1/30/03 @ 210 min	0.2	0.4	0.0	0.2	0.0	0.2
1/30/03 @ 240 min	0.2	0.4	0.0	0.2	0.0	0.2
1/31/2003	0.2	0.6	0.0	0.3	0.2	0.2
2/1/2003	0.4	0.9	0.0	0.4	0.2	0.2
2/2/2003	0.4	1.0	0.0	0.6	0.1	0.4
2/3/2003	0.5	1.3	0.0	0.6	0.1	0.4
2/4/2003	0.5	1.5	0.0	0.7	0.2	0.4
2/5/2003	0.6	1.7	0.0	0.8	0.1	0.3
2/6/2003	0.6	1.8	0.0	0.8	0.2	0.4

Carbon Dioxide Comparison MP-1 at 10 ft bgs

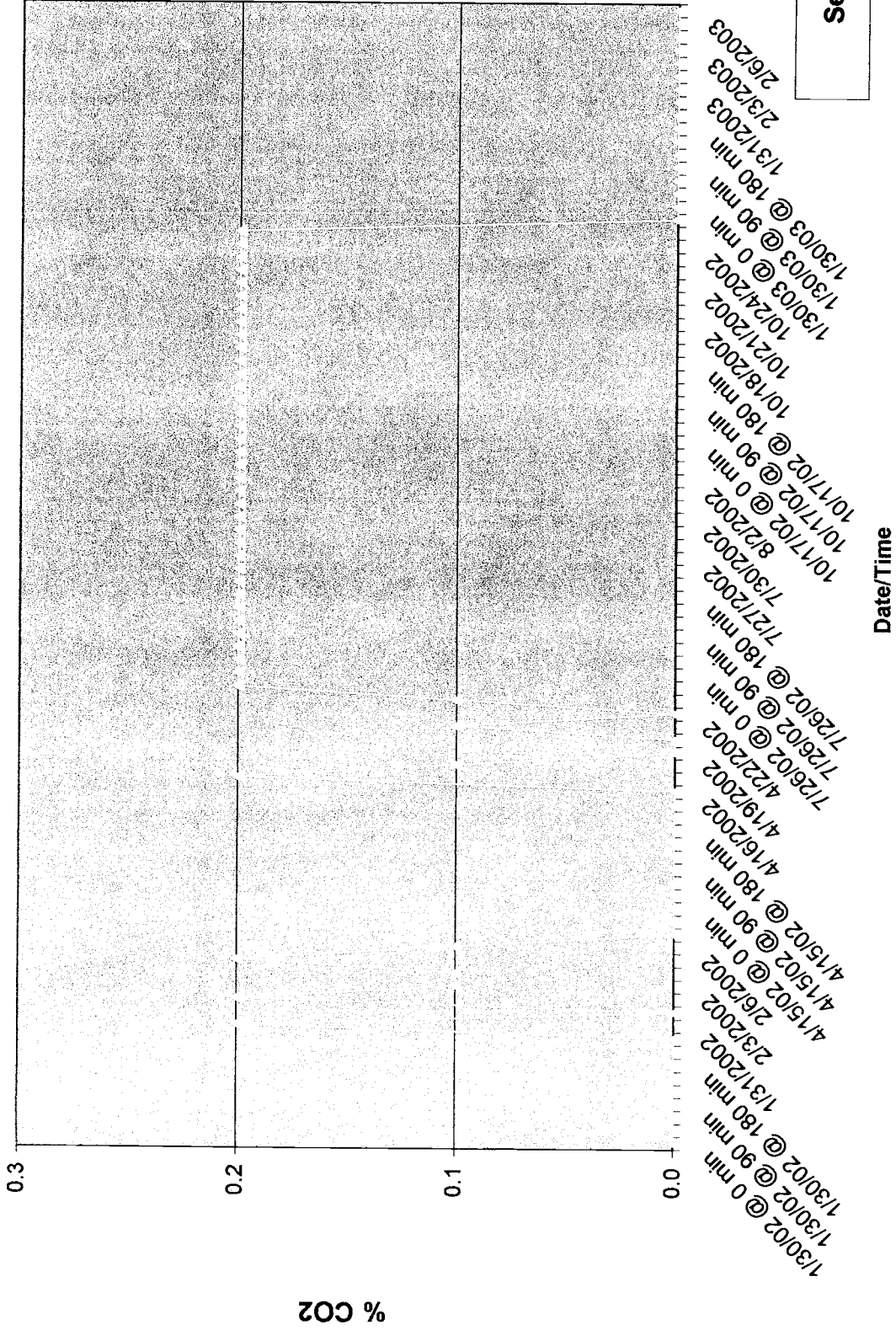


Carbon Dioxide Comparison MP-1 at 20 ft bgs

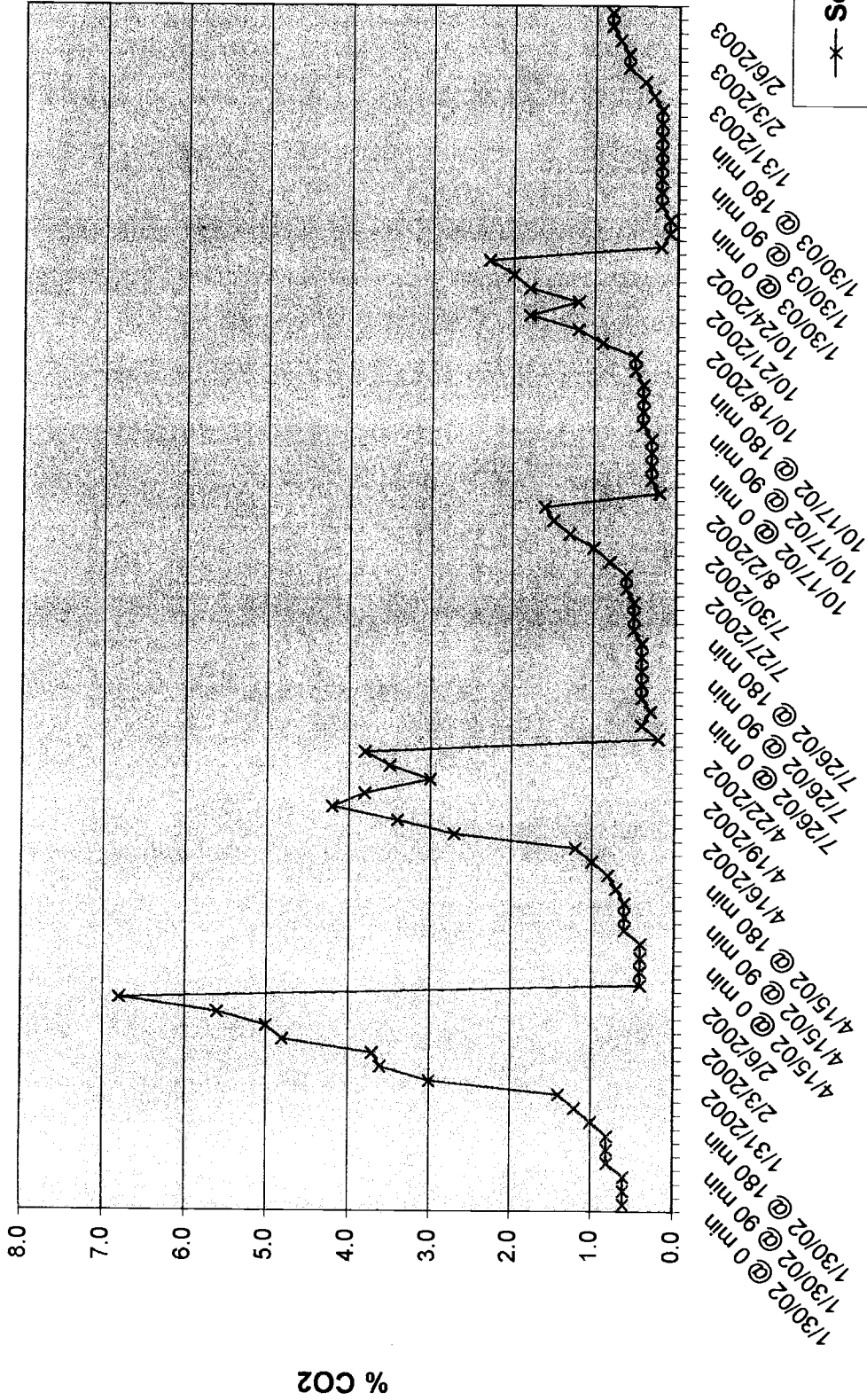


Series 2

Carbon Dioxide Comparison MP-2 at 10 ft bgs

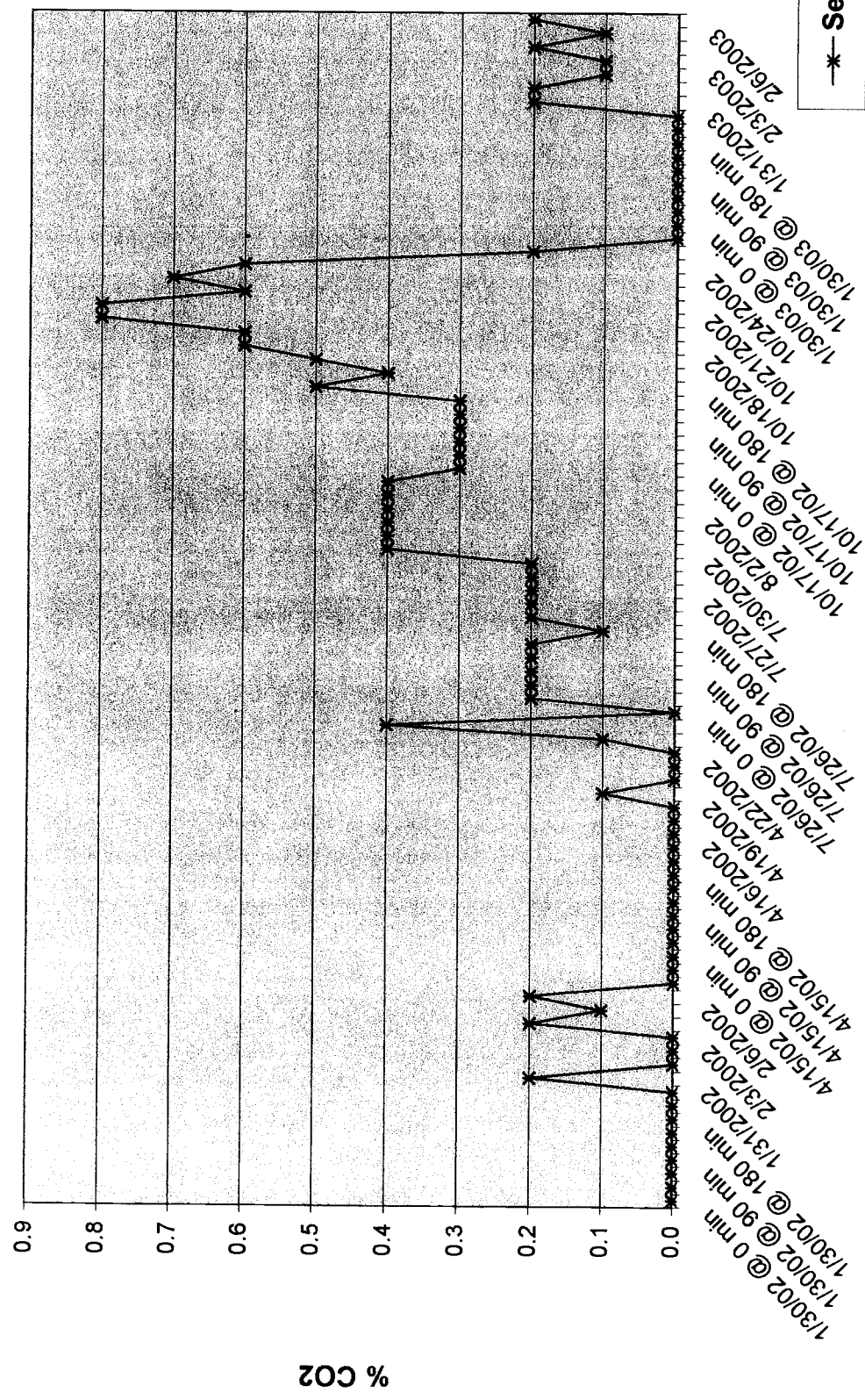


Carbon Dioxide Comparison MP-2 at 20 ft bgs



* Series4

Carbon Dioxide Comparison MP-3 at 10 ft bgs

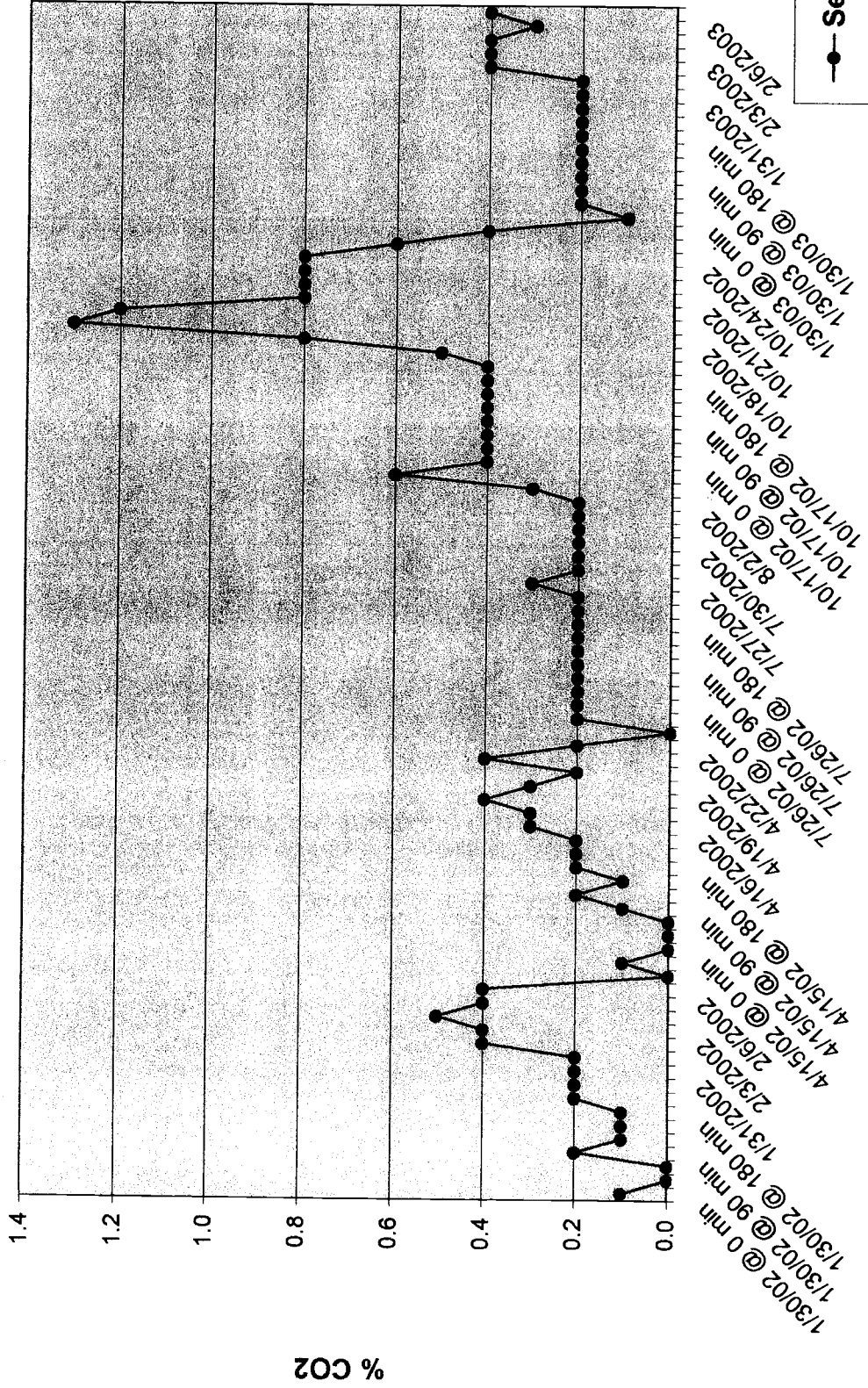


*--Series5

Date/Time

% CO2

Carbon Dioxide Comparison MP-3 at 20 ft bgs



Series 6

Date/Time

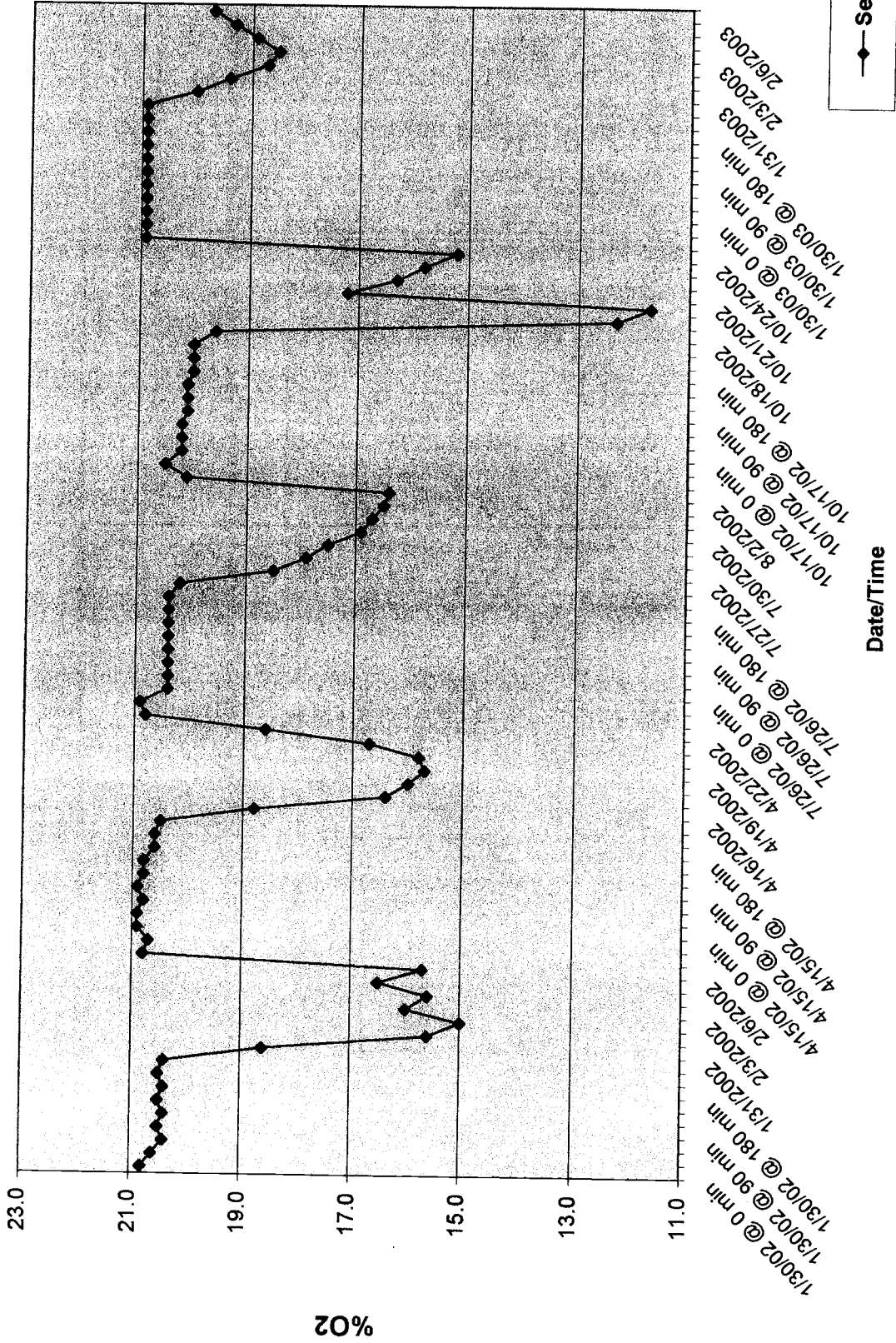
Appendix E

Oxygen Comparison

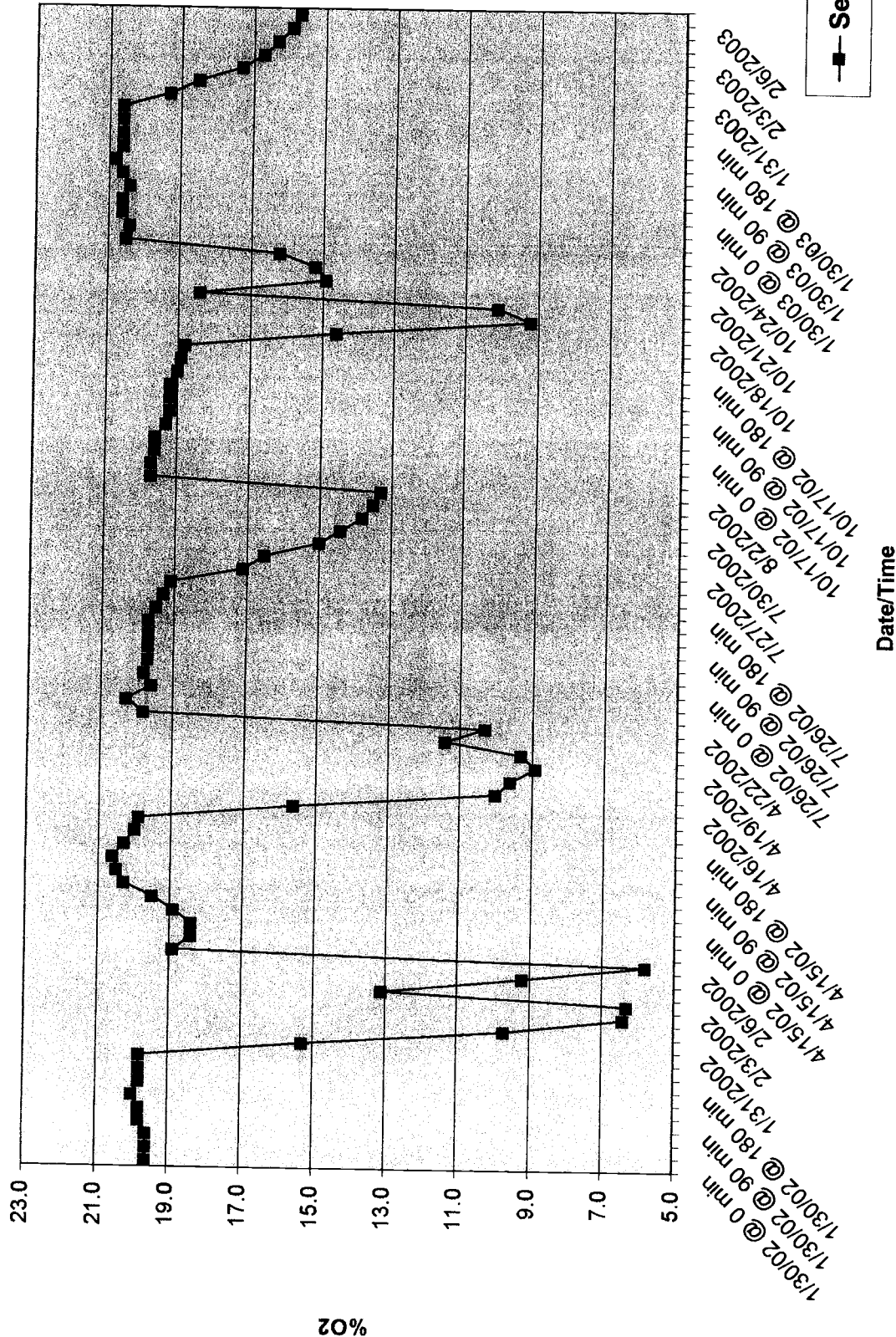
Oxygen Comparison						
	MP - 1		MP - 2		MP - 3	
DATE	10 ft bgs (Blue)	20 ft bgs (Green)	10 ft bgs (Blue)	20 ft bgs (Green)	10 ft bgs (Blue)	20 ft bgs (Green)
	% O ₂	% O ₂	% O ₂	% O ₂	% O ₂	% O ₂
1/30/02 @ 0 min	20.8	19.6	20.8	20.2	20.9	20.9
1/30/02 @ 30 min	20.6	19.6	20.6	20.1	20.7	20.7
1/30/02 @ 60 min	20.4	19.6	20.4	19.8	20.7	20.6
1/30/02 @ 90 min	20.5	19.8	20.5	19.7	20.8	20.7
1/30/02 @ 120 min	20.4	19.8	20.5	19.5	20.8	20.7
1/30/02 @ 150 min	20.5	20.0	20.5	19.3	20.8	20.7
1/30/02 @ 180 min	20.4	19.8	20.6	19.2	20.8	20.7
1/30/02 @ 210 min	20.5	19.8	20.2	18.9	20.9	20.6
1/30/02 @ 240 min	20.4	19.8	20.2	18.4	20.7	20.5
1/31/2002	18.6	15.3	19.7	13.5	20.9	20.9
2/1/2002	15.6	9.7	20.5	9.0	20.2	18.9
2/2/2002	15.0	6.4	18.8	7.2	19.6	19.8
2/3/2002	16.0	6.3	19.8	6.2	20.9	20.7
2/4/2002	15.6	13.1	19.5	9.0	20.3	19.7
2/5/2002	16.5	9.2	20.1	8.2	20.4	19.3
2/6/2002	15.7	5.8	20.8	5.4	20.9	20.4
2/28/2002	20.8	18.9	20.9	20.7	20.9	20.9
3/28/2002	20.7	18.4	20.9	20.4	20.9	20.9
4/15/02 @ 0 min	20.9	18.4	20.9	20.4	20.9	20.9
4/15/02 @ 30 min	20.9	18.9	20.9	20.3	20.9	20.9
4/15/02 @ 60 min	20.8	19.5	20.9	20.3	20.9	20.9
4/15/02 @ 90 min	20.9	20.3	20.8	20.1	20.8	20.9
4/15/02 @ 120 min	20.8	20.5	20.9	19.8	20.8	20.9
4/15/02 @ 150 min	20.8	20.6	20.7	19.6	20.8	20.8
4/15/02 @ 180 min	20.6	20.3	20.7	19.5	20.7	20.6
4/15/02 @ 210 min	20.6	20.0	20.3	19.3	20.8	20.7
4/15/02 @ 240 min	20.5	19.9	20.4	19.0	20.8	20.6
4/16/2002	18.8	15.6	20.2	13.0	20.8	20.0
4/17/2002	16.4	10.0	19.8	9.6	20.7	19.7
4/18/2002	16.0	9.6	19.9	8.5	20.8	19.6
4/19/2002	15.7	8.9	20.1	7.9	20.7	20.1
4/20/2002	15.8	9.3	20.2	7.6	20.8	20.7
4/21/2002	16.7	11.4	20.4	7.7	20.6	19.9
4/22/2002	18.6	10.3	20.7	8.3	20.9	20.2
5/15/2002	20.8	19.8	20.8	20.7	20.8	20.9
6/12/2002	20.9	20.3	20.9	20.9	20.9	20.8

7/26/02 @ 0 min	20.4	19.6	20.9	20.5	20.9	20.6
7/26/02 @ 30 min	20.4	19.8	20.8	20.4	20.7	20.7
7/26/02 @ 60 min	20.4	19.7	20.8	20.3	20.8	20.6
7/26/02 @ 90 min	20.4	19.7	20.8	20.3	20.8	20.7
7/26/02 @ 120 min	20.4	19.7	20.8	20.0	20.8	20.7
7/26/02 @ 150 min	20.4	19.7	20.8	19.8	20.7	20.6
7/26/02 @ 180 min	20.4	19.5	20.8	19.8	20.7	20.6
7/26/02 @ 210 min	20.4	19.3	20.8	19.8	20.7	20.6
7/26/02 @ 240 min	20.2	19.1	20.8	19.7	20.7	20.6
7/27/2002	18.5	17.1	20.6	17.0	20.5	20.4
7/28/2002	17.9	16.5	20.6	16.6	20.6	20.2
7/29/2002	17.5	15.0	20.6	15.9	20.5	20.0
7/30/2002	16.9	14.4	20.6	15.6	20.4	20.1
7/31/2002	16.7	13.8	20.4	14.0	20.2	20.0
8/1/2002	16.5	13.5	20.4	13.9	20.2	20.0
8/2/2002	16.4	13.3	20.4	13.9	20.2	20.0
8/15/2002	20.1	19.7	20.7	20.7	20.4	20.4
9/17/2002	20.5	19.7	20.8	20.7	20.7	20.4
10/17/02 @ 0 min	20.2	19.6	20.9	20.6	20.8	20.4
10/17/02 @ 30 min	20.2	19.6	20.9	20.6	20.8	20.4
10/17/02 @ 60 min	20.2	19.3	20.9	20.6	20.8	20.4
10/17/02 @ 90 min	20.1	19.2	20.9	20.3	20.7	20.4
10/17/02 @ 120 min	20.1	19.2	20.9	20.3	20.5	20.4
10/17/02 @ 150 min	20.1	19.2	20.9	20.3	20.5	20.4
10/17/02 @ 180 min	20.0	19.0	20.9	20.2	20.5	20.4
10/17/02 @ 210 min	20.0	18.9	20.8	20.0	20.4	20.4
10/17/02 @ 240 min	20.0	18.8	20.8	20.0	20.3	20.4
10/18/2002	19.6	14.6	20.8	17.3	18.1	20.0
10/19/2002	12.3	9.2	20.4	15.5	15.6	18.4
10/20/2002	11.7	10.1	19.0	14.3	15.3	18.1
10/21/2002	17.2	18.4	19.3	17.9	17.5	19.0
10/22/2002	16.3	14.9	19.2	16.3	20.0	19.3
10/23/2002	15.8	15.2	19.4	15.6	18.1	19.0
10/24/2002	15.2	16.2	19.3	14.7	18.6	18.9
11/17/2002	20.9	20.5	20.9	20.9	20.9	20.9
12/20/2002	20.9	20.4	20.9	20.9	20.9	20.8
1/30/03 @ 0 min	20.9	20.6	20.9	20.9	20.9	20.8
1/30/03 @ 30 min	20.9	20.6	20.9	20.9	20.9	20.9
1/30/03 @ 60 min	20.9	20.4	20.9	20.9	20.9	20.9
1/30/03 @ 90 min	20.9	20.6	20.9	20.9	20.9	20.9
1/30/03 @ 120 min	20.9	20.8	20.9	20.9	20.9	20.9
1/30/03 @ 150 min	20.9	20.6	20.9	20.9	20.9	20.9
1/30/03 @ 180 min	20.9	20.6	20.9	20.9	20.9	20.9
1/30/03 @ 210 min	20.9	20.6	20.9	20.9	20.9	20.9
1/30/03 @ 240 min	20.9	20.6	20.9	20.9	20.9	20.9
1/31/2003	20.0	19.3	20.9	19.9	20.9	20.9
2/1/2003	19.4	18.5	20.9	18.6	20.9	20.9
2/2/2003	18.7	17.3	20.9	17.2	20.9	20.9
2/3/2003	18.5	16.7	20.9	17.0	20.9	19.9
2/4/2003	18.9	16.3	20.9	17.1	20.9	19.7
2/5/2003	19.3	15.9	20.9	17.7	20.9	19.5
2/6/2003	19.7	15.7	20.9	18.1	20.9	19.4

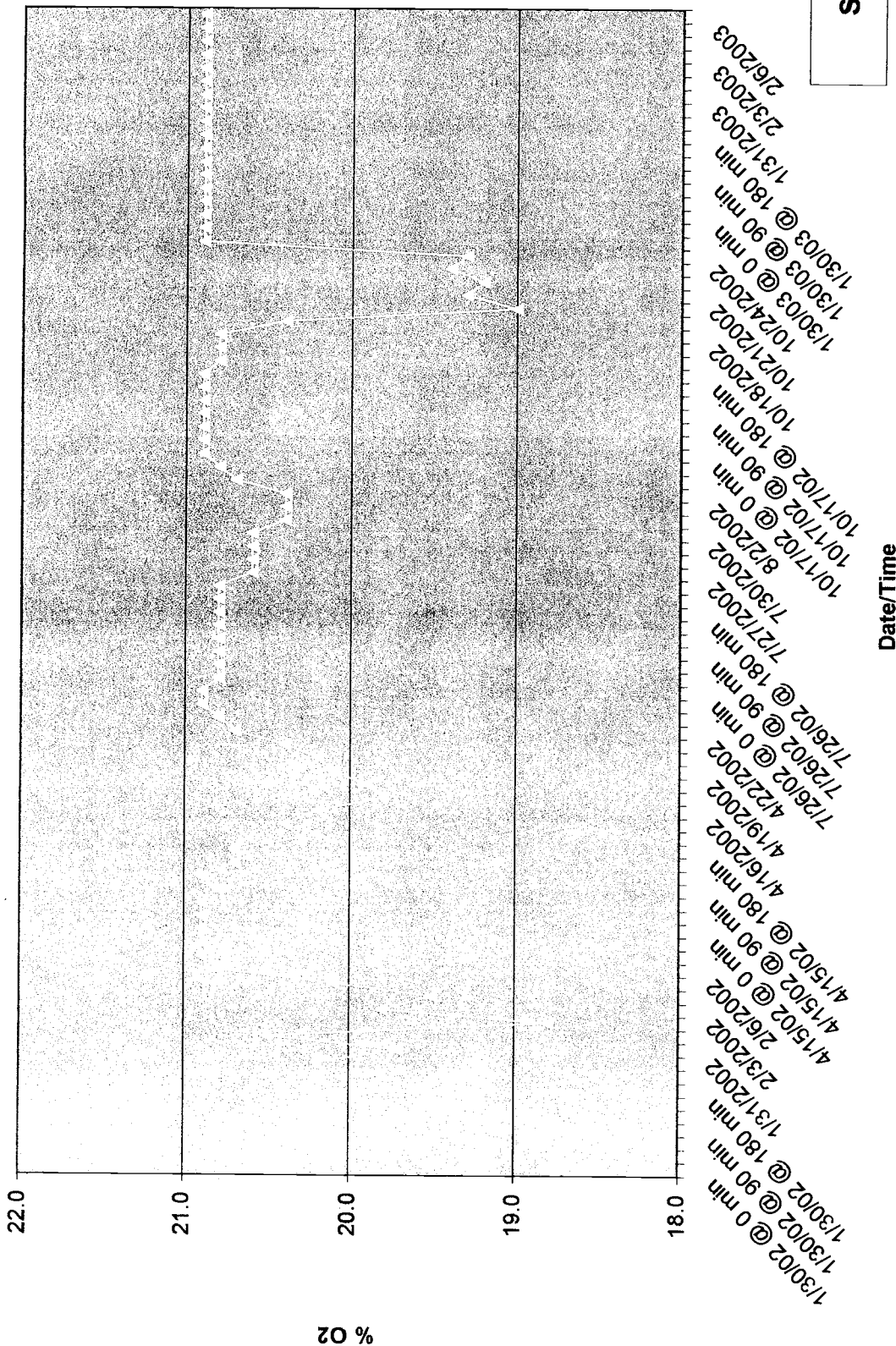
Oxygen Comparison MP-1 at 10 ft bgs



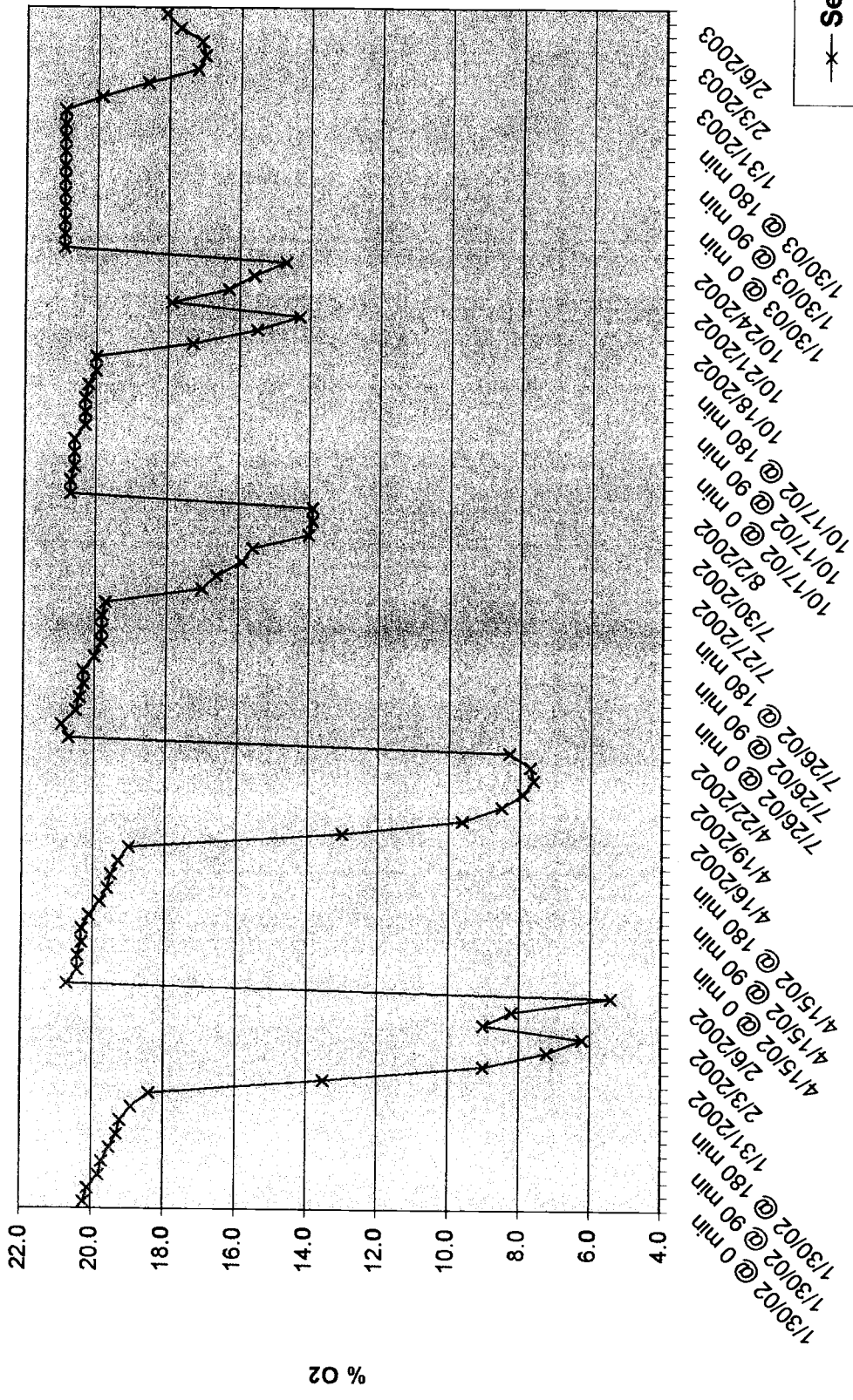
Oxygen Comparison MP-1 at 20 ft bgs



Oxygen Comparison MP-2 at 10 ft bgs

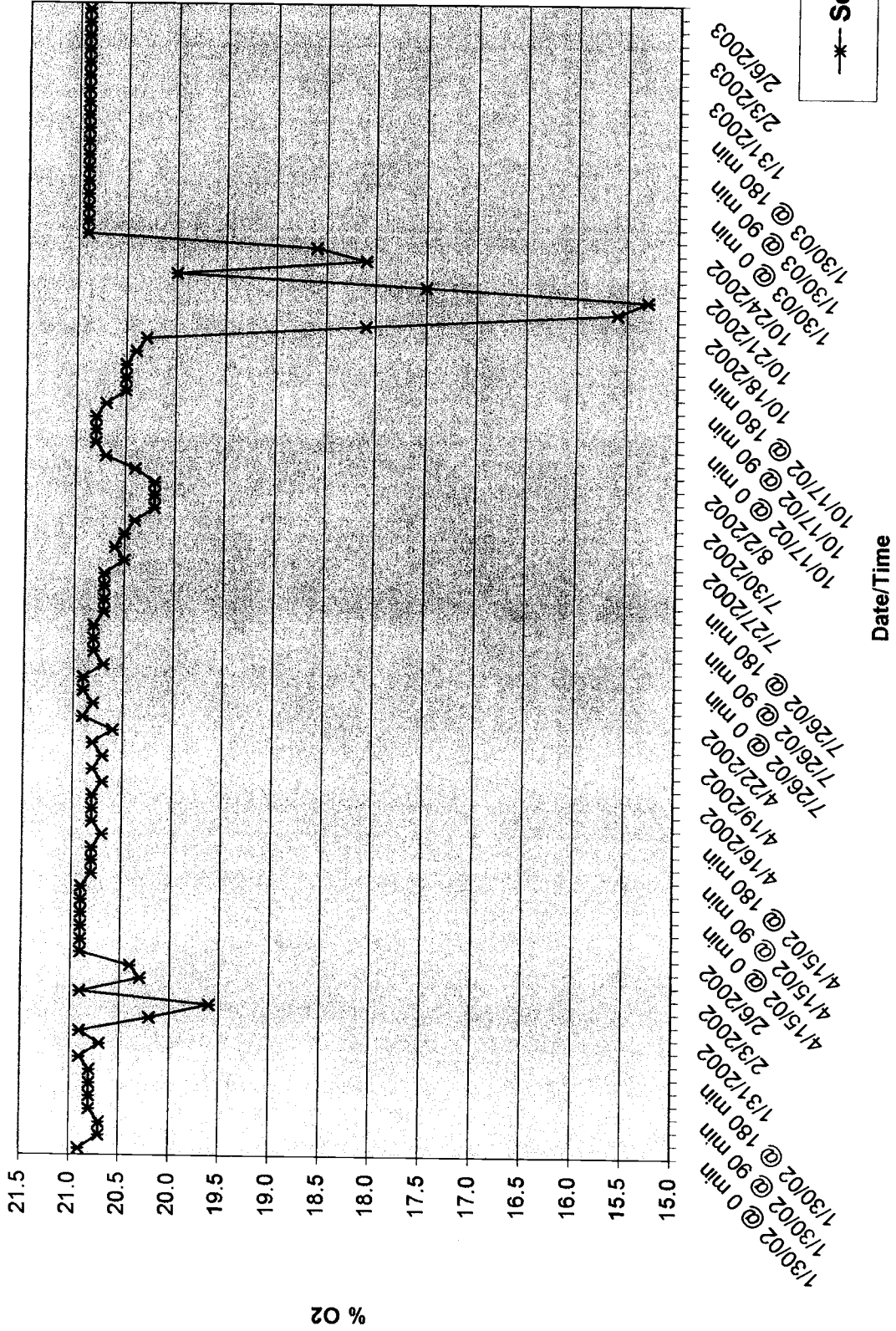


Oxygen Comparison MP-2 at 20 ft bgs



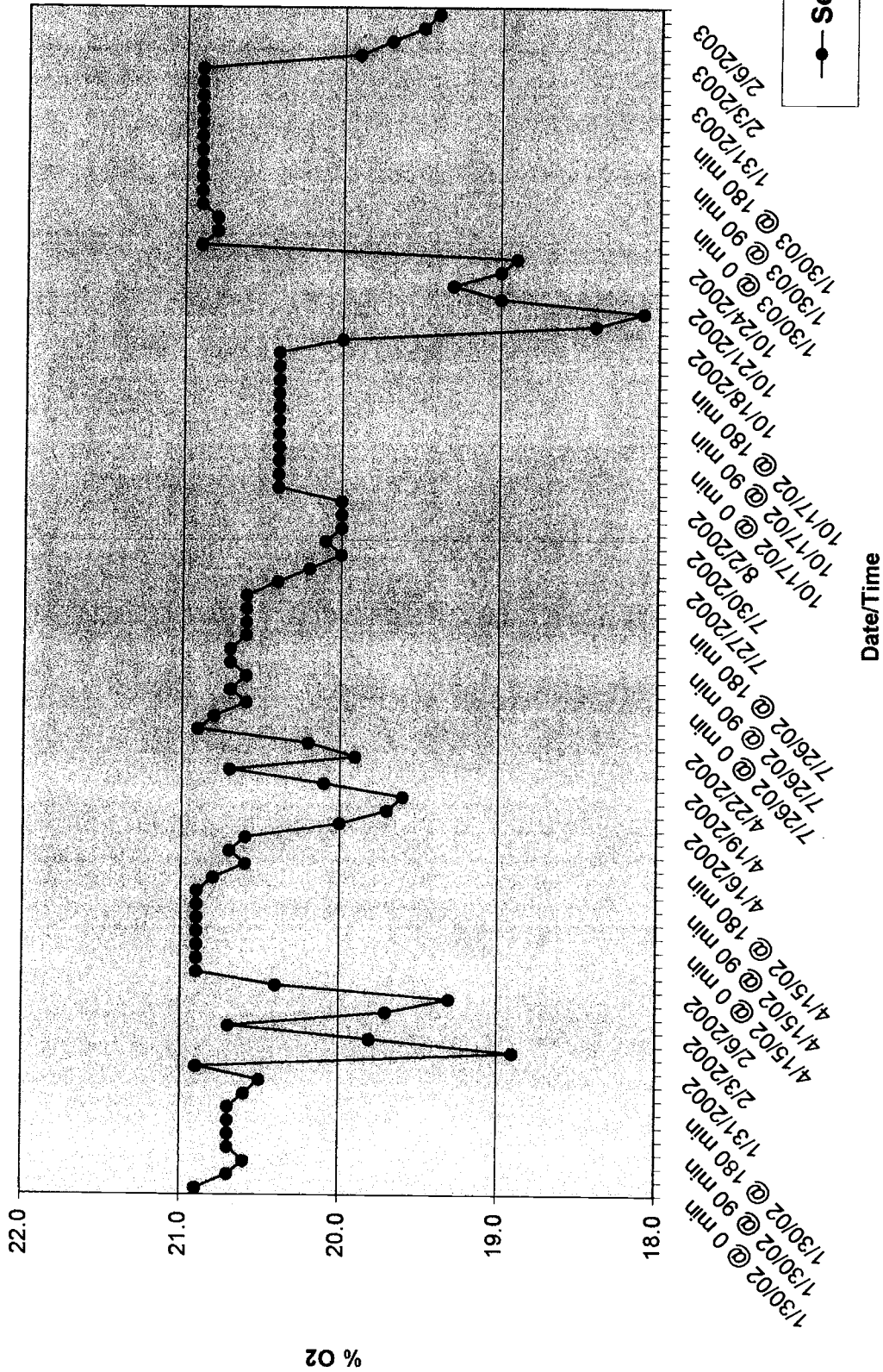
Series4
-x-

Oxygen Comparison MP-3 at 10ft bgs



*--Series5

Oxygen Comparison MP-3 at 20ft bgs



APPENDIX C – LOGS of EXPLORITORY BORINGS



Phone: (907) 365-6299
 Fax: (907) 365-6256

2121 Abbott Road
 Anchorage, Alaska 99507-4453

LOG OF EXPLORATORY BORING

Project Name:	Ft. Richardson Bldg 986 SVE O&M	Boring Number:	FRPOLCB-11
Location:	Bldg 986 Ft. Richardson, Alaska	Page:	1 of 2
Drilled By:	Discovery Drilling - Scott Clinkenbeard	Reference Elevation:	
Drill Method:	CME 75; HSA 3 1/4-in ID; 6-in OD	Total Depth:	52 feet
Logged By:	AGVIQ, LLC - Jeff Norberg; Geologist	Date/Time Completed:	6-Oct-03 0935 to 1300

Sample Time (military)	PID READINGS (ppm)	BLOW COUNTS (blows/6")	GROUND WATER LEVELS	DEPTH IN FEET SAMPLES	WELL DETAILS	USCS Classification	LITHOLOGIC DESCRIPTION
							Grass and loam surface
0943	0.0	7,8,9,8		5		OL	5.0' -5.5' Dusky brown (5YR 2/2) Silt with minor gravel max 1-in dia., root fibers, damp
						SW	5.5' -m 7.0' Dark yellowish brown (10YR 4/2) Gravelly sand, F-C sand, gravel max 2-in dia., dry
0952	0.0	25,15,14,12		10		SW	Same as 5.5' - 7.0' (Sample # 03FRA001SS)
1010	0.0	19,70,50,37		15		SW	Same as 10' - 12' but contains minor amount of black organic (ash-like) material, damp (Sample # 03FRA002SS)
1030	0.0	36,10,18,26		20		GW	Light olive gray (5Y 5/2) sandy gravel, sand F-C, gravel max 4-in dia., minor black organic (ash-like) material, damp (Sample # 03FRA003SS)
1047	0.0	14,21,24,22		25		GW	Same as 20' - 22'
1102	0.0	12,13,13,17		30		GW	Same as 25' - 27' but gravel max 2-in dia. (Sample # 03FRA004SS)
1115	0.0	10,43,27,22		35		SW	Olive gray (5Y 3/2) Gravelly sand, F-C sand, gravel max 2-in dia., minor black organic (ash-like) material, damp
1150	0.0	11,13,17,17		40		SW	Same as 35' - 37' (Sample # 03FRA005SS)

LOG OF EXPLORATORY BORING (continued)

Project Name: Ft. Richardson Bldg 986 SVE O&M
 Logged By: AGVIQ, LLC - Jeff Norberg; Geologist

Boring Number:
 Page:

FRPOLCB-11
 2 of 2

Sample Time (military)	PID READINGS (ppm)	BLOW COUNTS (blows/6")	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1210	0.0	11,27,80,43		45	█		SW	Same as 40' - 42' but no ash-like material observed
1222	0.0	13,21,27,20		50	█		SP	50' - 51.5' Same as 45' - 47' 51.5' - 52.0' F-M Sand with slight gravel max 1-in dia.
				55				(Sample # 03FRA006SS, 03FRA006SS-MS, and 03FRA006SS-MSD) Bottom of Soil Boring 52.0 feet bgs Backfilled with 1 bag bentonite chips and native cuttings from drilling activities
				60				
				65				
				70				
				75				
				80				
				85				



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Anchorage, Alaska 99507-4453

LOG OF EXPLORATORY BORING

Project Name:	Ft. Richardson Bldg 986 SVE O&M	Boring Number:	FRPOLCB-12
Location:	Bldg 986 Ft. Richardson, Alaska	Page:	1 of 2
Drilled By:	Discovery Drilling - Scott Clinkenbeard	Reference Elevation:	
Drill Method:	CME 75; HSA 3 1/4-in ID; 6-in OD	Total Depth:	52 feet
Logged By:	AGVIQ, LLC - Jeff Norberg; Geologist	Date/Time Completed:	6-Oct-03 1330 to 1630

Sample Time (military)	PID READINGS (ppm)	BLOW COUNTS (blows/6")	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	USCS Classification	LITHOLOGIC DESCRIPTION
								Grass and loam surface
1343	0.0	8,9,8,7		5			SM	5.0' -5.5' Moderate yellowish brown (10YR 5/4), Silty sand with minor gravel max 1-in dia., root fibers, damp
							GW	5.5' -m 7.0' Pale yellowish brown (10YR 6/2) Sandy gravel, F-C sand, gravel max 3-in dia., dry
1354	0.0	23,24,26,20		10			GW	Same as 5.5' - 7.0' (Sample # 03FRA007SS)
1408	56.5	13,16,23,26		15			SW	Light olive gray (5Y 5/2), Gravelly sand, F-C sand, gravel max 3-in dia., minor amount of black organic (ash-like) material, slight HC odor, moist at 17' bgs (Sample # 03FRA008SS)
1423	0.0	11,10,9,8		20			SW	Same as 15' - 17' but no HC odor, interspersed lenses of F-C sand, slight Fe staining mottled dark yellowish orange (10YR 6/6), damp [Sample # 03FRA009SS and 03FRA800SS (duplicate)]
1434	0.0	9,13,13,18		25			SW	Same as 20' - 22' but no lenses of F-C sand
1450	0.0	15,23,24,20		30			SW	Same as 25' - 27' (Sample # 03FRA010SS)
1508	0.0	3,9,11,15		35			SW	Same as 30' - 32' but olive gray (5Y 3/2)
1522	0.0	14,26,46,20		40			SW	Same as 35' - 37' but no black ash-like material (Sample # 03FRA011SS)

LOG OF EXPLORATORY BORING (continued)

Project Name: Ft. Richardson Bldg 986 SVE O&M
 Logged By: AGVIQ, LLC - Jeff Norberg; Geologist

Boring Number:
 Page:

FRPOLCB-12
 2 of 2

Sample Time (military)	PID READINGS (ppm)	BLOW COUNTS (blows/6")	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1541	0.0	10,20,14,12		45	█		SW	Olive gray (5Y 3/2), F-C Sand with some gravel, gravel max 2-in dia, damp
1557	0.0	90,75,30,26		50	█		SW	Same as 45' - 47' (Sample # 03FRA012SS)
				55				Bottom of Soil Boring 52.0 feet bgs Backfilled with 1 bag bentonite chips and native cuttings from drilling activities
				60				
				65				
				70				
				75				
				80				
				85				



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LOG OF EXPLORATORY BORING

Project Name:	Ft. Richardson Bldg 986 SVE O&M	Boring Number:	FRPOLCB-13
Location:	Bldg 986 Ft. Richardson, Alaska	Page:	1 of 2
Drilled By:	Discovery Drilling - Scott Clinkenbeard	Reference Elevation:	
Drill Method:	CME 75; HSA 3 1/4-in ID; 6-in OD	Total Depth:	52 feet
Logged By:	AGVIQ, LLC - Jeff Norberg; Geologist	Date/Time Completed:	7-Oct-03 0830 to 1140

Sample Time (military)	PID READINGS (ppm)	BLOW COUNTS (blows/6")	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	USCS Classification	LITHOLOGIC DESCRIPTION
								Grass and loam surface
0840	0.9	7,12,18,13		5			SM	5.0' -5.5' Moderate yellowish brown (10YR 5/4), Silty sand, root fibers, damp
							GW	5.5' -m 7.0' Pale yellowish brown (10YR 6/2) Sandy gravel, F-C sand, gravel max 3-in dia., dry
0853	-	118 (6")		10				No Recovery - Split Spoon Refusal
0908	18.7	10,18,18,13		12			GW	Same as 5.5' - 7.0' but Light olive gray (5Y 5/2), damp (Sample # 03FRA013SS)
0917	133.0	15,17,17,18		15			GW	Same as 12' - 14' but HC odor (Sample # 03FRA014SS)
0930	92.7	15,20,33,38		20			GW	Same as 15' - 17' but Olive gray (5Y 3/2) and minor amount of black organic (ash-like) material, HC odor (Sample # 03FRA015SS)
		soil cuttings 41.6						
0945	0.0	12,14,16,18		25			SW	Olive gray (5Y 3/2) Gravelly sand, F-C sand, gravel max 3-in dia., minor amount of black organic (ash-like) material, damp
		soil cuttings 4.2						
1000	0.0	10,12,12,19		30			SW	Same as 25' - 27' but slight Fe staining (Sample # 03FRA016SS)
1018	0.0	10,16,10,16		35			SW	Same as 30' - 32'
		soil cuttings 22.3						
1038	0.5	20,55,44,32		40			SW	Same as 35' - 37' (Sample # 03FRA017SS)

LOG OF EXPLORATORY BORING (continued)

Project Name: Ft. Richardson Bldg 986 SVE O&M
 Logged By: AGVIQ, LLC - Jeff Norberg; Geologist

Boring Number:
 Page:

FRPOLCB-13
 2 of 2

Sample Time (military)	PID READINGS (ppm)	BLOW COUNTS (blows/6")	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1100	0.0	14,20,27,36		45	█		SW	Same as 40' - 42' but gravel max 2-in dia
1120	0.0	10,14,17,19		50	█		SP	Light olive gray (5Y 4/2), F-M Sand, damp (Sample # 03FRA018SS)
				55				Bottom of Soil Boring 52.0 feet bgs Backfilled with 1 bag bentonite chips and native cuttings from drilling activities
				60				
				65				
				70				
				75				
				80				
				85				



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LOG OF EXPLORATORY BORING

Project Name:	Ft. Richardson Bldg 986 SVE O&M	Boring Number:	FRPOLCB-14
Location:	Bldg 986 Ft. Richardson, Alaska	Page:	1 of 2
Drilled By:	Discovery Drilling - Scott Clinkenbeard	Reference Elevation:	
Drill Method:	CME 75; HSA 3 1/4-in ID; 6-in OD	Total Depth:	52 feet
Logged By:	AGVIQ, LLC - Jeff Norberg; Geologist	Date/Time Completed:	7-Oct-03 1200 to 1545

Sample Time (military)	PID READINGS (ppm)	BLOW COUNTS (blows/6")	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	USCS Classification	LITHOLOGIC DESCRIPTION
								Grass and loam surface
1207	0.0	8,12,10,16		5			OL	5.0' -5.5' Dark yellowish brown (10YR 2/2), Silt, root fibers, damp
							SW	5.5' -m 7.0' Moderate yellowish brown (10YR 5/4) Gravelly sand, F-C sand, gravel max 3-in dia., dry
1218	5.6	7,16,25,31		10			GW	Dark yellowish brown (10YR 4/2) Sandy gravel, F-C Sand, gravel max 3-in dia., minor amount black organic ash-like material and slight fe staining, damp (Sample # 03FRA019SS)
1234	35.5	34,19,32,19		15			SW	Light olive gray (5Y 5/2), Gravelly sand, F-C sand, gravel max 3-in dia., minor amount of black organic (ash-like) material and slight fe staining, HC odor, damp (Sample # 03FRA020SS)
1250	62.5	22,24,19,17		20			SW	Same as 15' - 17' but Light olive gray (5Y 4/2) (Sample # 03FRA021SS)
1345	-	14,16,21,20		25			SW	Same as 20' - 22' but gravelly sand mottled with black organic (ash-like) material <u>PID Not Working</u>
1408	-	8,34,50,37		30			SW	Same as 25' - 27' but Olive gray (5Y 3/2) and slight ash-like material (Sample # 03FRA022SS)
1428	-	8,18,15,16		35			SW	Same as 30' - 32'
1445	-	42,25,20,22		40			SW	Same as 35' - 37' (Sample # 03FRA023SS)

LOG OF EXPLORATORY BORING (continued)

Project Name: Ft. Richardson Bldg 986 SVE O&M
 Logged By: AGVIQ, LLC - Jeff Norberg; Geologist

Boring Number:
 Page:

FRPOLCB-14
 2 of 2

Sample Time (military)	PID READINGS (ppm)	BLOW COUNTS (blows/6")	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1505	-	11,31,33,77		45			SW / SP	45' - 46.5' Same as 40' - 42' 46.5' - 47' Olive gray (5Y 3/2), F-M Sand with some gravel, gravel max 2-in dia, damp
1523	-	50,55,26,29		50			SP	Same as 46.5' - 47' [Sample # 03FRA024SS and 03FRA801SS (duplicate)]
				55				Bottom of Soil Boring 52.0 feet bgs Backfilled with 1 bag bentonite chips and native cuttings from drilling activities Note: PID not working after 20 foot sample. Consistently indicating erroneous reading of 9999 ppm.
				60				
				65				
				70				
				75				
				80				
				85				



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LOG OF EXPLORATORY BORING

Project Name:	Ft. Richardson Bldg 986 SVE O&M	Boring Number:	FRPOLCB-15
Location:	Bldg 986 Ft. Richardson, Alaska	Page:	1 of 2
Drilled By:	Discovery Drilling - Scott Clinkenbeard	Reference Elevation:	
Drill Method:	CME 75; HSA 3 1/4-in ID; 6-in OD	Total Depth:	84 feet
Logged By:	AGVIQ, LLC - Jeff Norberg; Geologist	Date/Time Completed:	8-Oct-03 0853 to 1500

Sample Time (military)	PID READINGS (ppm)	BLOW COUNTS (blows/6")	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	USCS Classification	LITHOLOGIC DESCRIPTION
								Grass and loam surface
0900	0.0	18,18,16,19		5			SM SW	5.0' -5.5' Grayish brown (5YR 3/2), Silt, root fibers, damp 5.5' -m 7.0' Dark yellowish brown (10YR 4/2) Gravelly sand, F-C sand, gravel max 3-in dia., dry
0910	5.6	18,30,22,23		10			GW	Dark yellowish brown (10YR 4/2) Sandy gravel, F-C sand, gravel max 3-in dia., damp (Sample # 03FRA025SS)
0925	62.5	33,16,19,19		15			SW	Light olive gray (5Y 5/2), Gravelly sand, F-C sand, gravel max 3-in dia., minor Fe staining, slight HC odor (Sample # 03FRA026SS)
0938	-	21,19,15,24		20			SW	Same as 15' - 17' but Olive gray (5Y 3/2) and slight amount of black organic (ash-like) material, damp [Sample # 03FRA027SS and 03FRA802SS (duplicate)]
0953	-	7,19,19,16		25			SW	Same as 20' - 22' but gravel max 2-in dia.
1005	-	9,14,11,13		30			SW	Same as 25' - 27' but no HC odor observed (Sample # 03FRA028SS)
1020	-	14,17,14,12		35			SW	Same as 30' - 32' but Light olive gray (5Y 5/2) and gravel max 3-inch dia
1035	-	14,33,34,25		40			SW	Same as 35' - 37' (Sample # 03FRA029SS)

LOG OF EXPLORATORY BORING (continued)

Project Name: Ft. Richardson Bldg 986 SVE O&M
 Logged By: AGVIQ, LLC - Jeff Norberg; Geologist

Boring Number:
 Page:

FRPOLCB-15
 2 of 2

Sample Time (military)	PID READINGS (ppm)	BLOW COUNTS (blows/6")	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1055	-	10,15,19,18		45			SW	Olive gray (5Y 3/2), F-C Sand with slight gravel, gravel max 1-in dia, damp
1110	-	11,13,16,13		50			SW	Olive gray (5Y 3/2), Gravelly sand, F-C sand, gravel max 3-in dia., damp (Sample # 03FRA030SS, 03FRA030SS-MS, and 03FRA030SS-MSD)
1140	-	56,78,46,67		60				Same as 50' - 52' but slight Fe staining
1205	-	29,42,34,41		70				70' - 71' Same as 60' - 62' 71' - 72' Olive gray (5Y 3/2), F-C Sand with slight gravel, gravel max 1-in dia, damp
1223	-	100 (2")		80				No Recovery - Split Spoon Refusal
1248	-	9,11,10,16						Yellowish gray (5Y 6/2) Gravelly sand, F-C Sand, gravel max 3-in dia., damp
				85				[Sample # 03FRA031SS and 03FRA803SS (duplicate)] Bottom of Soil Boring 84.0 feet bgs Backfilled with 1 bag bentonite chips and native cuttings from drilling activities

APPENDIX D – ANALYTICAL REPORTS



Laboratory Analysis Report

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: <http://www.sgsevenvironmental.com>

Darrin Lawless
AGVIQ LLC
2121 Abbott Road, Suite 100
Anchorage, AK 995074453

Work Order: 1035412
Ft. Richardson Soil BV O&M
Client: AGVIQ LLC
Report Date: September 11, 2003

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by SGS. A copy of our Quality Control Manual that outlines this program is available at your request. The laboratory ADEC certification numbers are AK08-03 (DW) and UST-005 (CS).

— except as specifically noted, all statements and data in this report are in conformance to the provisions set forth in our Quality Assurance Program Plan.

If you have any questions regarding this report or if we can be of any other assistance, please call your SGS Project Manager at (907) 562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

- PQL Practical Quantitation Limit (reporting limit).
- U Indicates the analyte was analyzed for but not detected.
- F Indicates an estimated value that falls below PQL, but is greater than the MDL.
- J The quantitation is an estimation.
- B Indicates the analyte is found in a blank associated with the sample.
- * The analyte has exceeded allowable regulatory or control limits.
- GT Greater Than
- D The analyte concentration is the result of a dilution.
- LT Less Than
- ! Surrogate out of control limits.
- Q QC parameter out of acceptance range.
- M A matrix effect was present.
- JL The analyte was positively identified, but the quantitation is a low estimation.

Note: Soil samples are reported on a dry weight basis unless otherwise specified.



SGS Ref.# 1035412001
Client Name AGVIQ LLC
Project Name/# Ft. Richardson Soil BV O&M
Client Sample ID 03FRA001WS
Matrix Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time
Printed Date/Time 09/11/2003 10:10
Collected Date/Time 08/22/2003 13:15
Received Date/Time 08/22/2003 16:13
Technical Director Stephen C. Ede

Released By

Sample Remarks:

PAHSIM - The MSD recovery for indeno[1,2,3-c,d]pyrene and benzo[g,h,i]perylene are outside QC goals (biased low). The associated LCS met all recovery criteria.

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department										
Gasoline Range Organics		0.0900 U	0.0900	mg/L	AK101 GRO	C		09/03/03	09/03/03	MML
Surrogates										
4-Bromofluorobenzene <surr>		101		%	AK101 GRO	C	50-150	09/03/03	09/03/03	MML
Nonvolatile Organic Fuels Department										
Diesel Range Organics		0.309 U	0.309	mg/L	AK102	I		08/25/03	08/26/03	MCM
Surrogates										
5a Androstane <surr>		66.5		%	AK102	I	50-150	08/25/03	08/26/03	MCM
Volatile Gas Chromatography/Mass Spectroscopy										
Dichlorodifluoromethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Chloromethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Vinyl chloride		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromomethane		0.00300 U	0.00300	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Chloroethane		0.00300 U	0.00300	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Trichlorofluoromethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1-Dichloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Methylene chloride		0.00500 U	0.00500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Carbon disulfide		0.00200 U	0.00200	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
trans-1,2-Dichloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1-Dichloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2,2-Dichloropropane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
cis-1,2-Dichloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2-Butanone (MEK)		0.0100 U	0.0100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromochloromethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
oform		0.00168	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE



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 Client Name AGVIQ LLC
 Project Name/# Ft. Richardson Soil BV O&M
 Client Sample ID 03FRA001 WS
 Matrix Water (Surface, Eff., Ground)

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 Printed Date/Time 09/11/2003 10:10
 Collected Date/Time 08/22/2003 13:15
 Received Date/Time 08/22/2003 16:13
 Technical Director Stephen C. Ede

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy										
1,1,1-Trichloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Carbon tetrachloride		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1-Dichloropropene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Benzene		0.000400 U	0.000400	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Trichloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dichloropropane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Dibromomethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromodichloromethane		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2-Chloroethyl Vinyl Ether		0.0100 U	0.0100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
is-1,3-Dichloropropene		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
oluene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
trans-1,3-Dichloropropene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1,2-Trichloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Tetrachloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,3-Dichloropropane		0.000400 U	0.000400	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Dibromochloromethane		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dibromoethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Chlorobenzene		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1,1,2-Tetrachloroethane		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Ethylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
o-Xylene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Styrene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromoform		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
P & M -Xylene		0.00200 U	0.00200	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Isopropylbenzene (Cumene)		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1,2,2-Tetrachloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2,3-Trichloropropane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
n-Propylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2-Chlorotoluene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
4-Chlorotoluene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,3,5-Trimethylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
tert-Butylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,4-Trimethylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE



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Volatile Gas Chromatography/Mass Spectroscopy										
sec-Butylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,3-Dichlorobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
4-Isopropyltoluene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,4-Dichlorobenzene		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dichlorobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
n-Butylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dibromo-3-chloropropane		0.00200 U	0.00200	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2,4-Trichlorobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Hexachlorobutadiene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
aphthalene		0.00200 U	0.00200	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2,3-Trichlorobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
4-Methyl-2-pentanone (MIBK)		0.0100 U	0.0100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2-Hexanone		0.0100 U	0.0100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dichloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Surrogates										
Dibromofluoromethane <surr>		97.4		%	SW8260B	A	85-115	09/04/03	09/04/03	TJE
1,2-Dichloroethane-D4 <surr>		99.7		%	SW8260B	A	72-119	09/04/03	09/04/03	TJE
4-Bromofluorobenzene <surr>		101		%	SW8260B	A	78-124	09/04/03	09/04/03	TJE
Toluene-d8 <surr>		101		%	SW8260B	A	84-113	09/04/03	09/04/03	TJE
Polynuclear Aromatics GC/MS										
Naphthalene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
Acenaphthene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
Fluorene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
Fluoranthene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
Pyrene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
Benzo[b]Fluoranthene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
Acenaphthylene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
Indeno[1,2,3-c,d] pyrene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
Dibenzo[a,h]anthracene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
benzo[ghi]perylene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
benanthrene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM



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Polynuclear Aromatics GC/MS										
Anthracene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
Benzo(a)Anthracene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
Chrysene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
Benzo[k]fluoranthene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
Benzo[a]pyrene		0.0500 U	0.0500	ug/L	PAH SIM	G		08/25/03	08/28/03	KWM
Surrogates										
Naphthalene-d8 <surrogate>		83		%	PAH SIM	G	30-126	08/25/03	08/28/03	KWM
Acenaphthene-d10 <surrogate>		90.4		%	PAH SIM	G	30-128	08/25/03	08/28/03	KWM
Chrysene-d12 <surrogate>		107		%	PAH SIM	G	30-138	08/25/03	08/28/03	KWM



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Released By

Sample Remarks:

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department										
Gasoline Range Organics		0.0900 U	0.0900	mg/L	AK101 GRO	C		09/03/03	09/03/03	MML
Surrogates										
4-Bromofluorobenzene <surr>		98.9		%	AK101 GRO	C	50-150	09/03/03	09/03/03	MML
Semivolatile Organic Fuels Department										
Diesel Range Organics		0.297 U	0.297	mg/L	AK102	I		08/25/03	08/26/03	MCM
Surrogates										
5a Androstane <surr>		62.1		%	AK102	I	50-150	08/25/03	08/26/03	MCM
Volatile Gas Chromatography/Mass Spectroscopy										
Dichlorodifluoromethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Chloromethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Vinyl chloride		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromomethane		0.00300 U	0.00300	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Chloroethane		0.00300 U	0.00300	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Trichlorofluoromethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1-Dichloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Methylene chloride		0.00500 U	0.00500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Carbon disulfide		0.00200 U	0.00200	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
trans-1,2-Dichloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1-Dichloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2,2-Dichloropropane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
cis-1,2-Dichloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2-Butanone (MEK)		0.0100 U	0.0100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromochloromethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Chloroform		0.00158	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1,1-Trichloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE



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Volatile Gas Chromatography/Mass Spectroscopy										
Carbon tetrachloride		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1-Dichloropropene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Benzene		0.000400 U	0.000400	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Trichloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dichloropropane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Dibromomethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromodichloromethane		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2-Chloroethyl Vinyl Ether		0.0100 U	0.0100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
cis-1,3-Dichloropropene		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
luene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
ans-1,3-Dichloropropene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1,2-Trichloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Tetrachloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,3-Dichloropropane		0.000400 U	0.000400	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Dibromochloromethane		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dibromoethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Chlorobenzene		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1,1,2-Tetrachloroethane		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Ethylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
o-Xylene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Styrene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromoform		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
P & M -Xylene		0.00200 U	0.00200	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Isopropylbenzene (Cumene)		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1,2,2-Tetrachloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2,3-Trichloropropane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
n-Propylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2-Chlorotoluene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
4-Chlorotoluene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,3,5-Trimethylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
tert-Butylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2,4-Trimethylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
-Butylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE



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Volatile Gas Chromatography/Mass Spectroscopy										
1,3-Dichlorobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
4-Isopropyltoluene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,4-Dichlorobenzene		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dichlorobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
n-Butylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dibromo-3-chloropropane		0.00200 U	0.00200	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2,4-Trichlorobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Hexachlorobutadiene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Naphthalene		0.00200 U	0.00200	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2,3-Trichlorobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1-Methyl-2-pentanone (MIBK)		0.0100 U	0.0100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2-Hexanone		0.0100 U	0.0100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dichloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Surrogates										
Dibromofluoromethane <surr>		97.2		%	SW8260B	A	85-115	09/04/03	09/04/03	TJE
1,2-Dichloroethane-D4 <surr>		98.7		%	SW8260B	A	72-119	09/04/03	09/04/03	TJE
4-Bromofluorobenzene <surr>		99.4		%	SW8260B	A	78-124	09/04/03	09/04/03	TJE
Toluene-d8 <surr>		98.5		%	SW8260B	A	84-113	09/04/03	09/04/03	TJE
Polynuclear Aromatics GC/MS										
Naphthalene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Acenaphthene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Fluorene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Fluoranthene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Pyrene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Benzo[b]Fluoranthene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Acenaphthylene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Indeno[1,2,3-c,d] pyrene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Dibenzo[a,h]anthracene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Benzo[g,h,i]perylene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Anthracene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Fluoranthene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM



SGS Ref.# 1035412004
Client Name AGVIQ LLC
Project Name/# Ft. Richardson Soil BV O&M
Client Sample ID 03FRA800WS
Matrix Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time

Printed Date/Time 09/11/2003 10:10
Collected Date/Time 08/22/2003 13:15
Received Date/Time 08/22/2003 16:13
Technical Director Stephen C. Ede

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS										
Benzo(a)Anthracene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Chrysene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Benzo[k]fluoranthene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Benzo[a]pyrene		0.0495 U	0.0495	ug/L	PAH SIM	G		08/25/03	08/29/03	KWM
Surrogates										
Naphthalene-d8 <surrogate>		67.5		%	PAH SIM	G	30-126	08/25/03	08/29/03	KWM
Acenaphthene-d10 <surrogate>		80		%	PAH SIM	G	30-128	08/25/03	08/29/03	KWM
Chrysene-d12 <surrogate>		96.8		%	PAH SIM	G	30-138	08/25/03	08/29/03	KWM



SGS Ref.# 1035412005
Client Name AGVIQ LLC
Project Name/# Ft. Richardson Soil BV O&M
Client Sample ID Trip Blank 001
Matrix Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time

Printed Date/Time 09/11/2003 10:10
Collected Date/Time 08/22/2003 13:00
Received Date/Time 08/22/2003 16:13
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department										
Gasoline Range Organics		0.0900 U	0.0900	mg/L	AK101 GRO	C		09/03/03	09/03/03	MML
Surrogates										
4-Bromofluorobenzene <surrogate>		93.4		%	AK101 GRO	C	50-150	09/03/03	09/03/03	MML



SGS Ref.# 1035412006
Client Name AGVIQ LLC
Project Name/# Ft. Richardson Soil BV O&M
Client Sample ID Trip Blank 002
Matrix Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time
Printed Date/Time 09/11/2003 10:10
Collected Date/Time 08/22/2003 13:00
Received Date/Time 08/22/2003 16:13
Technical Director Stephen L. Ede

Released By

Sample Remarks:

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy										
Dichlorodifluoromethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Chloromethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Vinyl chloride		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromomethane		0.00300 U	0.00300	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Chloroethane		0.00300 U	0.00300	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Trichlorofluoromethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1-Dichloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
ethylene chloride		0.00500 U	0.00500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Carbon disulfide		0.00200 U	0.00200	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
trans-1,2-Dichloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1-Dichloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2,2-Dichloropropane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
cis-1,2-Dichloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2-Butanone (MEK)		0.0100 U	0.0100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromochloromethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Chloroform		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1,1-Trichloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Carbon tetrachloride		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1-Dichloropropene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Benzene		0.000400 U	0.000400	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Trichloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dichloropropane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Dibromomethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromodichloromethane		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2-Chloroethyl Vinyl Ether		0.0100 U	0.0100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
cis-1,3-Dichloropropene		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Toluene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
trans-1,3-Dichloropropene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1,2-Trichloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Tetrachloroethene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,3-Dichloropropane		0.000400 U	0.000400	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromochloromethane		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE



SGS Ref.# 1035412006
Client Name AGVIQ LLC
Project Name/# Ft. Richardson Soil BV O&M
Client Sample ID Trip Blank 002
Matrix Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time
Printed Date/Time 09/11/2003 10:10
Collected Date/Time 08/22/2003 13:00
Received Date/Time 08/22/2003 16:13
Technical Director Stephen C. Ede

Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy										
1,2-Dibromoethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Chlorobenzene		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1,1,2-Tetrachloroethane		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Ethylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
o-Xylene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Styrene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromoform		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
P & M -Xylene		0.00200 U	0.00200	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Isopropylbenzene (Cumene)		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Bromobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,1,2,2-Tetrachloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2,3-Trichloropropane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
n-Propylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2-Chlorotoluene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
4-Chlorotoluene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,3,5-Trimethylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
tert-Butylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2,4-Trimethylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
sec-Butylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,3-Dichlorobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
4-Isopropyltoluene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,4-Dichlorobenzene		0.000500 U	0.000500	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dichlorobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
n-Butylbenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dibromo-3-chloropropane		0.00200 U	0.00200	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2,4-Trichlorobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Hexachlorobutadiene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
Naphthalene		0.00200 U	0.00200	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2,3-Trichlorobenzene		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
4-Methyl-2-pentanone (MIBK)		0.0100 U	0.0100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
2-Hexanone		0.0100 U	0.0100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE
1,2-Dichloroethane		0.00100 U	0.00100	mg/L	SW8260B	A		09/04/03	09/04/03	TJE

sgates



SGS Ref.# 1035412006
Client Name AGVIQ LLC
Project Name/# Ft. Richardson Soil BV O&M
Client Sample ID Trip Blank 002
Matrix Water (Surface, Eff., Ground)

All Dates/Times are Alaska Standard Time

Printed Date/Time 09/11/2003 10:10
Collected Date/Time 08/22/2003 13:00
Received Date/Time 08/22/2003 16:13
Technical Director Stephen C. Ede

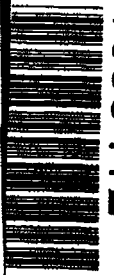
Parameter	Qualifiers	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Gas Chromatography/Mass Spectroscopy										
Dibromofluoromethane <surr>		98.1		%	SW8260B	A	85-115	09/04/03	09/04/03	TJE
1,2-Dichloroethane-D4 <surr>		101		%	SW8260B	A	72-119	09/04/03	09/04/03	TJE
4-Bromofluorobenzene <surr>		101		%	SW8260B	A	78-124	09/04/03	09/04/03	TJE
Toluene-d8 <surr>		101		%	SW8260B	A	84-113	09/04/03	09/04/03	TJE



CT&E Environmental Services Inc.
Laboratory Division

CHAIN OF CUSTODY RECORD

1035412



1 CLIENT: **AGVIA LLC**

CONTACT: **DARRIN LAWLESS** PHONE NO: (907) 365-6349

PROJECT: **FT. RICHARDSON SOIL BY DM** FWISID:

REPORTS TO: **DARRIN LAWLESS**

2121 ABBOTT RD. ANCHORAGE, AK FAX NO: (907) 365-6356

INVOICE TO: **99507** QUOTE#

P.O. NUMBER: **-SAME-**

CT&E Reference:

PAGE 1 OF 1

2

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX
QA-5	03FRA001025	8/22/03	1315	W
QA-5	03FRA001025-MS		1315	W
QA-5	03FRA001025-MSD		1315	W
QA-5	03FRA000025		1315	W
QA-C	TRIP BLANK - 001		1300	W
QA-C	TRIP BLANK - 002		1300	W

No.	CONTAINERS	SAMPLE TYPE	Analysis Required	Preserved/Used	REMARKS
			C = COMP G = GRAB		
10		G			Normal TAT
10		G			
10		G			
10		G			
					MSD

5 Collected/Impounded By: (1) *[Signature]* Date: 8/22/03 Time: 1613 Received By: *[Signature]*

Relinquished By: (2) *[Signature]* Date: 8/22/03 Time: 1613 Received By: *[Signature]*

Relinquished By: (3) _____ Date: _____ Time: _____ Received By: _____

Relinquished By: (4) *[Signature]* Date: 8/22/03 Time: 1613 Received For Laboratory By: *[Signature]*

4 Shipping Carrier: _____
Shipping Ticket No: _____
Data Deliverables: _____
Level I Level II Level III Level III EDD Type: _____
Requested Turnaround Time and Special Instructions: _____

Temperature C: **45.7**
78.5
72.5 **92.8**
Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT

PLEASE SEE REMARKS

200 W. Pege
3180 Pege
Anchorage, AK 99518 Tel: (907) 582-2343 Fax: (907) 564-5301
Fairbanks, AK 99701 Tel: (907) 474-8656 Fax: (907) 474-9685

White - Retained by Lab (Project File) Yellow - Returned with Report Pink - Re Sampler 0-720

1035412



SAMPLE RECEIPT FORM

CT&E WO#: _____

Yes No NA

- Are samples RUSH, priority, or within 72 hrs. of hold time?
- If yes have you done e-mail notification?
- Are samples within 24 hrs. of hold time or due date?
- If yes, have you spoken with Supervisor?
- Archiving bottles - if required, are they properly marked?
- Are there any problems? PM Notified? _____
- Were samples preserved correctly and pH verified? _____

Due Date: 9-2-03
 Received Date: 6-22-03
 Received Time: 1613
 Is date/time conversion necessary? N
 # of hours from AK Standard Time: _____
 Received Temperature*: _____ °C

Cooler ID	Temp Blank	Cooler Temp
1	4.3 °C	5.7 °C
2	5.9 °C	8.0 °C
	°C	°C
	°C	°C

*Temperature readings include thermometer correction factors

If this is for PWS, provide PWSID. _____
 Will courier charges apply? _____
 Method of payment? _____
 Data package required? (Level: 1 / 2 / 3)
 Notes: _____
 Is this a DoD project? (USACE, Navy, AFCEE) _____

Delivery method (circle all that apply) Client
 Alert Courier / UPS / FedEx / USPS /
 AA Goldstreak / NAC / ERA / PenAir / Carfile
 Lynden / SGS-CT&E / Other: _____
 Airbill # _____

- Additional Sample Remarks: (✓ if applicable)
- Extra Sample Volume? _____
 - Limited Sample Volume? _____
 - Field preserved for volatiles? _____
 - Field-filtered for dissolved? _____
 - Lab-filtered for dissolved? _____
 - Ref Lab required? _____
 - Foreign Soil? _____

This section must be filled out for DoD projects (USACE, Navy, AFCEE)

Yes No

Is received temperature $\pm 2^{\circ}\text{C}$? _____
 Exceptions: C2-8-02 Samples/Analyses Affected: _____

Rad Screen performed? _____
 Result: _____

Was there an airbill? (Note # above in the right hand column) _____
 Was cooler sealed with custody seals? Faxed to COE? _____
 # / where: _____

Were seal(s) intact upon arrival? _____
 Was there a COC with cooler? _____
 Was the COC filled out properly? _____
 Did the COC indicate ACOE / AFCEE project? (if applicable) _____
 Did the COC and samples correspond? _____
 Were all sample packed to prevent breakage? _____
 Packing material: BW

Were all samples unbroken and clearly labeled? _____
 Were all samples sealed in separate plastic bags? _____
 Were all bottles for volatiles free of headspace? _____
 Were correct container / sample sizes submitted? _____
 Is sample condition good? _____

This section must be filled if problems are found

Yes No

Was client notified of problems? _____

Individual contacted: _____
 Date/Time: _____
 Phone/Fax: _____
 Reason for contact: _____

SGS/CT&E Contact: _____

Notes: _____

Completed by (sign): [Signature] (print): Jamey Johnson
 Origin proof (check one): waived required performed by: _____



Laboratory Analysis Report

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: <http://www.sgsevenvironmental.com>

Darrin Lawless
AGVIQ LLC
2121 Abbott Road Suite 100
Anchorage, AK 995074453

Work Order: 1036502
03-109 Ft Rich Bld 986 SVE O&M
Client: AGVIQ LLC
Report Date: November 05, 2003

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by SGS. A copy of our Quality Control Manual that outlines this program is available at your request. The laboratory ADEC certification numbers are AK08-03 (DW), UST-005 (CS) and AK00971 (Micro).

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS Quality Assurance Program Plan and the National Environmental Laboratory Accreditation Conference.

If you have any questions regarding this report or if we can be of any other assistance, please call your SGS Project Manager at (907) 562-2343.


The following descriptors may be found on your report which will serve to further qualify the data.

- PQL Practical Quantitation Limit (reporting limit).
- U Indicates the analyte was analyzed for but not detected.
- F Indicates an estimated value that falls below PQL, but is greater than the MDL.
- J The quantitation is an estimation.
- B Indicates the analyte is found in a blank associated with the sample.
- * The analyte has exceeded allowable regulatory or control limits.
- GT Greater Than
- D The analyte concentration is the result of a dilution.
- LT Less Than
- ! Surrogate out of control limits.
- Q QC parameter out of acceptance range.
- M A matrix effect was present.
- JL The analyte was positively identified, but the quantitation is a low estimation.
- E The analyte result is high outside of calibrated range.

Note: Soil samples are reported on a dry weight basis unless otherwise specified.



SGS Ref.# 1036502001
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA001SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-11 10FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 9:52
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede
Released By 

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	2.13 U	2.13	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.0107 U	0.0107	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0427 U	0.0427	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0427 U	0.0427	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
P & M -Xylene	0.0427 U	0.0427	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0427 U	0.0427	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
rogates									
1,4-Difluorobenzene <surr>	84.9		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <surr>	77.5		%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.5 U	21.5	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <surr>	72.6		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Acenaphthylene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Acenaphthene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Fluorene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Phenanthrene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Anthracene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Fluoranthene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Pyrene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Benzo(a)Anthracene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
hrysene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM



SGS Ref.# 1036502001
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA001SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-11 10FT

All Dates/Times are Alaska Standard Time
 Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/06/2003 9:52
 Received Date/Time 10/08/2003 9:20
 Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Benzo[k]fluoranthene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Benzo[a]pyrene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Indeno[1,2,3-c,d] pyrene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Dibenzo[a,h]anthracene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Benzo[g,h,i]perylene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Surrogates									
Naphthalene-d8 <surr/IS>	46.2		%	PAH SIM	B	16-138	10/10/03	10/13/03	SPM
Acenaphthene-d10 <surr/IS>	48.5		%	PAH SIM	B	22-142	10/10/03	10/13/03	SPM
Chrysene-d12 <surr/IS>	48		%	PAH SIM	B	27-147	10/10/03	10/13/03	SPM
Solids									
Total Solids	94.5		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502002
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA002SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-11 15FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 10:10
Received Date/Time 10/08/2003 9:20
Technical Director Stephen S. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.79 U	1.79	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.00893 U	0.00893	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0357 U	0.0357	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0357 U	0.0357	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
P & M -Xylene	0.0357 U	0.0357	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0357 U	0.0357	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
rogates									
1,4-Difluorobenzene <surrogate>	84.8		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <surrogate>	75		%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.2 U	21.2	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <surrogate>	69.6		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Acenaphthylene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Acenaphthene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Fluorene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Phenanthrene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Anthracene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Fluoranthene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Pyrene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Benzo(a)Anthracene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
rysene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM



SGS Ref.# 1036502002
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA002SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-11 15FT

All Dates/Times are Alaska Standard Time
 Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/06/2003 10:10
 Received Date/Time 10/08/2003 9:20
 Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Benzo[k]fluoranthene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Benzo[a]pyrene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Indeno[1,2,3-c,d] pyrene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Dibenzo[a,h]anthracene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Benzo[g,h,i]perylene	5.48 U	5.48	ug/Kg	PAH SIM	B		10/10/03	10/13/03	SPM
Surrogates									
Naphthalene-d8 <surr/IS>	52.1		%	PAH SIM	B	16-138	10/10/03	10/13/03	SPM
Acenaphthene-d10 <surr/IS>	55		%	PAH SIM	B	22-142	10/10/03	10/13/03	SPM
Chrysene-d12 <surr/IS>	72.3		%	PAH SIM	B	27-147	10/10/03	10/13/03	SPM
Solids									
Total Solids	93.0		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502003
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA003SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-11 20FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 10:30
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.88 U	1.88	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.00939 U	0.00939	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0376 U	0.0376	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0376 U	0.0376	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
P & M -Xylene	0.0376 U	0.0376	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0376 U	0.0376	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	84.7		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <surr>	69.6		%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.6 U	21.6	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <surr>	116		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(b)Fluoranthene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502003
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA003SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-11 20FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 10:30
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.52 U	5.52	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surrogate>	46.5		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surrogate>	57.3		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surrogate>	71.3		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	92.3		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502004
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA004SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-11 30FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 11:02
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.48 U	1.48	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.00739 U	0.00739	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0296 U	0.0296	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0296 U	0.0296	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
P & M -Xylene	0.0296 U	0.0296	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0296 U	0.0296	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	83.9		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <surr>	71.3		%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.7 U	21.7	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <surr>	71.1		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502004
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA004SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-11 30FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 11:02
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surr/IS>	64.7		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surr/IS>	67.8		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surr/IS>	68.3		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	92.6		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502005
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA005SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-11 40FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 11:50
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.84 U	1.84	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.00921 U	0.00921	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0369 U	0.0369	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0369 U	0.0369	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
P & M -Xylene	0.0369 U	0.0369	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0369 U	0.0369	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Surrogates									
1,4-Difluorobenzene <surrogate>	84.1		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <surrogate>	68.2		%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.7 U	21.7	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5 α Androstane <surrogate>	75.9		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502005
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA005SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-11 40FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 11:50
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surr/IS>	55.4		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surr/IS>	59.4		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surr/IS>	67.9		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	93.7		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502006
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA006SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-11 50FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 12:22
Received Date/Time 10/08/2003 9:20
Technical Director Stephen G. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.66 U	1.66	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.00830 U	0.00830	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0332 U	0.0332	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0332 U	0.0332	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
P & M -Xylene	0.0332 U	0.0332	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0332 U	0.0332	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
rogates									
1,4-Difluorobenzene <surrogate>	82.1		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <surrogate>	85.2		%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.0 U	21.0	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <surrogate>	81.5		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
hrysene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502006
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA006SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-11 50FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 12:22
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	7.44 U	7.44	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surr/IS>	61.8		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surr/IS>	66.2		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surr/IS>	66.4		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	96.7		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502009
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA800SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-11 FD-01

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 14:23
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	2.05 U	2.05	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.0173	0.0102	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0410 U	0.0410	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0410 U	0.0410	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
P & M -Xylene	0.0410 U	0.0410	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0410 U	0.0410	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Surrogates									
1,4-Difluorobenzene <surrogate>	83.4		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <surrogate>	85.5		%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.1 U	21.1	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <surrogate>	73.6		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Chrysene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
benzo[b]Fluoranthene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502009
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA800SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-11 FD-01

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 14:23
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[k]fluoranthene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.30 U	5.30	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surr/IS>	65.8		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surr/IS>	65.7		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surr/IS>	65.8		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	94.5		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502010
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA007SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-12 10FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 13:54
Received Date/Time 10/08/2003 9:20
Technical Director Stephen S. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.84 U	1.84	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.00922 U	0.00922	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0369 U	0.0369	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0369 U	0.0369	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
P & M -Xylene	0.0369 U	0.0369	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0369 U	0.0369	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
rogates									
1,4-Difluorobenzene <surr>	83.2		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <surr>	85.6		%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.1 U	21.1	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <surr>	73.3		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
rysene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502010
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA007SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-12 10FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 13:54
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.16 U	5.16	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <sur/IS>	56.7		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <sur/IS>	59.9		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <sur/IS>	64.5		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	95.7		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502011
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA008SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-12 15FT

All Dates/Times are Alaska Standard Time
 Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/06/2003 14:08
 Received Date/Time 10/08/2003 9:20
 Technical Director Stephen S. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
 Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.
 DRO - The pattern is consistent with a weathered middle distillate.
 GRO/BTEX - BFB surrogate recovery is biased high due to matrix interference.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	16.4	1.78	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.0296	0.00891	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0392	0.0356	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0824	0.0356	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
p & m -Xylene	0.185	0.0356	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0946	0.0356	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	85.8		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <surr>	271	!	%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	96.5	22.2	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <surr>	77.9		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	9.02	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502011
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA008SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-12 15FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 14:08
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo(a)Anthracene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Chrysene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[b]Fluoranthene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.46 U	5.46	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
rogates									
Naphthalene-d8 <sur/IS>	49.5		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <sur/IS>	52.1		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <sur/IS>	66.3		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	92.4		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502012
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA009SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-12 20FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 14:23
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.85 U	1.85	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.0139	0.00924	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0369 U	0.0369	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0369 U	0.0369	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
P & M -Xylene	0.0369 U	0.0369	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0369 U	0.0369	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Surrogates									
1,4-Difluorobenzene <surrogate>	82.7		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <surrogate>	95.1		%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.6 U	21.6	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <surrogate>	100		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
hrysene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502012
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA009SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-12 20FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/06/2003 14:23
 Received Date/Time 10/08/2003 9:20
 Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.18 U	5.18	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surrogate>	56.5		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surrogate>	59.1		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surrogate>	71.3		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	94.8		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502013
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA010SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-12 30FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 14:50
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede
Released By *Shonda Stricker*

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.88 U	1.88	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.0150	0.00938	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0375 U	0.0375	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0375 U	0.0375	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
P & M -Xylene	0.0375 U	0.0375	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0375 U	0.0375	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
rogates									
1,4-Difluorobenzene <surrogate>	83		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <surrogate>	78.8		%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.2 U	21.2	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <surrogate>	76.6		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
perylene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502013
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA010SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-12 30FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 14:50
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surrogate>	47.3		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surrogate>	50.6		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surrogate>	65.7		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	94.4		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502014
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA011SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-12 40FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 15:22
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede
Released By *Rhonda Struchen*

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	2.13 U	2.13	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.0107 U	0.0107	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0427 U	0.0427	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0427 U	0.0427	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
P & M -Xylene	0.0427 U	0.0427	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0427 U	0.0427	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Surrogates									
1,4-Difluorobenzene <sur>	85.3		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <sur>	86.4		%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.3 U	21.3	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <sur>	79.5		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(b)Fluoranthene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502014
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA011SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-12 40FT

All Dates/Times are Alaska Standard Time
 Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/06/2003 15:22
 Received Date/Time 10/08/2003 9:20
 Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.25 U	5.25	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surrogate>	61.7		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surrogate>	65.5		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surrogate>	60.4		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	94.2		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502015
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA012SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-12 50FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 15:57
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede
Released By *Rhonda Stricker*

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.83 U	1.83	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.00917 U	0.00917	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0367 U	0.0367	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0367 U	0.0367	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
P & M -Xylene	0.0367 U	0.0367	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0367 U	0.0367	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Surrogates									
1,4-Difluorobenzene <surrogate>	84.9		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <surrogate>	83.7		%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.1 U	21.1	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <surrogate>	78		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(b)Fluoranthene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502015
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA012SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-12 50FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/06/2003 15:57
 Received Date/Time 10/08/2003 9:20
 Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.20 U	5.20	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surrogate>	59.1		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surrogate>	61.3		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surrogate>	62.3		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	96.5		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502016
Client Name AGVIQ LLC
Project Name# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID Trip Blank-01
Matrix Soil/Solid
Location/Well ID FRPOLCB-12 50FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/06/2003 9:00
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede
Released By *Rhonda Struchen*

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	2.53 U	2.53	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Benzene	0.0127 U	0.0127	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Toluene	0.0507 U	0.0507	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Ethylbenzene	0.0507 U	0.0507	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
P & M -Xylene	0.0507 U	0.0507	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
o-Xylene	0.0507 U	0.0507	mg/Kg	AK101 8021B	A		10/06/03	10/15/03	MML
Logates									
1,4-Difluorobenzene <sur>	82		%	AK101 8021B	A	76-113	10/06/03	10/15/03	MML
4-Bromofluorobenzene <sur>	87.9		%	AK101 8021B	A	50-150	10/06/03	10/15/03	MML
Solids									
Total Solids	100		%	SM20 2540G				10/10/03	YHW



SGS Ref.# 1036502017
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA013SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-13 12FT

All Dates/Times are Alaska Standard Time
 Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/07/2003 9:08
 Received Date/Time 10/08/2003 9:20
 Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
 Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.
 DRO - Unknown hydrocarbon with several peaks is present.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.64 U	1.64	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Benzene	0.0375	0.00820	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Toluene	0.0386	0.0328	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Ethylbenzene	0.0328 U	0.0328	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
P & M -Xylene	0.0591	0.0328	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
-Xylene	0.0328 U	0.0328	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	82.1		%	AK101 8021B	A	76-113	10/07/03	10/15/03	MML
4-Bromofluorobenzene <surr>	102		%	AK101 8021B	A	50-150	10/07/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	27.4	20.7	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <surr>	121		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
benzo(a)Anthracene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502017
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA013SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-13 12FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 9:08
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Chrysene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[b]Fluoranthene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surrogate>	60.1		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surrogate>	63.3		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surrogate>	64.2		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	97.2		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502018
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA014SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-13 15FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 9:17
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.
DRO - Surrogate is outside QC goals (biased high) due to hydrocarbon interference.
DRO - The pattern is consistent with a weathered middle distillate.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.62 U	1.62	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Benzene	0.0430	0.00808	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Toluene	0.0323 U	0.0323	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Ethylbenzene	0.0323 U	0.0323	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
m & p -Xylene	0.0556	0.0323	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
o-Xylene	0.0323 U	0.0323	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Surrogates									
1,4-Difluorobenzene <surrogate>	88.9		%	AK101 8021B	A	76-113	10/07/03	10/15/03	MML
4-Bromofluorobenzene <surrogate>	85.6		%	AK101 8021B	A	50-150	10/07/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	746	82.6	mg/Kg	AK102	B		10/10/03	10/13/03	MCM
Surrogates									
5a Androstane <surrogate>	346	!	%	AK102	B	50-150	10/10/03	10/13/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	52.4 U	52.4	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	9.73	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	7.58	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
benzofluoranthene	8.58	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502018
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA014SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-13 15FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 9:17
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo(a)Anthracene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Chrysene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[b]Fluoranthene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.24 U	5.24	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
rogates									
1aphthalene-d8 <sur/IS>	37.9		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <sur/IS>	57.3		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <sur/IS>	62.8		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	93.8		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502019
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA015SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-13 20FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 9:30
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede
Released By *Ghonda Strucka*

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.
DRO - The pattern is consistent with a weathered middle distillate.
GRO/BTEX - BFB surrogate recovery is biased high due to matrix interference.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	28.3	1.93	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Benzene	0.0633	0.00963	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Toluene	0.0587	0.0385	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Ethylbenzene	0.178	0.0385	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
p & m -Xylene	0.393	0.0385	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
o-Xylene	0.169	0.0385	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	85.6		%	AK101 8021B	A	76-113	10/07/03	10/15/03	MML
4-Bromofluorobenzene <surr>	452	!	%	AK101 8021B	A	50-150	10/07/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	241	20.6	mg/Kg	AK102	B		10/10/03	10/11/03	MCM
Surrogates									
5a Androstane <surr>	87.3		%	AK102	B	50-150	10/10/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	67.3	52.9	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.29 U	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.29 U	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	13.0	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	9.86	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.29 U	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.29 U	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
rene	5.29 U	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502019
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA015SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-13 20FT

All Dates/Times are Alaska Standard Time
 Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/07/2003 9:30
 Received Date/Time 10/08/2003 9:20
 Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo(a)Anthracene	5.29 U	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Chrysene	5.29 U	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[b]Fluoranthene	5.29 U	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.29 U	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.29 U	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.29 U	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.29 U	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.29 U	5.29	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
rogates									
Naphthalene-d8 <surrogate>	50		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surrogate>	52.1		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surrogate>	70.7		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	95.7		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502020
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA016SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-13 30FT

All Dates/Times are Alaska Standard Time
 Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/07/2003 10:00
 Received Date/Time 10/08/2003 9:20
 Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
 Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	2.20 U	2.20	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Benzene	0.0276	0.0110	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Toluene	0.0466	0.0440	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Ethylbenzene	0.0440 U	0.0440	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
P & M -Xylene	0.0440 U	0.0440	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
o-Xylene	0.0440 U	0.0440	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Aromatics									
1,4-Difluorobenzene <surr>	81.9		%	AK101 8021B	A	76-113	10/07/03	10/15/03	MML
4-Bromofluorobenzene <surr>	100		%	AK101 8021B	A	50-150	10/07/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	22.0 U	22.0	mg/Kg	AK102	B		10/10/03	10/13/03	MCM
Surrogates									
5a Androstane <surr>	74.2		%	AK102	B	50-150	10/10/03	10/13/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
rysene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502020
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA016SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-13 30FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 10:00
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.35 U	5.35	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surr/IS>	54.8		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surr/IS>	68.3		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surr/IS>	70.4		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	93.0		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502021
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA017SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-13 40FT

All Dates/Times are Alaska Standard Time
 Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/07/2003 10:38
 Received Date/Time 10/08/2003 9:20
 Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
 Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.09 U	1.09	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Benzene	0.00545 U	0.00545	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Toluene	0.0218 U	0.0218	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Ethylbenzene	0.0218 U	0.0218	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
P & M -Xylene	0.0218 U	0.0218	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
o-Xylene	0.0218 U	0.0218	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
ogates									
1,4-Difluorobenzene <surr>	83.6		%	AK101 8021B	A	76-113	10/07/03	10/15/03	MML
4-Bromofluorobenzene <surr>	82.6		%	AK101 8021B	A	50-150	10/07/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.0 U	21.0	mg/Kg	AK102	B		10/10/03	10/13/03	MCM
Surrogates									
5a Androstane <surr>	77.8		%	AK102	B	50-150	10/10/03	10/13/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
rysene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502021
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA017SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-13 40FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 10:38
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.01 U	5.01	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surr/IS>	60.1		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
acenaphthene-d10 <surr/IS>	63.3		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
chrysene-d12 <surr/IS>	65.9		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	97.8		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502022
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA018SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-13 50FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/07/2003 11:20
 Received Date/Time 10/08/2003 9:20
 Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
 Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.71 U	1.71	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Benzene	0.00853 U	0.00853	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Toluene	0.0341 U	0.0341	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Ethylbenzene	0.0341 U	0.0341	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
P & M -Xylene	0.0341 U	0.0341	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
o-Xylene	0.0341 U	0.0341	mg/Kg	AK101 8021B	A		10/07/03	10/15/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	84.9		%	AK101 8021B	A	76-113	10/07/03	10/15/03	MML
4-Bromofluorobenzene <surr>	84.2		%	AK101 8021B	A	50-150	10/07/03	10/15/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.3 U	21.3	mg/Kg	AK102	B		10/10/03	10/13/03	MCM
Surrogates									
5a Androstane <surr>	65.2		%	AK102	B	50-150	10/10/03	10/13/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502022
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA018SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-13 50FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 11:20
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.33 U	5.33	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surr/IS>	58.7		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surr/IS>	62.2		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surr/IS>	64.6		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	94.7		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502023
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA019SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 10FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 12:18
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.
DRO - The pattern is consistent with a weathered middle distillate.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.53 U	1.53	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Benzene	0.0202	0.00767	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Toluene	0.0473	0.0307	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Ethylbenzene	0.0307 U	0.0307	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
P & M -Xylene	0.0307 U	0.0307	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
m-Xylene	0.0307 U	0.0307	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	84.9		%	AK101 8021B	A	76-113	10/07/03	10/16/03	MML
4-Bromofluorobenzene <surr>	82.9		%	AK101 8021B	A	50-150	10/07/03	10/16/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	318	22.9	mg/Kg	AK102	B		10/10/03	10/13/03	MCM
Surrogates									
5a Androstane <surr>	82.2		%	AK102	B	50-150	10/10/03	10/13/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	11.6	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
benzo(a)Anthracene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502023
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA019SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 10FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 12:18
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Chrysene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[b]Fluoranthene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.51 U	5.51	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surr/IS>	38.8		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surr/IS>	61.1		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surr/IS>	71.4		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	92.5		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502024
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA020SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 15FT

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Collected Date/Time 10/07/2003 12:34
Received Date/Time 10/08/2003 9:20
Technical Director Stephen S. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.94	1.66	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Benzene	0.0259	0.00829	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Toluene	0.0603	0.0331	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Ethylbenzene	0.0487	0.0331	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
P & M -Xylene	0.0717	0.0331	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
o-Xylene	0.0507	0.0331	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Surrogates									
1,4-Difluorobenzene <surrogate>	83.1		%	AK101 8021B	A	76-113	10/07/03	10/16/03	MML
4-Bromofluorobenzene <surrogate>	117		%	AK101 8021B	A	50-150	10/07/03	10/16/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	22.0 U	22.0	mg/Kg	AK102	B		10/10/03	10/13/03	MCM
Surrogates									
5a Androstane <surrogate>	108		%	AK102	B	50-150	10/10/03	10/13/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	6.20	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Chrysene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502024
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA020SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 15FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 12:34
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.32 U	5.32	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surrogate>	53.8		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surrogate>	61.1		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surrogate>	61.3		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	92.9		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502025
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA021SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 20FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 12:50
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Released By *Rhonda Stricker*

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.
DRO - The pattern is consistent with a weathered middle distillate.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	6.73	2.08	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Benzene	0.0292	0.0104	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Toluene	0.0417 U	0.0417	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Ethylbenzene	0.0493	0.0417	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
P & M -Xylene	0.145	0.0417	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
m-Xylene	0.0417 U	0.0417	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	85.4		%	AK101 8021B	A	76-113	10/07/03	10/16/03	MML
4-Bromofluorobenzene <surr>	133		%	AK101 8021B	A	50-150	10/07/03	10/16/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	296	23.0	mg/Kg	AK102	B		10/10/03	10/13/03	MCM
Surrogates									
5a Androstane <surr>	78		%	AK102	B	50-150	10/10/03	10/13/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
benzo(a)Anthracene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502025
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA021SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 20FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 12:50
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Chrysene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[b]Fluoranthene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.54 U	5.54	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surr/IS>	43.6		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surr/IS>	46.5		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surr/IS>	53.2		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	89.3		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502026
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA022SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 30FT

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Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 14:08
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede
Released By *Shonda Stricker*

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.88 U	1.88	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Benzene	0.00939 U	0.00939	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Toluene	0.0376 U	0.0376	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Ethylbenzene	0.0376 U	0.0376	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
P & M -Xylene	0.0376 U	0.0376	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
o-Xylene	0.0376 U	0.0376	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	81.8		%	AK101 8021B	A	76-113	10/07/03	10/16/03	MML
4-Bromofluorobenzene <surr>	101		%	AK101 8021B	A	50-150	10/07/03	10/16/03	MML
Semivolatiles Organic Fuels Department									
Diesel Range Organics	22.0 U	22.0	mg/Kg	AK102	B		10/10/03	10/13/03	MCM
Surrogates									
5a Androstane <surr>	91.8		%	AK102	B	50-150	10/10/03	10/13/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



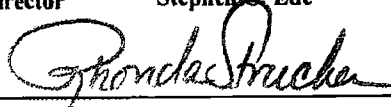
SGS Ref.# 1036502026
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA022SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 30FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 14:08
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.36 U	5.36	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surrogate>	56.8		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surrogate>	62.2		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surrogate>	68.7		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	93.6		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502027
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA023SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 40FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 14:45
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede
Released By 

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.64 U	1.64	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Benzene	0.00819 U	0.00819	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Toluene	0.0328 U	0.0328	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Ethylbenzene	0.0328 U	0.0328	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
P & M -Xylene	0.0328 U	0.0328	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
o-Xylene	0.0328 U	0.0328	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Logates									
1,4-Difluorobenzene <surr>	85.4		%	AK101 8021B	A	76-113	10/07/03	10/16/03	MML
4-Bromofluorobenzene <surr>	88.6		%	AK101 8021B	A	50-150	10/07/03	10/16/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.1 U	21.1	mg/Kg	AK102	B		10/10/03	10/13/03	MCM
Surrogates									
5a Androstane <surr>	64.5		%	AK102	B	50-150	10/10/03	10/13/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(b)Fluoranthene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502027
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA023SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 40FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 14:45
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.23 U	5.23	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surrogate>	58.9		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surrogate>	62.7		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surrogate>	62.9		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	96.3		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502028
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA024SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 50FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 15:23
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Released By

Sample Remarks:
Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.48 U	1.48	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Benzene	0.00742 U	0.00742	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Toluene	0.0297 U	0.0297	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Ethylbenzene	0.0297 U	0.0297	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
P & M -Xylene	0.0297 U	0.0297	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
o-Xylene	0.0297 U	0.0297	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
aromatics									
1,4-Difluorobenzene <sur>	85.6		%	AK101 8021B	A	76-113	10/07/03	10/16/03	MML
4-Bromofluorobenzene <sur>	88.6		%	AK101 8021B	A	50-150	10/07/03	10/16/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	22.0 U	22.0	mg/Kg	AK102	B		10/10/03	10/13/03	MCM
Surrogates									
5a Androstane <sur>	61		%	AK102	B	50-150	10/10/03	10/13/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
rysene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502028
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA024SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-14 50FT

All Dates/Times are Alaska Standard Time
 Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/07/2003 15:23
 Received Date/Time 10/08/2003 9:20
 Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[b]Fluoranthene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[k]fluoranthene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.13 U	5.13	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surr/IS>	50.4		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surr/IS>	53.8		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surr/IS>	57.8		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	95.6		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502029
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA801SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 FD-2

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 15:23
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.52 U	1.52	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Benzene	0.00761 U	0.00761	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Toluene	0.0305 U	0.0305	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Ethylbenzene	0.0305 U	0.0305	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
P & M -Xylene	0.0305 U	0.0305	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
o-Xylene	0.0305 U	0.0305	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	83.6		%	AK101 8021B	A	76-113	10/07/03	10/16/03	MML
4-Bromofluorobenzene <surr>	89.6		%	AK101 8021B	A	50-150	10/07/03	10/16/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.1 U	21.1	mg/Kg	AK102	B		10/10/03	10/13/03	MCM
Surrogates									
5a Androstane <surr>	59.6		%	AK102	B	50-150	10/10/03	10/13/03	MCM
Polynuclear Aromatics GC/MS									
Naphthalene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthylene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Acenaphthene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluorene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Phenanthrene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Anthracene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Fluoranthene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Pyrene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo(a)Anthracene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Chrysene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[b]Fluoranthene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM



SGS Ref.# 1036502029
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA801SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 FD-2


All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 15:23
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Benzo[k]fluoranthene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[a]pyrene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Indeno[1,2,3-c,d] pyrene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Dibenzo[a,h]anthracene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Benzo[g,h,i]perylene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/10/03	10/14/03	SPM
Surrogates									
Naphthalene-d8 <surrogate>	57.2		%	PAH SIM	B	16-138	10/10/03	10/14/03	SPM
Acenaphthene-d10 <surrogate>	61.1		%	PAH SIM	B	22-142	10/10/03	10/14/03	SPM
Chrysene-d12 <surrogate>	60.9		%	PAH SIM	B	27-147	10/10/03	10/14/03	SPM
Solids									
Total Solids	96.2		%	SM20 2540G	B			10/10/03	YHW



SGS Ref.# 1036502030
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID Trip Blank-02
Matrix Soil/Solid
Location/Well ID FRPOLCB-14 FD-2

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/07/2003 0:00
Received Date/Time 10/08/2003 9:20
Technical Director Stephen C. Ede

Released By 

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	2.51 U	2.51	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Benzene	0.0126 U	0.0126	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Toluene	0.0503 U	0.0503	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
Ethylbenzene	0.0503 U	0.0503	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
P & M -Xylene	0.0503 U	0.0503	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
o-Xylene	0.0503 U	0.0503	mg/Kg	AK101 8021B	A		10/07/03	10/16/03	MML
gates									
1,4-Difluorobenzene <surr>	83.9		%	AK101 8021B	A	76-113	10/07/03	10/16/03	MML
4-Bromofluorobenzene <surr>	92.8		%	AK101 8021B	A	50-150	10/07/03	10/16/03	MML
Solids									
Total Solids	100		%	SM20 2540G				10/10/03	YHW

ALASKA

A T E S T L A B
D I V I S I O N o f **D** O W L L L C
 Location: By Client

Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

ID# 1036502001

10/06/03 0952

Engineering Classification: Well Graded GRAVEL with Sand, GW

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

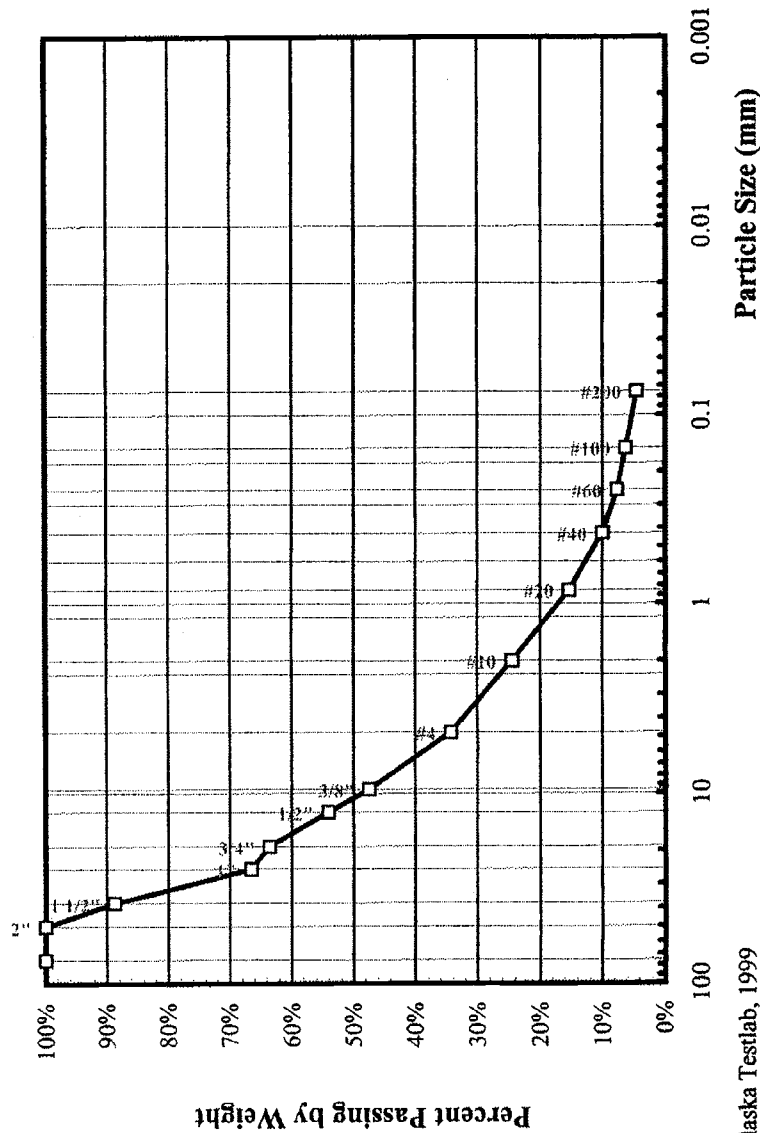
W.O. A30530

Lab No. 2602

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = ~0%	
3"	
2"	100%
1 1/2"	89%
1"	67%
3/4"	64%
1/2"	54%
3/8"	47%
No. 4	34%
Total Wt. = 741g	
No. 8	
No. 10	24%
No. 16	
No. 20	15%
No. 30	
No. 40	10%
No. 50	
No. 60	8%
No. 80	
No. 100	6%
No. 200	4.5%
Total Wt. of Fine Fraction = 251.5g	
0.02 mm	



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David L Andersen

David L. Andersen, P.E., General Manager

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Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

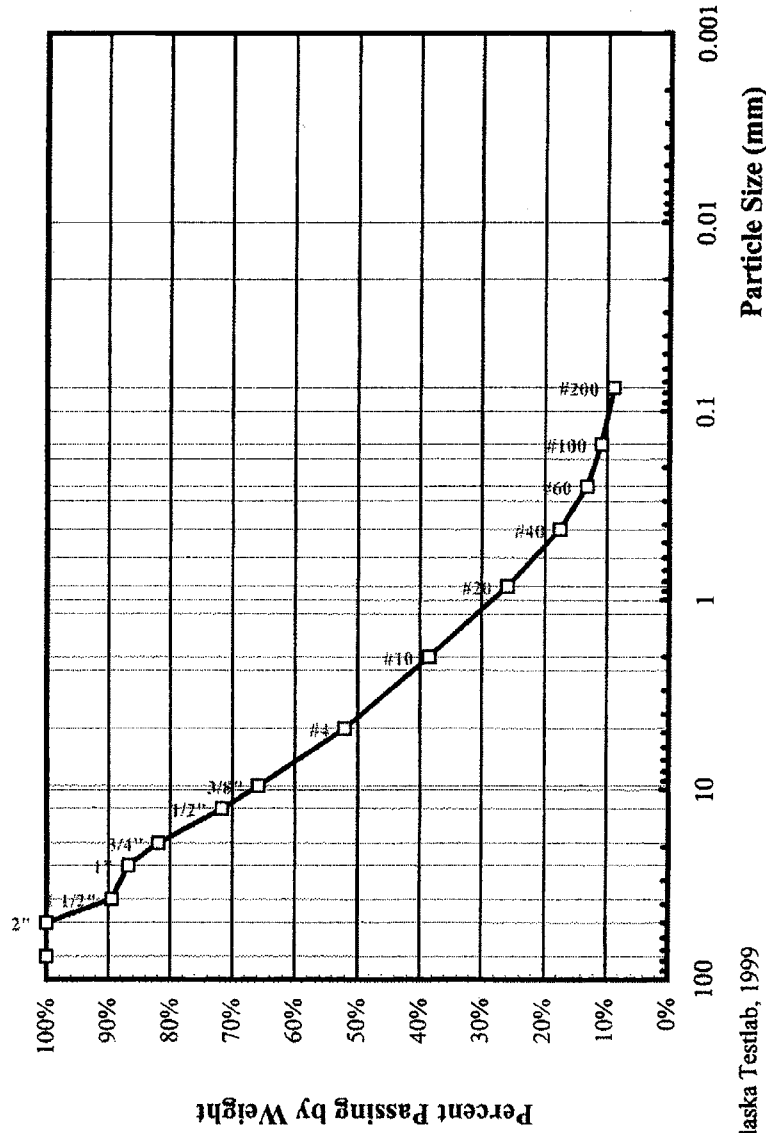
Location: By Client

ID# 1036502002

10/06/03 1010

Engineering Classification: Well Graded GRAVEL with Silt and Sand, GW-GM

Frost Classification: Not Measured



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David L. Andersen, P.E., General Manager

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PARTICLE-SIZE

DIST. ASTM D422

W.O. A30530

Lab No. 2603

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = ~0%	
3"	
2"	100%
1 1/2"	89%
1"	87%
3/4"	82%
1/2"	72%
3/8"	66%
No. 4	52%
Total Wt. = 1094g	
No. 8	
No. 10	39%
No. 16	
No. 20	26%
No. 30	
No. 40	18%
No. 50	
No. 60	13%
No. 80	
No. 100	11%
No. 200	8.9%
Total Wt. of Fine Fraction = 569g	
0.02 mm	



Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

Location: By Client

ID# 1036502003

10/06/03 1030

Engineering Classification: Well Graded GRAVEL with Silt and Sand, GW-GM

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

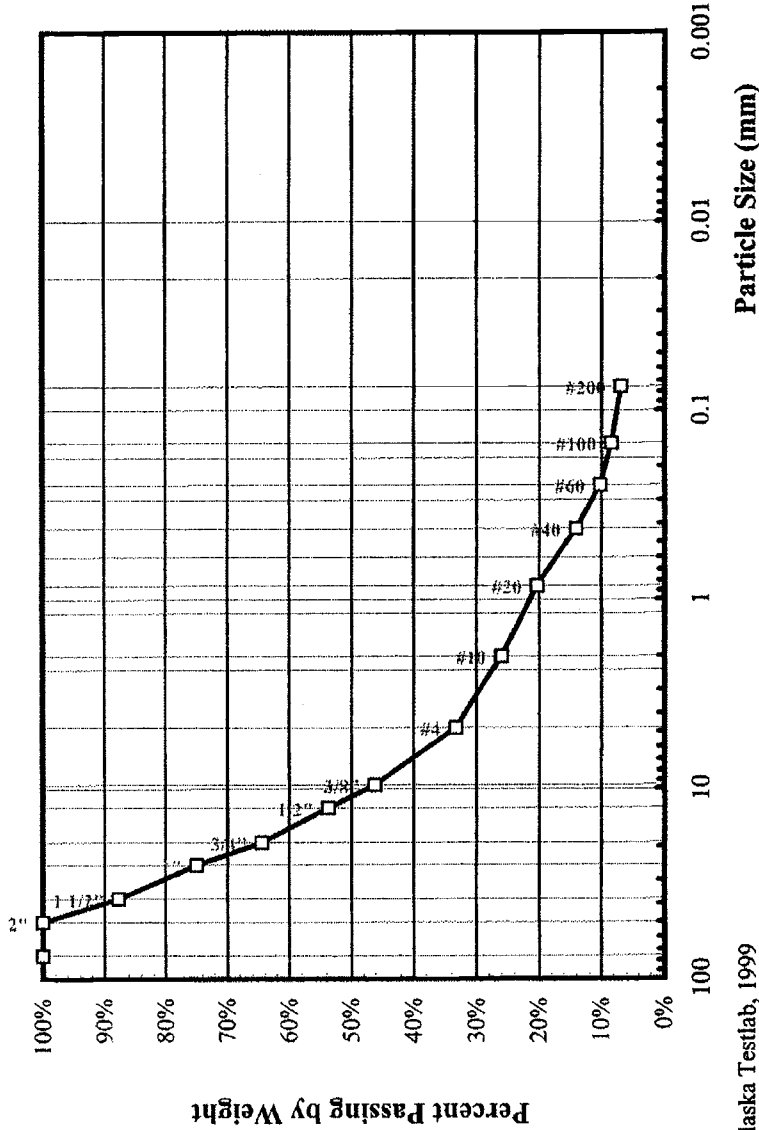
W.O. A30530

Lab No. 2604

Received: 10/9/03

Reported: 10/16/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = ~0%	
3"	
2"	100%
1 1/2"	88%
1"	75%
3/4"	64%
1/2"	54%
3/8"	46%
No. 4	33%
Total Wt. = 1037g	
No. 8	
No. 10	26%
No. 16	
No. 20	20%
No. 30	
No. 40	14%
No. 50	
No. 60	10%
No. 80	
No. 100	8%
No. 200	6.9%
Total Wt. of Fine Fraction = 345.7g	
0.02 mm	



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David L Andersen

David L. Andersen, P.E., General Manager

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ALASKA

A T E S T L A B
A Division of DOW LLC
 Location: By Client

Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

ID# 1036502004

10/06/03 1102

Engineering Classification: Poorly Graded GRAVEL with Silt and Sand, GP-GM

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

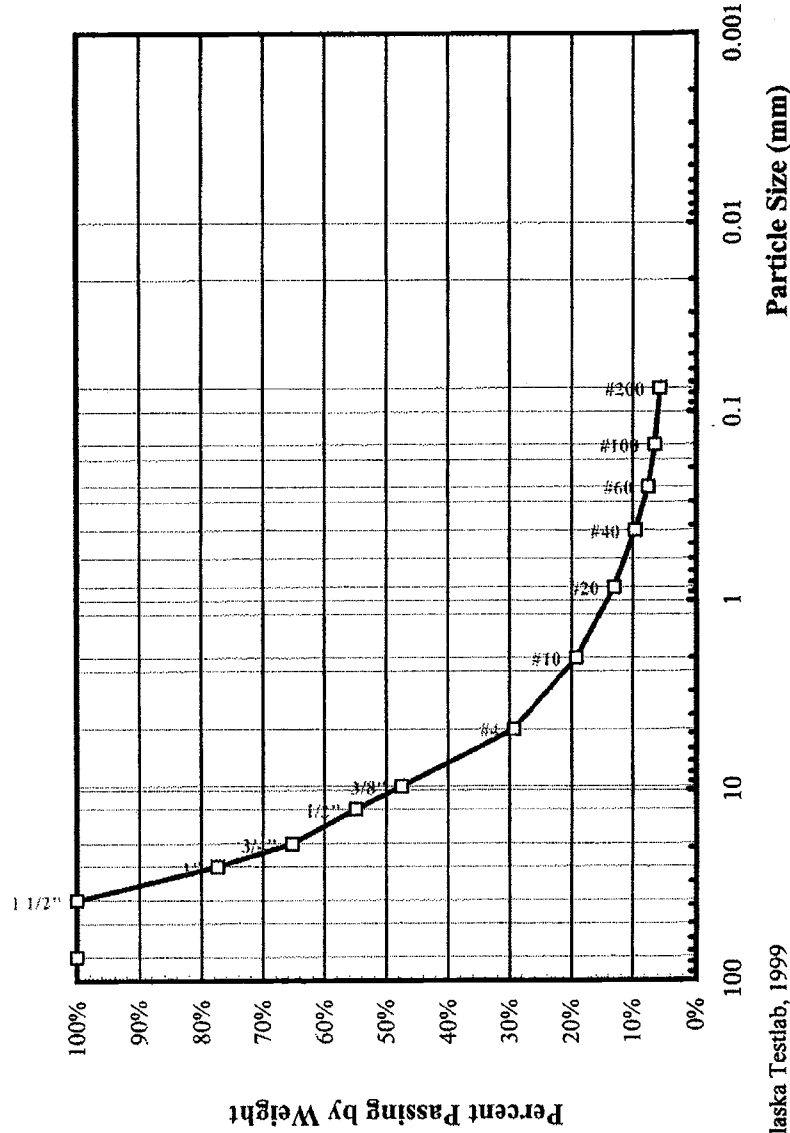
W.O. A30530

Lab No. 2605

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = ~0%	
3"	
2"	
1 1/2"	100%
1"	77%
3/4"	65%
1/2"	55%
3/8"	48%
No. 4	29%
Total Wt. = 947g	
No. 8	
No. 10	19%
No. 16	
No. 20	13%
No. 30	
No. 40	10%
No. 50	
No. 60	8%
No. 80	
No. 100	6%
No. 200	5.7%
Total Wt. of Fine Fraction = 278.3g	
0.02 mm	



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ALASKA

A T E S T L A B
Division of DOW LLC
 Location: By Client

Client: CTE Environmental Services, Inc
 Project: Ft. Rich Bldg. 986

ID# 1036502005
 10/06/03 1150

Engineering Classification: Well Graded GRAVEL with Sand, GW
Frost Classification: Not Measured

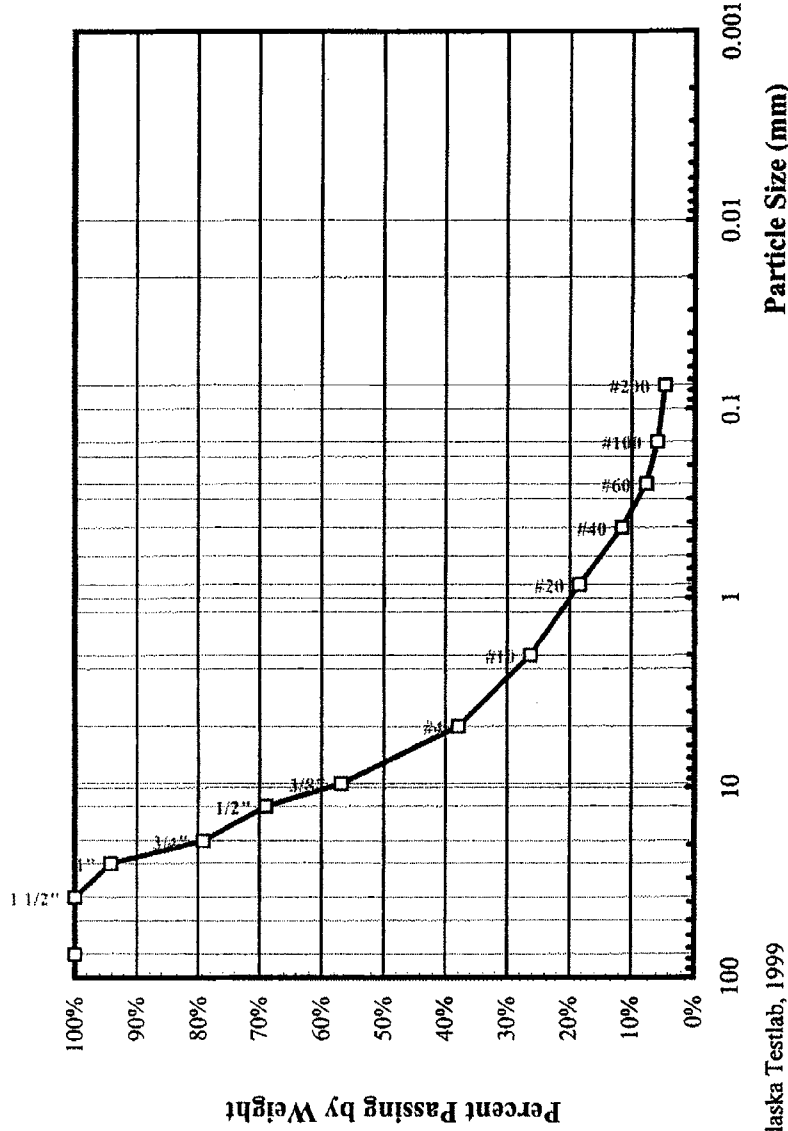
PARTICLE-SIZE

DIST. ASTM D422

W.O. A30530
 Lab No. 2606

Received: 10/9/03
 Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = ~0%	
3"	
2"	
1 1/2"	100%
1"	94%
3/4"	79%
1/2"	69%
3/8"	57%
No. 4	38%
Total Wt. = 1037g	
No. 8	
No. 10	26%
No. 16	
No. 20	18%
No. 30	
No. 40	12%
No. 50	
No. 60	8%
No. 80	
No. 100	6%
No. 200	4.7%
Total Wt. of Fine Fraction = 394.4g	
0.02 mm	



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ALASKA

A T E S T L A B
D I V I S I O N o f D O W L L L C
 Location: By Client

Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

ID# 1036502006

10/06/03 1222

Engineering Classification: Well Graded GRAVEL with Sand, GW

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

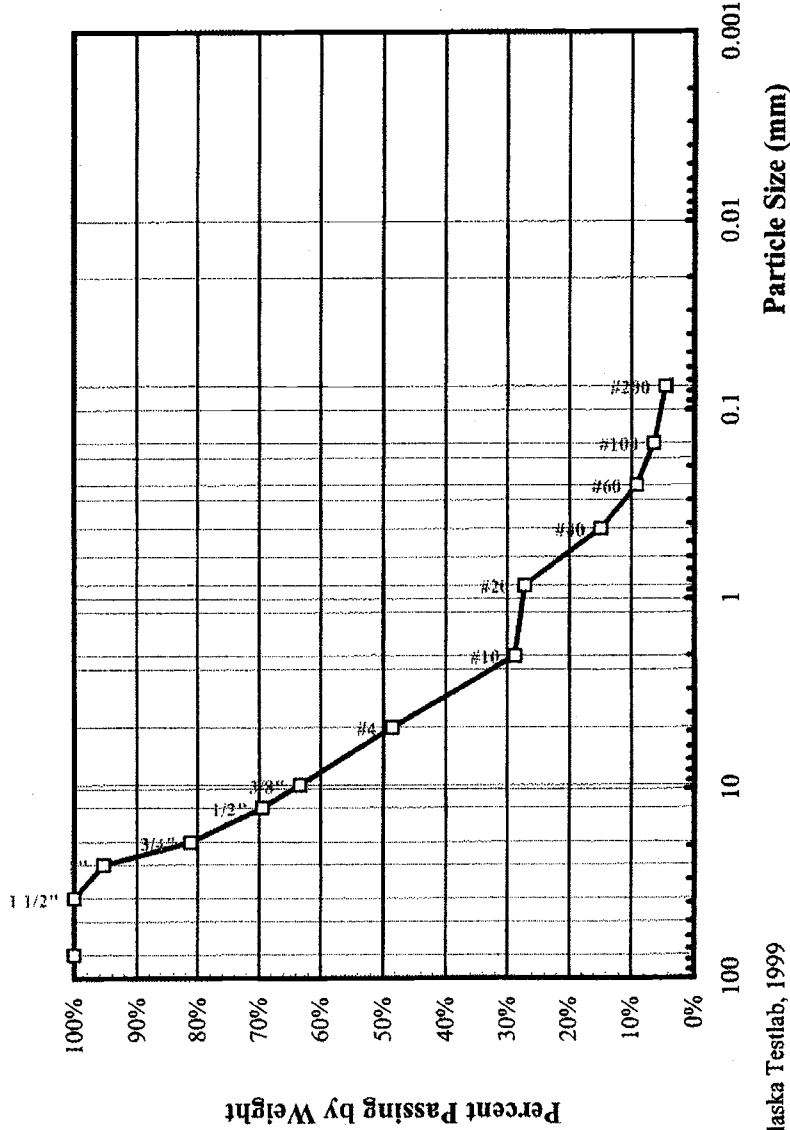
W.O. A30530

Lab No. 2607

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = ~0%	
3"	
2"	
1 1/2"	100%
1"	95%
3/4"	81%
1/2"	69%
3/8"	63%
No. 4	49%
Total Wt. = 980g	
No. 8	
No. 10	29%
No. 16	
No. 20	27%
No. 30	
No. 40	15%
No. 50	
No. 60	9%
No. 80	
No. 100	6%
No. 200	4.6%
Total Wt. of Fine Fraction = 482.4g	
0.02 mm	



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Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

Location: By Client

ID# 1036502010

10/06/03 1354

Engineering Classification: Poorly Graded GRAVEL with Silt and Sand, GP-GM

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

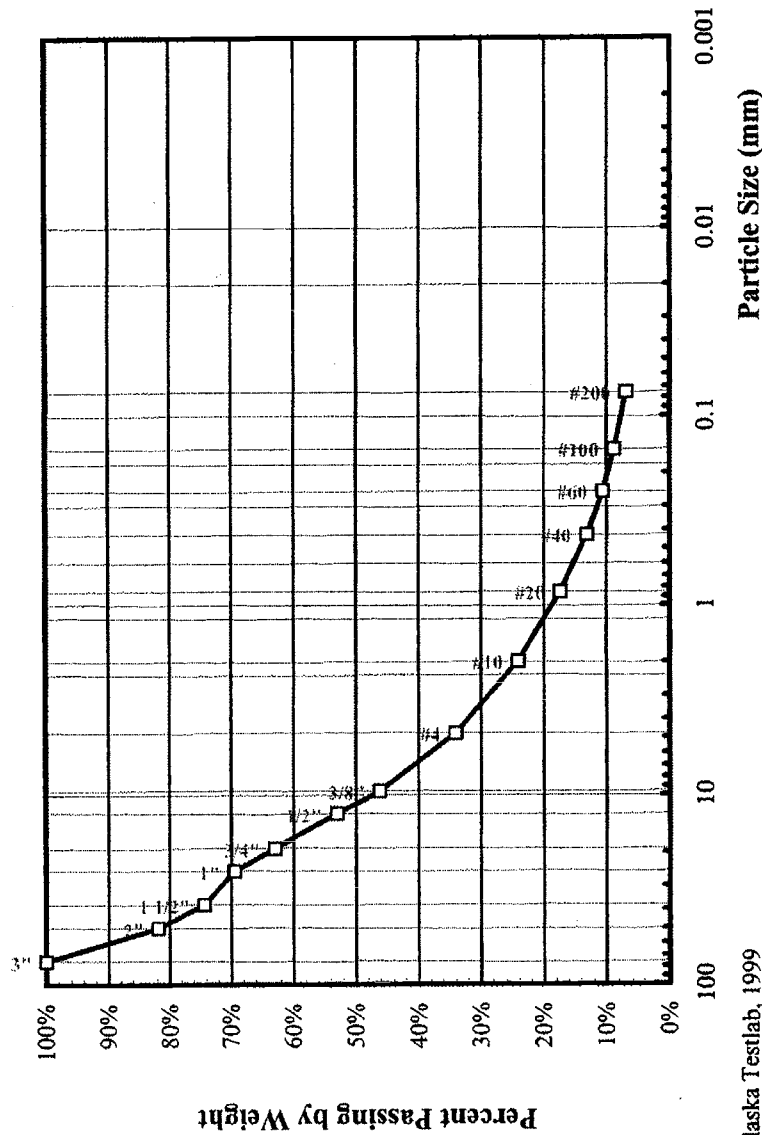
W.O. A30530

Lab No. 2608

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
±3 in. Not Included in Test = -0%	
3"	100%
2"	82%
1 1/2"	74%
1"	69%
3/4"	63%
1/2"	53%
3/8"	46%
No. 4	34%
Total Wt. = 1023g	
No. 8	24%
No. 10	
No. 16	17%
No. 20	
No. 30	13%
No. 40	
No. 50	11%
No. 60	
No. 80	9%
No. 100	
No. 200	6.9%
Total Wt. of Fine Fraction = 346.8g	
0.02 mm	



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ALASKA

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Location: By Client

Client: CTE Environmental Services, Inc
Project: Ft. Rich Bldg. 986

ID# 1036502011
10/06/03 1408

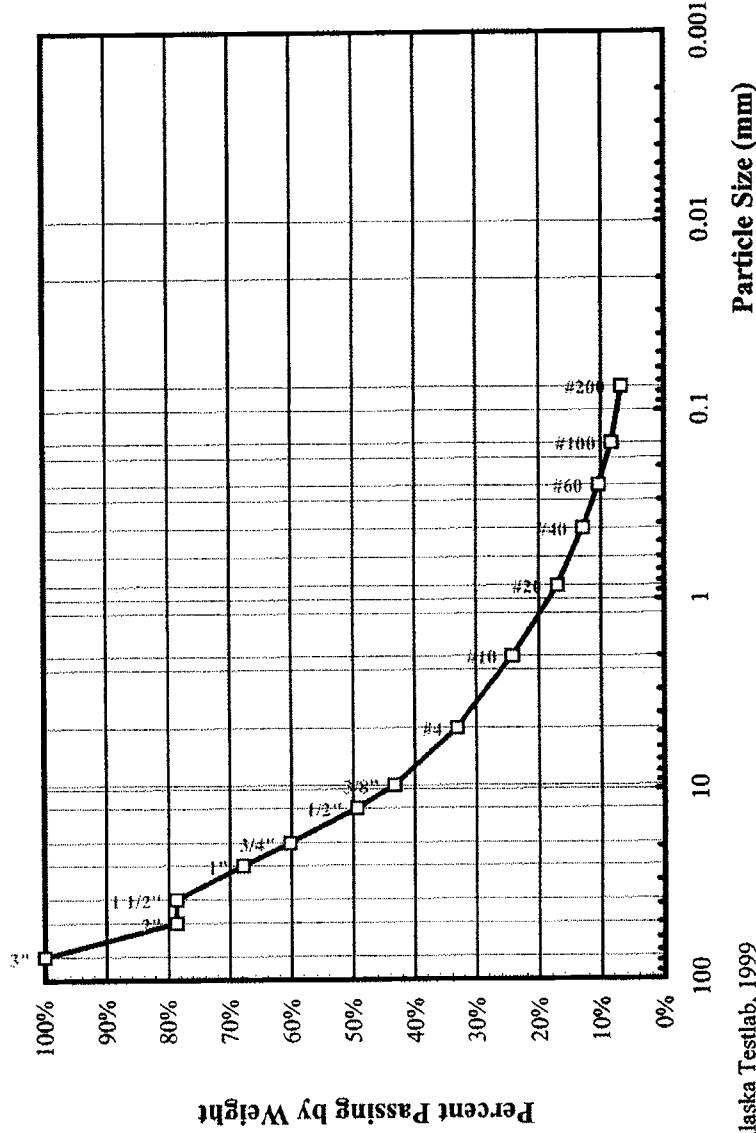
Engineering Classification: Well Graded GRAVEL with Silt and Sand, GW-GM
Frost Classification: Not Measured

PARTICLE-SIZE DIST. ASTM D422

W.O. A30530
Lab No. 2609

Received: 10/9/03
Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = ~0%	
3"	100%
2"	79%
1 1/2"	79%
1"	68%
3/4"	60%
1/2"	49%
3/8"	43%
No. 4	33%
Total Wt. = 1115g	
No. 8	24%
No. 10	
No. 16	
No. 20	17%
No. 30	
No. 40	13%
No. 50	
No. 60	10%
No. 80	
No. 100	8%
No. 200	6.8%
Total Wt. of Fine Fraction = 370.7g	
0.02 mm	



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Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

Location: By Client

ID# 1036502013

10/06/03 1450

Engineering Classification: Well Graded GRAVEL with Silt and Sand, GW-GM

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

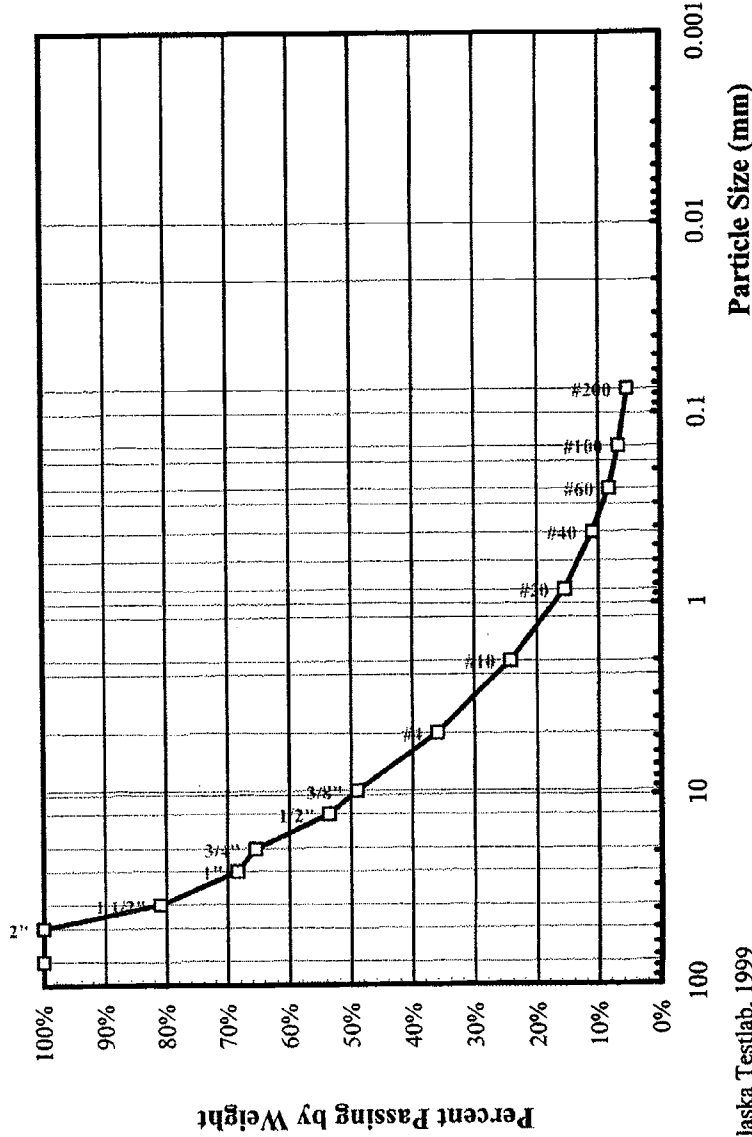
W.O. A30530

Lab No. 2611

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = -0%	
3"	
2"	100%
1 1/2"	81%
1"	68%
3/4"	65%
1/2"	54%
3/8"	49%
No. 4	36%
Total Wt. = 996g	
No. 8	
No. 10	24%
No. 16	
No. 20	15%
No. 30	
No. 40	11%
No. 50	
No. 60	8%
No. 80	
No. 100	7%
No. 200	5.3%
Total Wt. of Fine Fraction = 357.4g	
0.02 mm	



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Location: By Client

Client: CTE Environmental Services, Inc.

Project: Ft. Rich Bldg. 986

ID# 1036502015

10/06/03 1408

Engineering Classification: Well Graded GRAVEL with Silt and Sand, GW-GM

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

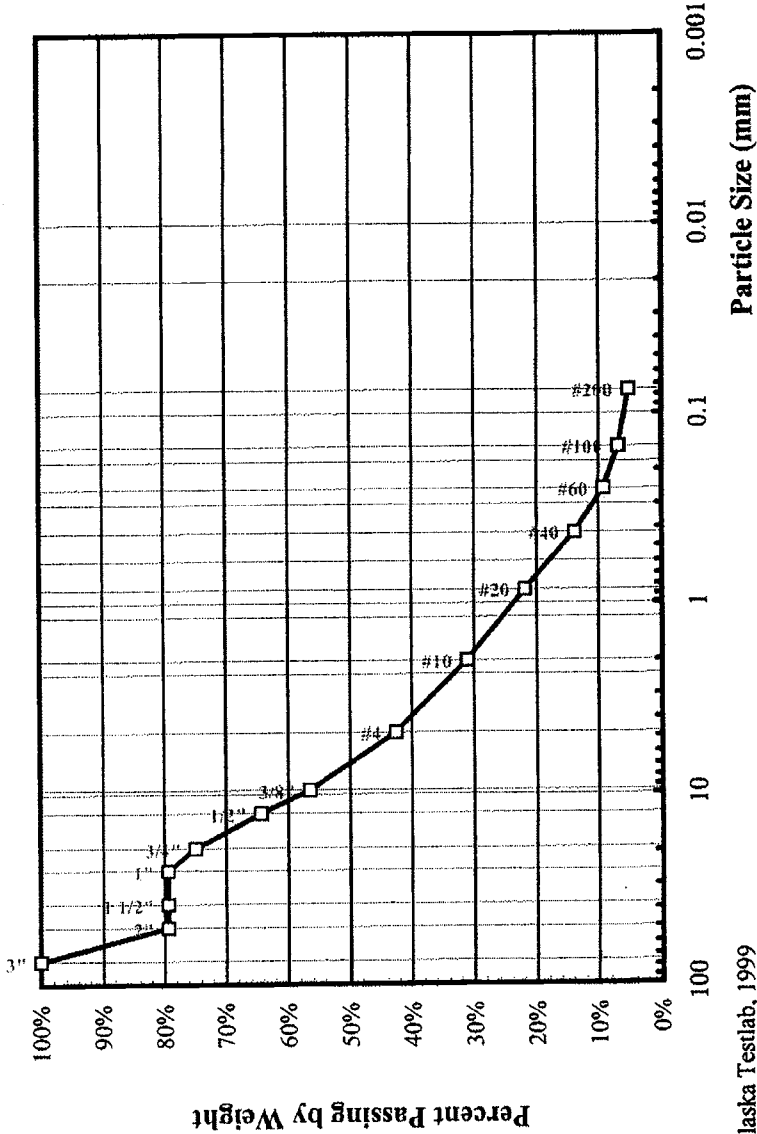
W.O. A30530

Lab No. 2613

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in. Not Included in Test = -0%	
3"	100%
2"	79%
1 1/2"	79%
1"	79%
3/4"	75%
1/2"	64%
3/8"	56%
No. 4	43%
Total Wt. = 896g	
No. 8	31%
No. 10	22%
No. 16	14%
No. 20	9%
No. 30	7%
No. 40	5.3%
No. 50	
No. 60	
No. 80	
No. 100	
No. 200	
Total Wt. of Fine Fraction = 381.6g	
0.02 mm	



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ALASKA

TESTLAB
A Division of DOW LLC
Location: By Client

Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

ID# 1036502017

10/07/03 0908

Engineering Classification: Poorly Graded GRAVEL with Silt and Sand, GP-GM

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

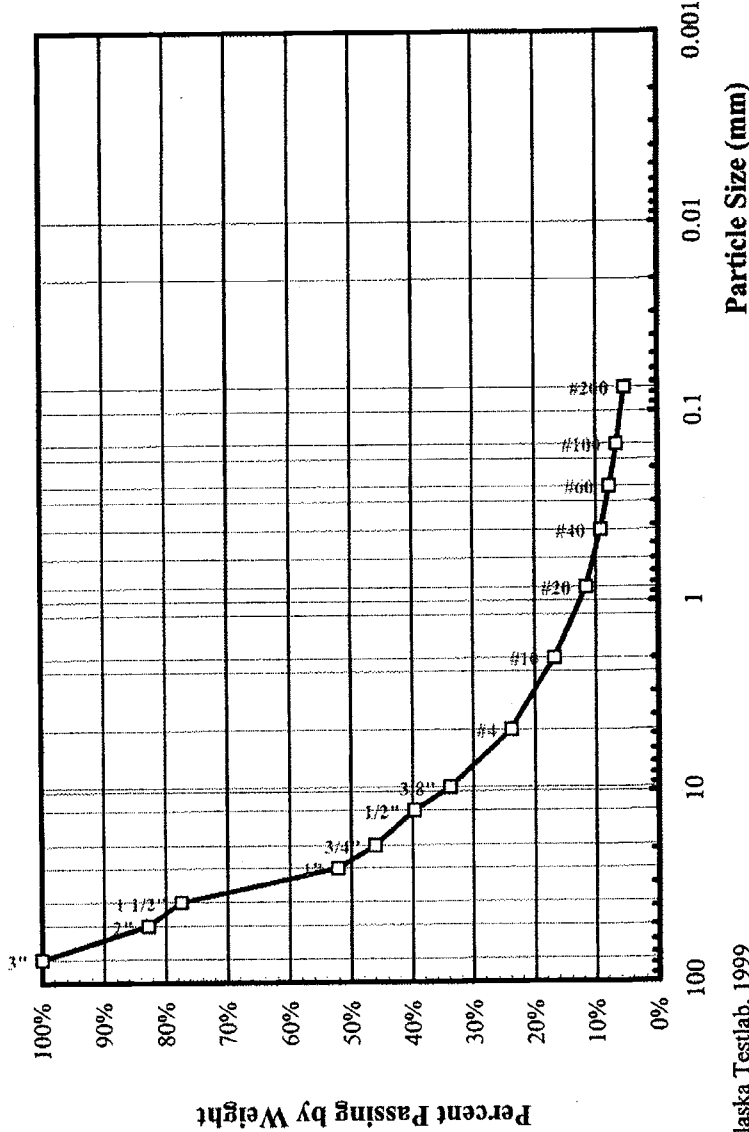
W.O. A30530

Lab No. 2614

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in. Not Included in Test = -0%	
3"	100%
2"	83%
1 1/2"	77%
1"	52%
3/4"	46%
1/2"	40%
3/8"	34%
No. 4	24%
Total Wt. = 1042g	
No. 8	17%
No. 10	12%
No. 16	9%
No. 20	8%
No. 30	7%
No. 40	5.3%
No. 50	
No. 60	
No. 80	
No. 100	
No. 200	
Total Wt. of Fine Fraction = 247.8g	
0.02 mm	



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Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

Location: By Client

ID# 1036502019

10/07/03 0930

Engineering Classification: Silty GRAVEL with Sand, GM

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

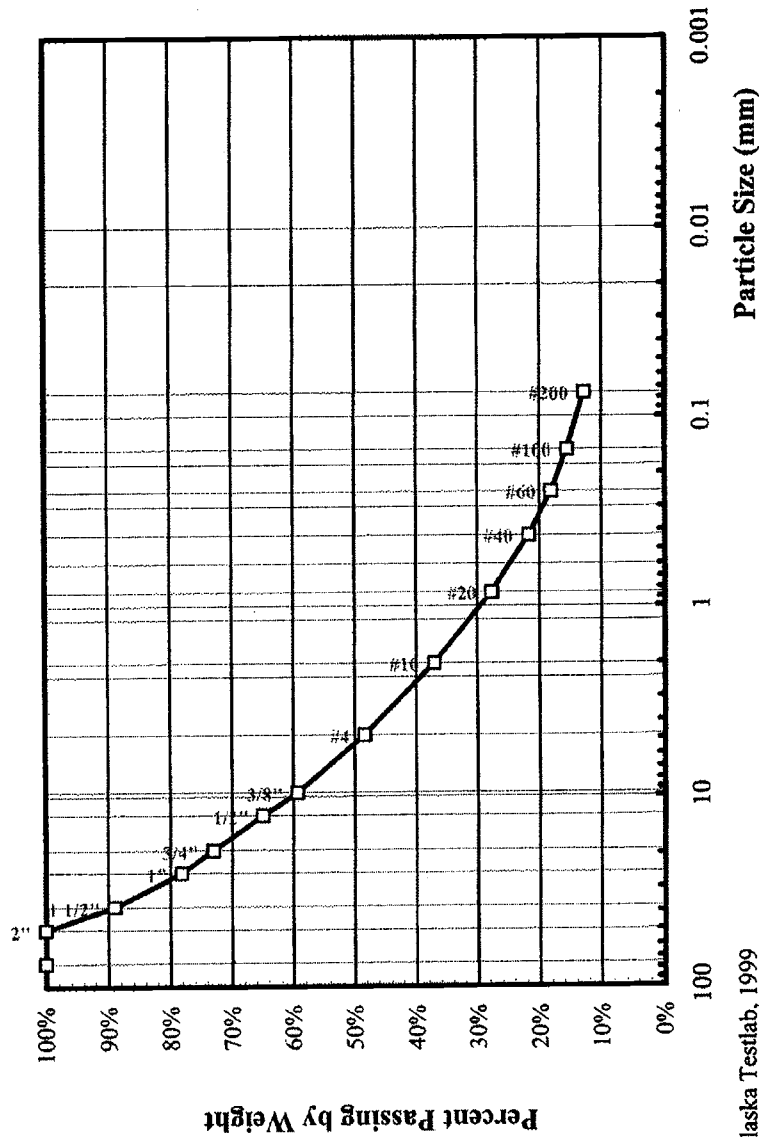
W.O. A30530

Lab No. 2616

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = -0%	
3"	
2"	100%
1 1/2"	89%
1"	78%
3/4"	73%
1/2"	65%
3/8"	59%
No. 4	48%
Total Wt. = 936g.	
No. 8	
No. 10	37%
No. 16	
No. 20	28%
No. 30	
No. 40	22%
No. 50	
No. 60	18%
No. 80	
No. 100	16%
No. 200	13%
Total Wt. of Fine Fraction = 452g	
0.02 mm	



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Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

Location: By Client

ID# 1036502020

10/07/03 1000

Engineering Classification: Well Graded GRAVEL with Silt and Sand. GW-GM

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

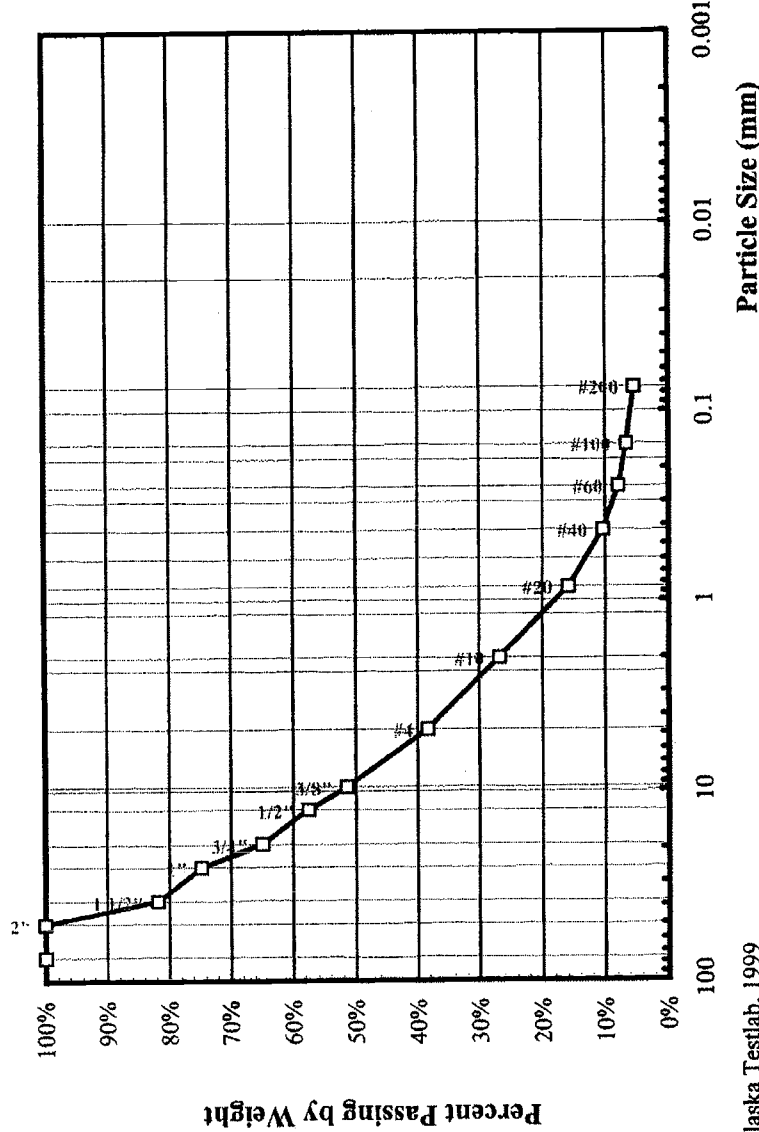
W.O. A30530

Lab No. 2617

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in. Not Included in Test = -0%	
3"	
2"	100%
1 1/2"	82%
1"	75%
3/4"	65%
1/2"	57%
3/8"	51%
No. 4	38%
Total Wt. = 1202g	
No. 8	
No. 10	27%
No. 16	
No. 20	16%
No. 30	
No. 40	10%
No. 50	
No. 60	8%
No. 80	
No. 100	7%
No. 200	5.4%
Total Wt. of Fine Fraction = 461.2g	
0.02 mm	



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ALASKA

A T E S T L A B
A Division of DOWL LLC
 Location: By Client

Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

ID# 1036502021

10/07/03 1038

Engineering Classification: Well Graded GRAVEL with Sand, GW

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

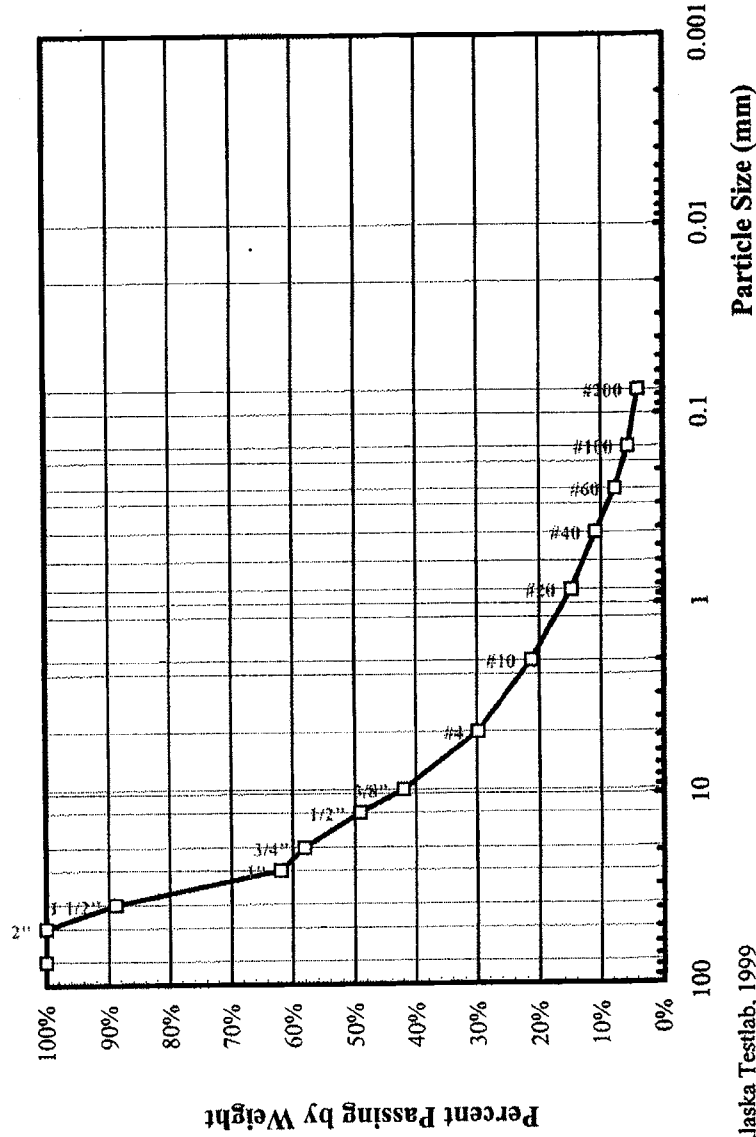
W.O. A30530

Lab No. 2618

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = -0%	
3"	
2"	100%
1 1/2"	89%
1"	62%
3/4"	58%
1/2"	49%
3/8"	42%
No. 4	30%
Total Wt. = 1472g	
No. 8	
No. 10	21%
No. 16	
No. 20	15%
No. 30	
No. 40	11%
No. 50	
No. 60	8%
No. 80	
No. 100	6%
No. 200	3.9%
Total Wt. of Fine Fraction = 437.4g	
0.02 mm	



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ALASKA

A T E S T L A B
A Division of DOW LLC
 Location: By Client

Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

ID# 1036502022

10/07/03 1120

Engineering Classification: Poorly Graded SAND with Silt, SP-SM

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

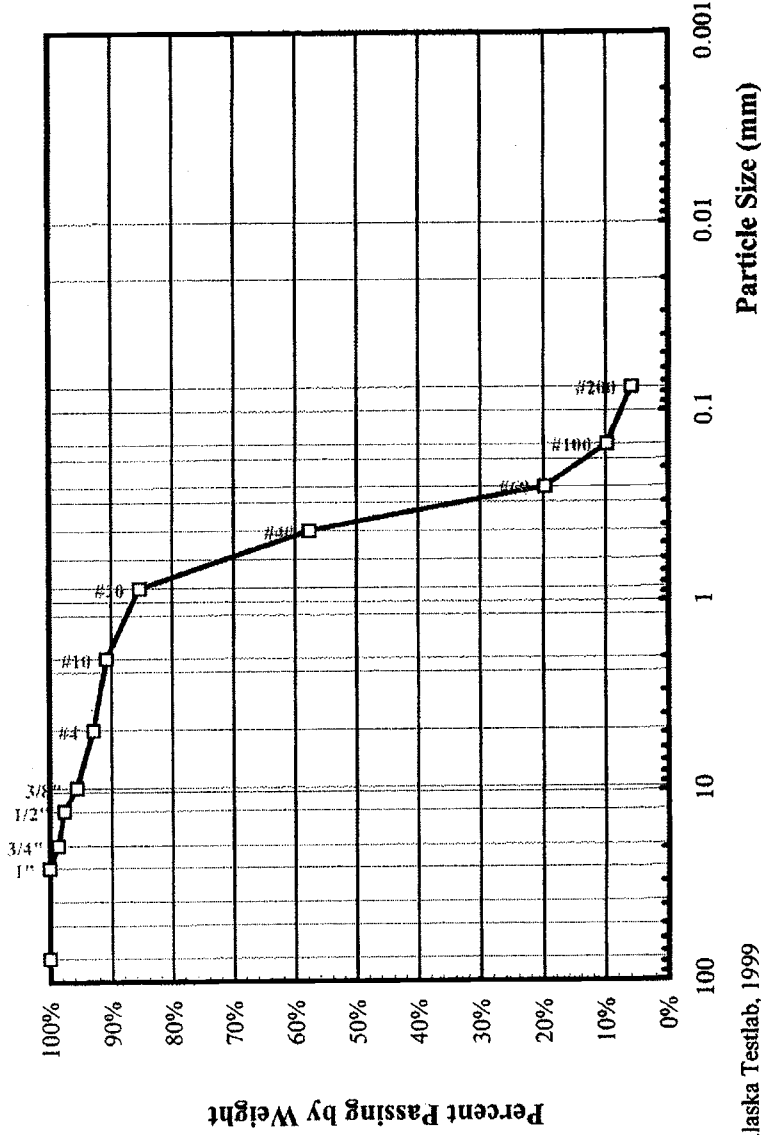
W.O. A30530

Lab No. 2619

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = -0%	
3"	
2"	
1 1/2"	100%
1"	99%
3/4"	98%
1/2"	96%
3/8"	93%
No. 4	
Total Wt. = 927g	
No. 8	91%
No. 10	
No. 16	85%
No. 20	
No. 30	58%
No. 40	
No. 50	20%
No. 60	
No. 80	10%
No. 100	
No. 200	5.9%
Total Wt. of Fine Fraction = 420.7g	
0.02 mm	



ALASKA

A T E S T L A B
A Division of DOWL LLC
 Location: By Client

Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

ID# 1036502023

10/07/03 1218

Engineering Classification: Well Graded GRAVEL with Sand, GW

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

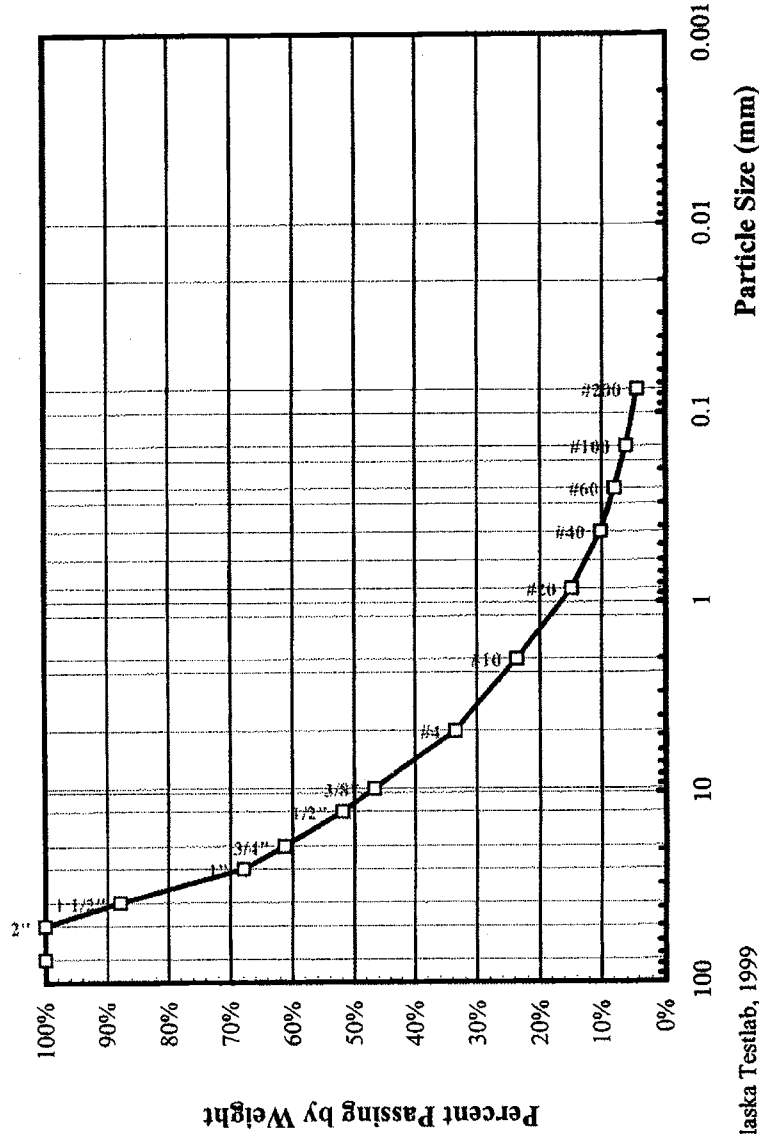
W.O. A30530

Lab No. 2620

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = -0%	
3"	
2"	100%
1 1/2"	88%
1"	68%
3/4"	61%
1/2"	52%
3/8"	47%
No. 4	33%
Total Wt. = 1403g	
No. 8	
No. 10	24%
No. 16	
No. 20	15%
No. 30	
No. 40	10%
No. 50	
No. 60	8%
No. 80	
No. 100	6%
No. 200	4.4%
Total Wt. of Fine Fraction = 467.7g	
0.02 mm	



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ALASKA

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Location: By Client

Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

ID# 1036502024

10/07/03 1234

Engineering Classification: Well Graded GRAVEL with Silt and Sand, GW-GM

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

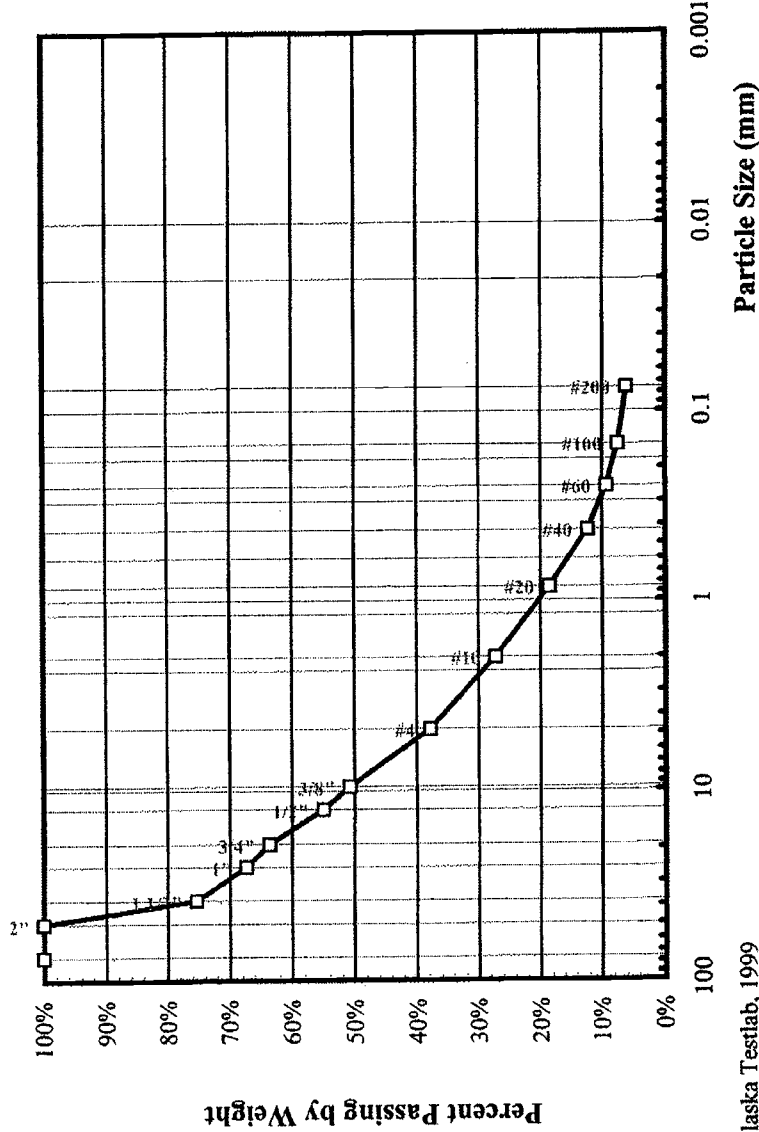
W.O. A30530

Lab No. 2621

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = -0%	
3"	
2"	100%
1 1/2"	75%
1"	67%
3/4"	64%
1/2"	55%
3/8"	51%
No. 4	38%
Total Wt. = 1132g	
No. 8	
No. 10	27%
No. 16	
No. 20	19%
No. 30	
No. 40	12%
No. 50	
No. 60	9%
No. 80	
No. 100	7%
No. 200	6.1%
Total Wt. of Fine Fraction = 424.1g	
0.02 mm	



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Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

Location: By Client

ID# 1036502025

10/07/03 1250

Engineering Classification: Poorly Graded GRAVEL with Silt and Sand. GP-GM

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

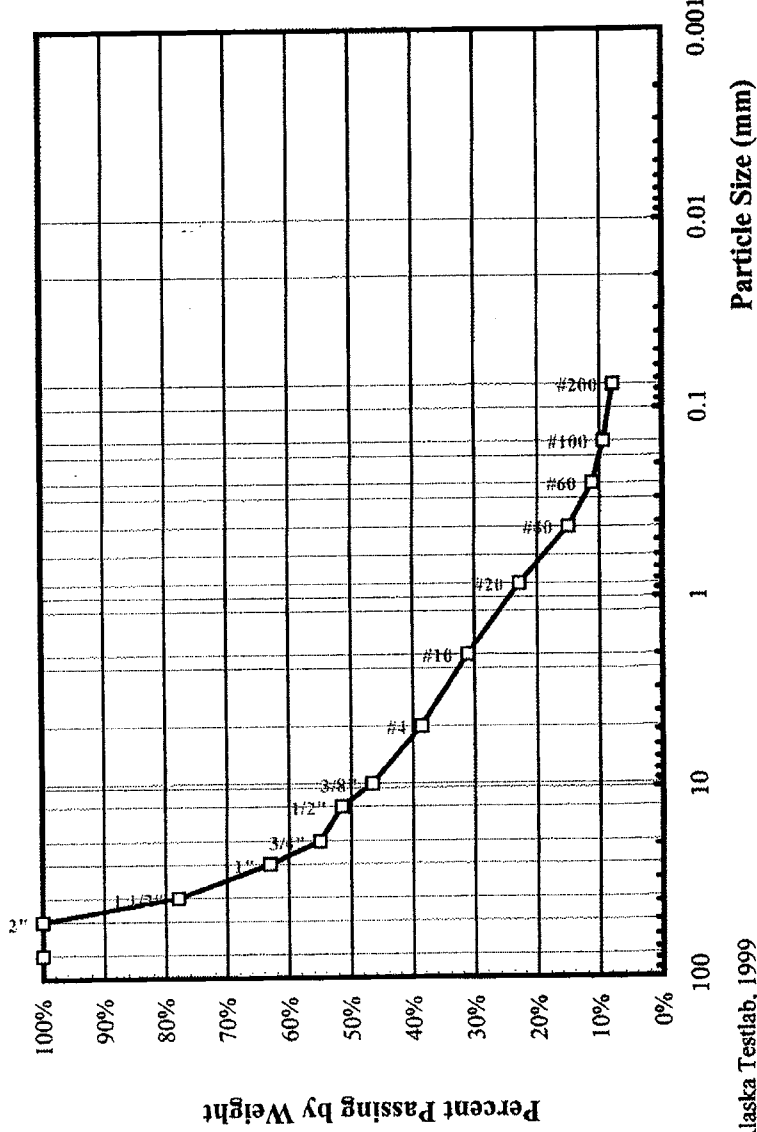
W.O. A30530

Lab No. 2622

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = ~0%	
3"	
2"	100%
1 1/2"	78%
1"	63%
3/4"	55%
1/2"	51%
3/8"	47%
No. 4	39%
Total Wt. = 1147g	
No. 8	
No. 10	31%
No. 16	
No. 20	23%
No. 30	
No. 40	15%
No. 50	
No. 60	11%
No. 80	
No. 100	9%
No. 200	7.9%
Total Wt. of Fine Fraction = 440.1g	
0.02 mm	



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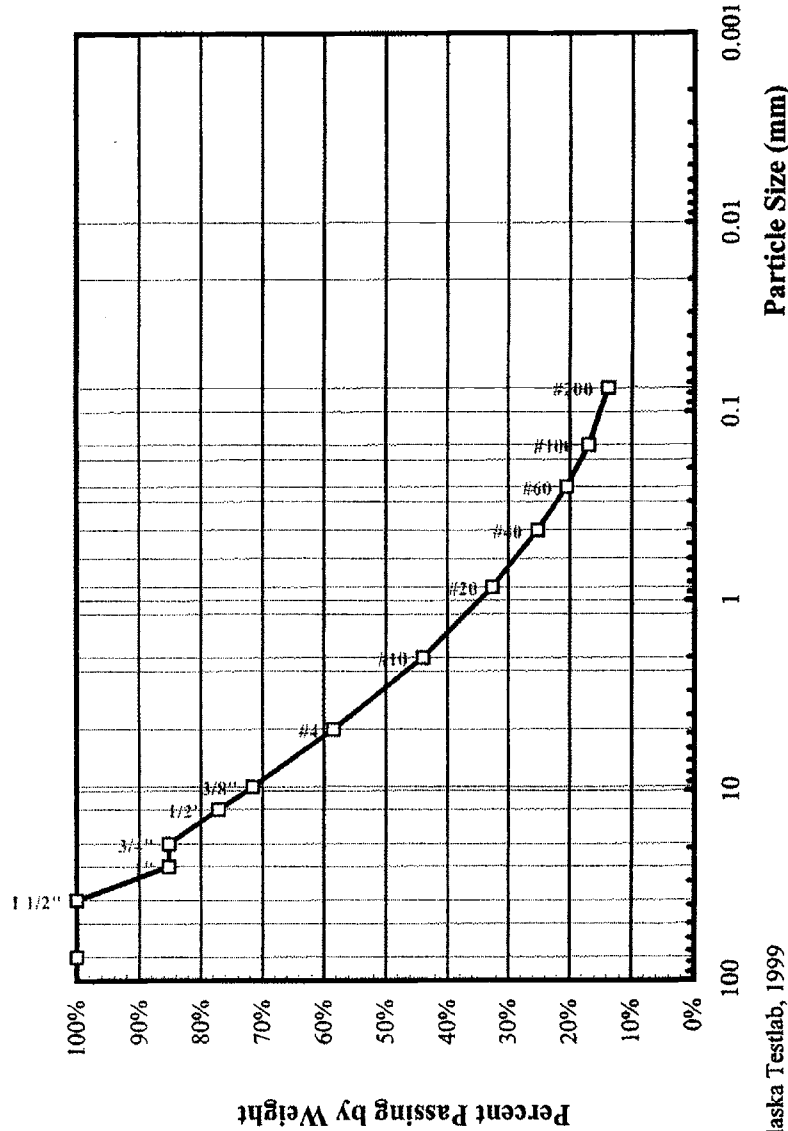
4040 B Street Anchorage Alaska 99503 • 907/562-2000 • 907/563-3953

ID# 1036502026

10/07/03 1408

Engineering Classification: Silty SAND with Gravel, SM

Frost Classification: Not Measured



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PARTICLE-SIZE
DIST. ASTM D422

W.O. A30530

Lab No. 2623

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = -0%	
3"	
2"	
1 1/2"	100%
1"	85%
3/4"	85%
1/2"	77%
3/8"	72%
No. 4	58%
Total Wt. = 599g	
No. 8	
No. 10	44%
No. 16	
No. 20	33%
No. 30	
No. 40	25%
No. 50	
No. 60	20%
No. 80	
No. 100	17%
No. 200	14%
Total Wt. of Fine Fraction = 349g	
0.075 mm	

ALASKA

A T E S T L A B
D I V I S I O N o f D O W L L L C
 Location: By Client

Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

ID# 1036502027

10/07/03 1408

Engineering Classification: Well Graded GRAVEL with Silt and Sand, GW-GM

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

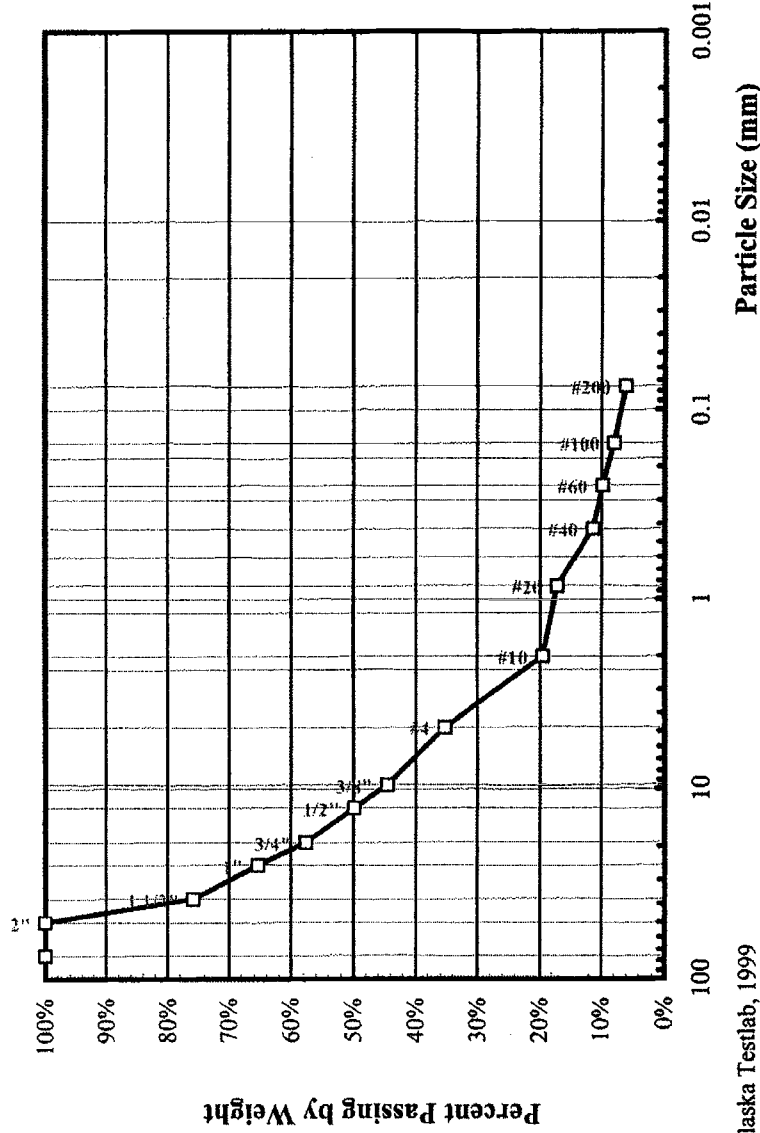
W.O. A30530

Lab No. 2624

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = ~0%	
3"	
2"	100%
1 1/2"	76%
1"	65%
3/4"	58%
1/2"	50%
3/8"	44%
No. 4	35%
Total Wt. = 1241g	
No. 8	
No. 10	20%
No. 16	
No. 20	17%
No. 30	
No. 40	11%
No. 50	
No. 60	10%
No. 80	
No. 100	8%
No. 200	6.2%
Total Wt. of Fine Fraction = 437.6g	
0.02 mm	



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ALASKA

T E S T L A B
 A Division of DOW LLC
 Location: By Client

Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

ID# 1036502028

10/07/03 1408

Engineering Classification: Poorly Graded GRAVEL with Silt and Sand, GP-GM

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

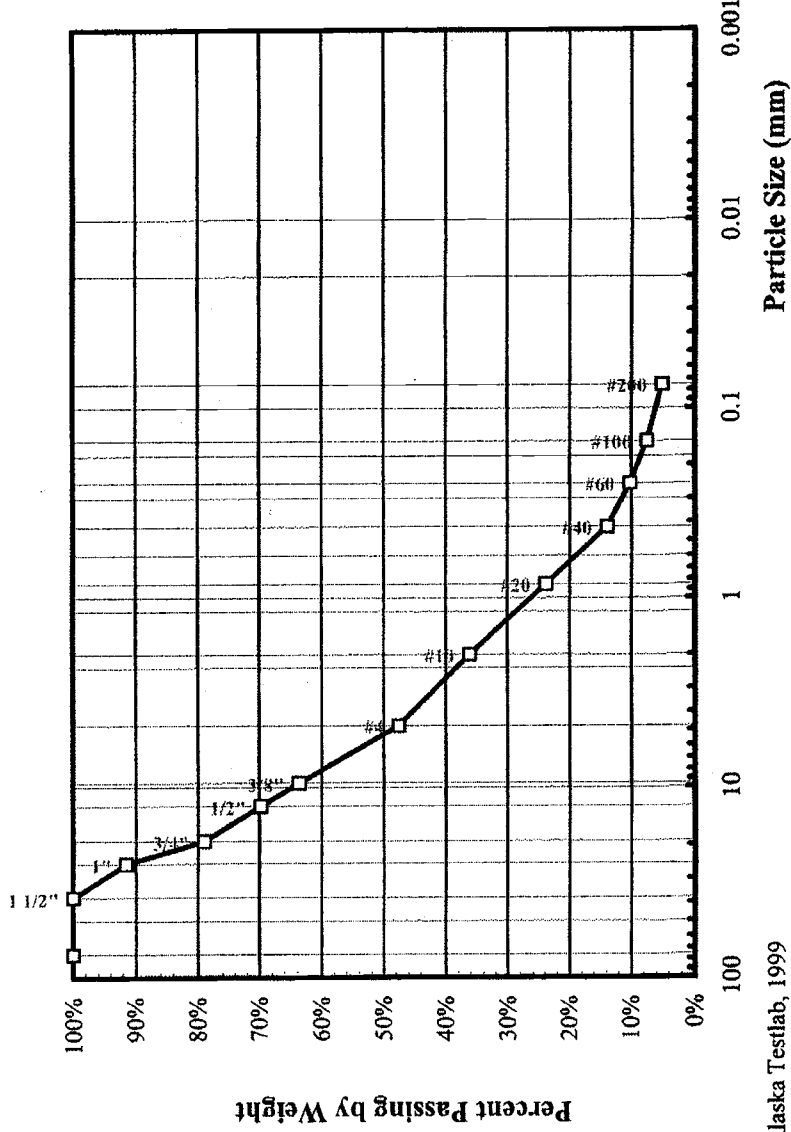
W.O. A30530

Lab No. 2625

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = ~0%	
3"	
2"	
1 1/2"	100%
1"	91%
3/4"	79%
1/2"	70%
3/8"	64%
No. 4	48%
Total Wt. = 833g	
No. 8	36%
No. 10	
No. 16	24%
No. 20	
No. 30	14%
No. 40	
No. 50	10%
No. 60	
No. 80	8%
No. 100	
No. 200	5%
Total Wt. of Fine Fraction = 397.5g	
0.02 mm	



October 28, 2003

Service Request No: K2307981

Rhonda Strucher
CT&E Environmental Services, Inc.
200 W. Potter Dr.
Anchorage, AK 99518-1605

Dear Rhonda:

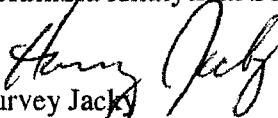
Enclosed are the results of the sample(s) submitted to our laboratory on October 11, 2003. For your reference, these analyses have been assigned our service request number K2307981.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3260.

Respectfully submitted,

Columbia Analytical Services, Inc.



Harvey Jacky
Project Chemist

HJ/jeb

Page 1 of 15

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

000002

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- ^ The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.
- * The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

000003

Case Narrative

000004

COLUMBIA ANALYTICAL SERVICES, INC.

Client: CT&E Environmental Services, Inc.
Project: NA
Sample Matrix: Soil

Service Request No.: K2307981
Date Received: 10/11/03

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), and Laboratory Control Sample (LCS).

Sample Receipt

Twenty-four soil samples were received for analysis at Columbia Analytical Services on 10/11/03. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Approved by _____

Date 10/29/03

000005

**Chain of Custody
Documentation**

000006



CHAIN OF CUSTODY RECORD
CT & E Environmental Services Inc.
 Laboratory Division

- Locations Nationwide
- Alaska
 - Arizona
 - California
 - Colorado
 - Connecticut
 - Florida
 - Georgia
 - Hawaii
 - Illinois
 - Indiana
 - Iowa
 - Kansas
 - Kentucky
 - Louisiana
 - Maryland
 - Massachusetts
 - Michigan
 - Minnesota
 - Missouri
 - Montana
 - Nebraska
 - Nevada
 - New Jersey
 - New York
 - North Carolina
 - North Dakota
 - Ohio
 - Oklahoma
 - Oregon
 - Pennsylvania
 - Rhode Island
 - South Carolina
 - South Dakota
 - Tennessee
 - Texas
 - Utah
 - Vermont
 - Virginia
 - Washington
 - West Virginia
 - Wisconsin
 - Wyoming

17361081

www.sgsenvironmental.com

0232520

1 CLIENT: SGS Environmental

CONTACT: Rhonda Struher PHONE NO: 907562-2343

PROJECT: H. Rick Bldg 986 SITE/PWSID#:

REPORTS TO: 800 W. P. Her Dr.

INVOICE TO: ANCH, AK 99518 FAX NO: 9075615301

QUOTE # _____ P.O. NUMBER _____

CT&E Reference: CAS-ke150 PAGE 1 OF 3

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	NO CONTAINERS	SAMPLE TYPE	Preservative Used	Analysis Required	Remarks
1	1036SD2.D01	10/6/03	0952	Soil	1	Ca COMP		TOC ASTM D 4129-82M	Client ID
2	002		1010						
3	003		1030						
4	004		1102						
5	005		1150						
6	006		1222						
7	007		1354						
8	008		1408						
9	009		1423						
10	010		1450						

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	NO CONTAINERS	SAMPLE TYPE	Preservative Used	Analysis Required	Remarks
1	1036SD2.D01	10/6/03	0952	Soil	1	Ca COMP		TOC ASTM D 4129-82M	Client ID
2	002		1010						
3	003		1030						
4	004		1102						
5	005		1150						
6	006		1222						
7	007		1354						
8	008		1408						
9	009		1423						
10	010		1450						

5 Selected/Relinquished By: (1) Thomde Thoma Date: 10/10/03 Time: 1130 Received By: _____

Relinquished By: (2) _____ Date: 10/16/03 Time: 100 Received By: Tracy Black

Relinquished By: (3) _____ Date: _____ Time: _____ Received By: _____

Relinquished By: (4) _____ Date: _____ Time: _____ Received By: _____

4 Shipping Carrier: _____ Samples Received Cold? (Circle) YES NO

Shipping Ticket No: _____ Temperature °C: _____

Special Deliverable Requirements: _____ Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Requested Turnaround Time and Special Instructions: COEDIP + COELT



CHAIN OF CUSTODY RECORD
CT & E Environmental Services Inc.
 Laboratory Division

- Locations Nationwide
- Alaska
 - Louisiana
 - Maryland
 - Michigan
 - New Jersey
 - West Virginia
 - Hawaii

www.sgsenvironmental.com

0232253

12301081

CT&E Reference: CAS-Kelso

PAGE 2 OF 3

1 CLIENT: **SGS ENVIRO** PHONE NO: **907-502-2843**
 CONTACT: **Rhonda Stuckor** SITE/PW/SID#:
 REPORTS TO: FAX NO.: **907-501-5301**
 INVOICE TO: QUOTE #
 P.O. NUMBER

CONTAINERS	NO	SAMPLE TYPE	Analysis Required
		C= COMP	
		SE	
		GRAB	

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	Preservatives Used	Analysis Required	Temperature °C	Samples Received Cold? (Circle) YES NO	REMARKS
11	1036SD2014	10/6/03	1522	SOI		TOC			Client ID
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									

2

3 Gained/Relinquished By: (1) **Shonda Stuckor** Date: **10/10/03** Time: **1130** Received By: **Jenny Kest** **OK**

4 Relinquished By: (2) **retires** Date: **11/06** Time: **1100** Received By: **Jenny Kest** **OK**

5 Relinquished By: (3) _____ Date: _____ Time: _____ Received By: _____

Relinquished By: (4) _____ Date: _____ Time: _____ Received By: _____

4

Shipping Carrier: _____

Shipping Ticket No: _____

Special Deliverable Requirements: _____

Requested Turnaround Time and Special Instructions: **NOE DIP + COEIT**

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Temperature °C: _____

Samples Received Cold? (Circle) YES NO

200 W. Parker Dr. Orange, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301

1200 Conrad Indus. Ave. Ludington, MI 49431 Tel: (231) 843-1877 Fax: (231) 845-9942

151 James Drive W. Assa, LA 70087 Tel: (504) 489-6401 Fax: (504) 463-3304

1255 Greenbrier Street Charleston, WV 25311 Tel: (304) 346-0725 Fax: (304) 346-0761

White - Add by Lab
 Yellow - Returned with Report
 Pink - Retained by Sampler



CHAIN OF CUSTODY RECORD
CT & E Environmental Services Inc.
Laboratory Division

- Locations Nationwide
- Alaska
 - Louisiana
 - Maryland
 - Michigan
 - New Jersey
 - West Virginia
 - Hawaii

www.sgsevironmental.com

1280981

023252

1 CLIENT: **SGS Enviro**

CONTACT: **Rhonda Strucher** PHONE NO: **907-512-2343**

PROJECT: **Ft. Arch Bldg 986** SITE/PWSID:

REPORTS TO:

FAX NO.:

INVOICE TO:

QUOTE #

P.O. NUMBER

CT&E Reference: **CA8-KelSD**

PAGE **3** OF **3**

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX
	1036SD2025	10/7/03	---	Soil
	026	10/7/03	1408	↓
	027	10/7/03	---	↓
	028	10/7/03	---	↓

NO	CONTAINERS	SAMPLE TYPE	Analysis Required	Preservatives Used	Remarks
			③		Client ID
					TOC ASTM D 4129-82M
					LOC ID: ERPDL08-14 20FL 03FRA021SS
					ER2PDL08-14 30FL 03FRA022SS
					ER4PDL08-14 40FL 03FRA023SS
					ER5PDL08-14 50FL 03FRA024SS

Collected/Relinquished By: (1)	Date	Time	Received By:
Rhonda Strucher	10/10/03	1130	
Relinquished By: (2)	Date	Time	Received By:
	10/14/03	1100	Tracy Black OAR
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

4

Shipping Carrier: _____

Shipping Ticket No: _____

Special Deliverable Requirements: _____

Requested Turnaround Time and Special Instructions: **COE DIP + COEJT**

Samples Received Cold? (Circle) YES NO

Temperature °C: _____

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

**Columbia Analytical Services Inc.
Cooler Receipt And Preservation Form**

Project/Client SGS Work Order K23 07981

Cooler received on 10/11/03 and opened on 10/11/03 by T. Black

1. Were custody seals on outside of cooler?
If yes, how many and where? 1 front Y N
2. Were seals intact and signature, & date correct? Y N
3. Is the shipper's airbill available and filed? If no, record airbill number: 12A8619W4441228185 Y N
4. COC # _____
Temperature of cooler(s) upon receipt: 0.1 _____
Temperature Blank: 0.2 _____
5. Were custody papers properly filled out (ink, signed, etc.)? Y N
6. Type of packing material present gel pads - bwrap
7. Did all bottles arrive in good condition (unbroken)? Y N
8. Were all bottle labels complete (i.e. analysis, preservation, etc.)? Y N
9. Did all bottle labels and tags agree with custody papers? Y N
10. Were the correct types of bottles used for the tests indicated? Y N
11. Were all of the preserved bottles received at the lab with the appropriate pH? Y N
12. Were VOA vials checked for absence of air bubbles, and if present, noted below? Y N
13. Did the bottles originate from CAS/K or a branch laboratory? Y N
14. Are CWA Microbiology samples received with > 1/2 the 24 hr. hold time remaining from collection? Y N
15. Was Cl2/Res negative? Y N

Explain any discrepancies: _____

RESOLUTION: _____

Samples that required preservation or received out of temperature:

Sample ID	Reagent	Volume	Lot Number	Bottle Type	Rec'd out of Temperature	Initials

000009A

General Chemistry Parameters

000010

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: CT&E Environmental Services, Inc.
 Project Name: NA
 Project Number: NA
 Sample Matrix: SOIL

Service Request: K2307981
 Date Collected: 10/06,07/03
 Date Received: 10/11/03

Carbon, Total Organic

Units: Percent
 Basis: Dry

Analysis Method: ASTM D4129-82M

Test Notes:

Sample Name	Lab Code	MRL	Dilution Factor	Date Analyzed	Result	Result Notes
1036502001	K2307981-001	0.05	1	10/21/03	0.13	
1036502002	K2307981-002	0.05	1	10/21/03	0.13	
1036502003	K2307981-003	0.05	1	10/21/03	0.62	
1036502004	K2307981-004	0.05	1	10/21/03	0.41	
1036502005	K2307981-005	0.05	1	10/22/03	0.15	
1036502006	K2307981-006	0.05	1	10/22/03	1.13	
1036502010	K2307981-007	0.05	1	10/22/03	0.19	
1036502011	K2307981-008	0.05	1	10/22/03	0.29	
1036502012	K2307981-009	0.05	1	10/22/03	0.31	
1036502013	K2307981-010	0.05	1	10/22/03	0.21	
1036502014	K2307981-011	0.05	1	10/22/03	0.18	
1036502015	K2307981-012	0.05	1	10/22/03	0.16	
1036502017	K2307981-013	0.05	1	10/22/03	0.21	
1036502018	K2307981-014	0.05	1	10/22/03	0.31	
1036502019	K2307981-015	0.05	1	10/22/03	0.29	
1036502020	K2307981-016	0.05	1	10/22/03	0.21	
1036502021	K2307981-017	0.05	1	10/22/03	0.12	
1036502022	K2307981-018	0.05	1	10/22/03	0.10	
1036502023	K2307981-019	0.05	1	10/22/03	0.31	
1036502024	K2307981-020	0.05	1	10/22/03	0.29	
1036502025	K2307981-021	0.05	1	10/22/03	0.29	
1036502026	K2307981-022	0.05	1	10/22/03	1.11	
1036502027	K2307981-023	0.05	1	10/22/03	0.13	
1036502028	K2307981-024	0.05	1	10/22/03	0.11	
Method Blank	K2307981-MB	0.05	1	10/21/03	ND	
Method Blank	K2307981-MB	0.05	1	10/22/03	ND	

000021

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: CT&E Environmental Services, Inc.
Site Name: NA
Project Number: NA
Sample Matrix: SOIL

Service Request: K2307981
Date Collected: 10/06/03
Date Received: 10/11/03
Date Extracted: NA
Date Analyzed: 10/21/03

Duplicate Summary
Inorganic Parameters

Sample Name: 1036502004
Lab Code: K2307981-004DUP
Test Notes:

Units: Percent
Basis: Dry

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Carbon, Total Organic	ASTM D4129-82M	0.05	0.41	0.43	0.42	5	

000012

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CT&E Environmental Services, Inc.
Project Name : NA
Project Number : NA
Sample Matrix : SOIL

Service Request : K2307981
Date Collected : 10/06/03
Date Received : 10/11/03
Date Extracted : NA
Date Analyzed : 10/21/03

Matrix Spike Summary
Inorganic Parameters

Sample Name : 1036502004
Lab Code : K2307981-004MS
Test Notes :

Units : Percent
Basis : Dry

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	ASTM D4129-82M	0.05	8.75	0.41	8.75	95	75-125	

000013

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: CT&E Environmental Services, Inc.
I.D. Name: NA
Project Number: NA
Sample Matrix: SOIL

Service Request: K2307981
Date Collected: 10/07/03
Date Received: 10/11/03
Date Extracted: NA
Date Analyzed: 10/22/03

Duplicate Summary
Inorganic Parameters

Sample Name: 1036502017
Lab Code: K2307981-013DUP
Test Notes:

Units: Percent
Basis: Dry

Analyte	Analysis Method	MRL	Duplicate		Average	Relative Percent Difference	Result Notes
			Sample Result	Sample Result			
Carbon, Total Organic	ASTM D4129-82M	0.05	0.21	0.23	0.22	9	

000014

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CT&E Environmental Services, Inc.
Instrument Name : NA
Project Number : NA
Sample Matrix : SOIL

Service Request : K2307981
Date Collected : 10/07/03
Date Received : 10/11/03
Date Extracted : NA
Date Analyzed : 10/22/03

Matrix Spike Summary
Inorganic Parameters

Sample Name : 1036502017
Lab Code : K2307981-013MS
Test Notes :

Units : Percent
Basis : Dry

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	ASTM D4129-82M	0.05	2.25	0.21	2.34	95	75-125	

000015

CHAIN OF CUSTODY RECORD

103650



CT&E Environmental Services Inc.
Laboratory Division

1 CLIENT: AGUIR LLC
 CONTACT: DARRIN LAWLESS PHONE NO: (907) 365-6249
 PROJECT: FRICH BLDG 986 SUE O&M PWSID#: _____
 REPORTS TO: DARRIN LAWLESS
2121 ABBOTT RD
ANCHORAGE, AK FAX NO: (907) 365-6256
 INVOICE TO: 99507 QUOTE# _____
 P.O. NUMBER: _____

CT&E Reference: _____

No.	CONTAINERS	SAMPLE TYPE	C = COMP G = GRAB	Preservatives Used	Analysis Required	REMARKS							
						MEQ	AK 102	AK 101/80218	ASTM D4129-83m Lake	ASTM D422 GENI 512 DST	SW 8270c 519 Lake	PH	NOX
17	4	G	G	X	X	X	X	X	X	X	X	FRPOL CB - B	10FT
18	4	G	G	X	X	X	X	X	X	X	X		15FT
19	4	G	G	X	X	X	X	X	X	X	X		20FT
20	4	G	G	X	X	X	X	X	X	X	X		30FT
21	4	G	G	X	X	X	X	X	X	X	X		40FT
22	4	G	G	X	X	X	X	X	X	X	X		50FT
23	4	G	G	X	X	X	X	X	X	X	X	FRPOL CB - 14	10FT
24	4	G	G	X	X	X	X	X	X	X	X		15FT
25	4	G	G	X	X	X	X	X	X	X	X		20FT
26	4	G	G	X	X	X	X	X	X	X	X		30FT

5 Collect/Reinforced By: (1) [Signature] Date 10/7/03 Time 2200
 Reinforced By: (2) [Signature] Date _____ Time _____
 Received By: _____
 Shipping Carrier: _____
 Shipping Ticket No: _____
 Data Deliverables: _____
 Level I Level II Level III EDD Type: _____
 Requested Turnaround Time and Special Instructions: NORMAL DAT
 Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT
 Temperature C: 72.3

CHAIN OF CUSTODY RECORD

103650



CT&E Environmental Services Inc.
Laboratory Division

1 CLIENT: **AGUIQ LLC**
 CONTACT: **DARRIN LAWLESS** PHONE NO: (907) 365-6249
 PROJECT: **FTRICH BLDG 986 SUE O&M** PWSID#:
 REPORTS TO: **DARRIN LAWLESS**
2121 ABBOTT RD
ANCHORAGE AK FAX NO: (907) 365-6256
 INVOICE TO: **99507** QUOTE#
 - SAME P.O. NUMBER:

CT&E Reference:

No.	SAMPLE TYPE	C = COMP	G = GRAB	Preservatives Used	Analysis Required	Meq/L	ASTM D4129 SAMPLING	ASTM D422 GRAIN SIZE DIST	ASTM D422 PAH	ASTM D422 SVOC	REMARKS
4	G			X	X		X	X	X		FRPOLCB-14 40F
4	G			X	X		X	X	X		SOFT
2	G			X	X		X	X	X		FRPOLCB-14 FD-2
1	G			X	X		X	X	X		TB-2

2

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX
27A-D	03 FRA 023 SS	10/7/03		SO
28A-D	03 FRA 024 SS			
29A-G	03 FRA 801 SS			
30A	TRIP BLANK - OR			

4

5

Shipping Carrier: _____
 Shipping Ticket No: _____
 Data Deliverables: Level I Level II Level III EDD Type: **Level III**
 Requested Turnaround Time and Special Instructions: **NORMAL FAT**

Temperature C: **TB: 2.3**
 Chain of Custody Seal: (Circle) **INTACT** BROKEN ABSENT

Collector/Relinquished By: (1) *[Signature]* Date: 10/7/03 Time: 2200
 Relinquished By: (2) *[Signature]* Date: 10/8/03 Time: 0920
 Relinquished By: (3) _____ Date: _____ Time: _____
 Relinquished By: (4) _____ Date: 10/8/03 Time: 0920



Laboratory Analysis Report

200 W. Potter Drive
Anchorage, AK 99518-1605
Tel: (907) 562-2343
Fax: (907) 561-5301
Web: <http://www.sgsevenvironmental.com>

Darrin Lawless
AGVIQ LLC
2121 Abbott Road Suite 100
Anchorage, AK 995074453

Work Order: 1036524
03-109 Ft Rich Bld 986 SVE O&M
Client: AGVIQ LLC
Report Date: November 05, 2003

Enclosed are the analytical results associated with the above workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by SGS. A copy of our Quality Control Manual that outlines this program is available at your request. The laboratory ADEC certification numbers are AK08-03 (DW), UST-005 (CS) and AK00971 (Micro).

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS Quality Assurance Program Plan and the National Environmental Laboratory Accreditation Conference.

If you have any questions regarding this report or if we can be of any other assistance, please call your SGS Project Manager at (907) 562-2343.

The following descriptors may be found on your report which will serve to further qualify the data.

- PQL Practical Quantitation Limit (reporting limit).
- U Indicates the analyte was analyzed for but not detected.
- F Indicates an estimated value that falls below PQL, but is greater than the MDL.
- J The quantitation is an estimation.
- B Indicates the analyte is found in a blank associated with the sample.
- * The analyte has exceeded allowable regulatory or control limits.
- GT Greater Than
- D The analyte concentration is the result of a dilution.
- LT Less Than
- ! Surrogate out of control limits.
- Q QC parameter out of acceptance range.
- M A matrix effect was present.
- JL The analyte was positively identified, but the quantitation is a low estimation.
- E The analyte result is high outside of calibrated range.

Note: Soil samples are reported on a dry weight basis unless otherwise specified.



SGS Ref.# 1036524001
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA025SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-15 10FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/08/2003 9:10
Received Date/Time 10/08/2003 16:30
Technical Director Stephen C. Ede
Released By *Rhonda Stricker*

Sample Remarks:

Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.
Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.49 U	1.49	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Benzene	0.0221	0.00744	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Toluene	0.0471	0.0297	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Ethylbenzene	0.0297 U	0.0297	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
P & M -Xylene	0.0464	0.0297	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
o-Xylene	0.0428	0.0297	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	82.4		%	AK101 8021B	A	76-113	10/08/03	10/14/03	MML
4-Bromofluorobenzene <surr>	118		%	AK101 8021B	A	50-150	10/08/03	10/14/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.1 U	21.1	mg/Kg	AK102	B		10/09/03	10/11/03	MCM
Surrogates									
5a Androstane <surr>	71.6		%	AK102	B	50-150	10/09/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Benzo(a)Anthracene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Naphthalene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Phenanthrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Anthracene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluoranthene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Pyrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Chrysene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[k]fluoranthene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Acenaphthylene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Indeno[1,2,3-c,d] pyrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM



SGS Ref.# 1036524001
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA025SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-15 10FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/08/2003 9:10
Received Date/Time 10/08/2003 16:30
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Acenaphthene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluorene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[b]Fluoranthene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[a]pyrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Dibenzo[a,h]anthracene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[g,h,i]perylene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Surrogates									
Acenaphthene-d10 <surr/IS>	50.7		%	PAH SIM	B	22-142	10/09/03	10/13/03	SPM
laphthalene-d8 <surr/IS>	49.5		%	PAH SIM	B	16-138	10/09/03	10/13/03	SPM
Chrysene-d12 <surr/IS>	49		%	PAH SIM	B	27-147	10/09/03	10/13/03	SPM
Solids									
Total Solids	96.7		%	SM20 2540G				10/09/03	AKN



SGS Ref.# 1036524002
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA026SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-15 15FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/08/2003 9:25
Received Date/Time 10/08/2003 16:30
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.
DRO - The pattern is consistent with a weathered middle distillate.
GRO/BTEX - BFB surrogate recovery is biased high due to matrix interference.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	16.1	1.97	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Benzene	0.0862	0.00987	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Toluene	0.0395 U	0.0395	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Ethylbenzene	0.0395 U	0.0395	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
m & p -Xylene	0.364	0.0395	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
o-Xylene	0.131	0.0395	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	83.1		%	AK101 8021B	A	76-113	10/08/03	10/14/03	MML
4-Bromofluorobenzene <surr>	205	!	%	AK101 8021B	A	50-150	10/08/03	10/14/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	40.7	21.2	mg/Kg	AK102	B		10/09/03	10/11/03	MCM
Surrogates									
5a Androstane <surr>	115		%	AK102	B	50-150	10/09/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Benzo(a)Anthracene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Naphthalene	16.7	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Phenanthrene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Anthracene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluoranthene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Pyrene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Chrysene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
benzo[k]fluoranthene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM



SGS Ref.# 1036524002
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA026SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-15 15FT

All Dates/Times are Alaska Standard Time
 Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/08/2003 9:25
 Received Date/Time 10/08/2003 16:30
 Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Acenaphthylene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Indeno[1,2,3-c,d] pyrene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Acenaphthene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluorene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[b]Fluoranthene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[a]pyrene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Dibenzo[a,h]anthracene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[g,h,i]perylene	6.00 U	6.00	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Logates									
Acenaphthene-d10 <surrogate>	54.4		%	PAH SIM	B	22-142	10/09/03	10/13/03	SPM
Naphthalene-d8 <surrogate>	48.3		%	PAH SIM	B	16-138	10/09/03	10/13/03	SPM
Chrysene-d12 <surrogate>	56.8		%	PAH SIM	B	27-147	10/09/03	10/13/03	SPM
Solids									
Total Solids	94.4		%	SM20 2540G	B			10/09/03	AKN



SGS Ref.# 1036524003
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA027SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-15 20FT

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/08/2003 9:38
 Received Date/Time 10/08/2003 16:30
 Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
 Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.
 DRO - The pattern is consistent with a weathered middle distillate.
 GRO/BTEX - BFB surrogate recovery is biased high due to matrix interference.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	14.1	1.80	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Benzene	0.0792	0.00900	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Toluene	0.0521	0.0360	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Ethylbenzene	0.0929	0.0360	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
m & p -Xylene	0.245	0.0360	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
o-Xylene	0.0804	0.0360	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Surrogates									
1,4-Difluorobenzene <surrogate>	85.1		%	AK101 8021B	A	76-113	10/08/03	10/14/03	MML
4-Bromofluorobenzene <surrogate>	201	!	%	AK101 8021B	A	50-150	10/08/03	10/14/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	218	21.8	mg/Kg	AK102	B		10/09/03	10/11/03	MCM
Surrogates									
5a Androstane <surrogate>	75.3		%	AK102	B	50-150	10/09/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Benzo(a)Anthracene	5.57 U	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Naphthalene	35.0	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Phenanthrene	18.7	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Anthracene	5.57 U	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluoranthene	5.57 U	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Pyrene	5.57 U	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Chrysene	5.57 U	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
benzo[k]fluoranthene	5.57 U	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM



SGS Ref.# 1036524003
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA027SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-15 20FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/08/2003 9:38
Received Date/Time 10/08/2003 16:30
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Acenaphthylene	5.57 U	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Indeno[1,2,3-c,d] pyrene	5.57 U	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Acenaphthene	5.57 U	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluorene	7.61	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[b]Fluoranthene	5.57 U	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[a]pyrene	5.57 U	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Dibenzo[a,h]anthracene	5.57 U	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[g,h,i]perylene	5.57 U	5.57	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Logates									
Acenaphthene-d10 <surrogate>	46.4		%	PAH SIM	B	22-142	10/09/03	10/13/03	SPM
Naphthalene-d8 <surrogate>	42.7		%	PAH SIM	B	16-138	10/09/03	10/13/03	SPM
Chrysene-d12 <surrogate>	53.2		%	PAH SIM	B	27-147	10/09/03	10/13/03	SPM
Solids									
Total Solids	91.8		%	SM20 2540G	B			10/09/03	AKN



SGS Ref.# 1036524004
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA028SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-15 30FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/08/2003 10:05
Received Date/Time 10/08/2003 16:30
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.
DRO - The pattern is consistent with a weathered middle distillate.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.79 U	1.79	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Benzene	0.0432	0.00897	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Toluene	0.0359 U	0.0359	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Ethylbenzene	0.0359 U	0.0359	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
P & M -Xylene	0.0359 U	0.0359	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Xylene	0.0359 U	0.0359	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	84		%	AK101 8021B	A	76-113	10/08/03	10/14/03	MML
4-Bromofluorobenzene <surr>	86.4		%	AK101 8021B	A	50-150	10/08/03	10/14/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	23.2 U	23.2	mg/Kg	AK102	B		10/09/03	10/11/03	MCM
Surrogates									
5a Androstane <surr>	75.1		%	AK102	B	50-150	10/09/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Benzo(a)Anthracene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Naphthalene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Phenanthrene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Anthracene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluoranthene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Pyrene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Chrysene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[k]fluoranthene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[e]fluoranthene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM



SGS Ref.# 1036524004
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA028SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-15 30FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/08/2003 10:05
Received Date/Time 10/08/2003 16:30
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Indeno[1,2,3-c,d] pyrene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Acenaphthene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluorene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[b]Fluoranthene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[a]pyrene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Dibenzo[a,h]anthracene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[g,h,i]perylene	5.62 U	5.62	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Surrogates									
acenaphthene-d10 <surrr/IS>	47.9		%	PAH SIM	B	22-142	10/09/03	10/13/03	SPM
1-Naphthalene-d8 <surrr/IS>	47		%	PAH SIM	B	16-138	10/09/03	10/13/03	SPM
Chrysene-d12 <surrr/IS>	57.4		%	PAH SIM	B	27-147	10/09/03	10/13/03	SPM
Solids									
Total Solids	87.5		%	SM20 2540G	B			10/09/03	AKN



SGS Ref.# 1036524005
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA029SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-15 40FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/08/2003 10:35
Received Date/Time 10/08/2003 16:30
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.53 U	1.53	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Benzene	0.0204	0.00766	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Toluene	0.0306 U	0.0306	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Ethylbenzene	0.0306 U	0.0306	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
P & M -Xylene	0.0371	0.0306	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
o-Xylene	0.0306 U	0.0306	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Surrogates									
1,4-Difluorobenzene <surrogate>	83.6		%	AK101 8021B	A	76-113	10/08/03	10/14/03	MML
4-Bromofluorobenzene <surrogate>	77.6		%	AK101 8021B	A	50-150	10/08/03	10/14/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	21.8 U	21.8	mg/Kg	AK102	B		10/09/03	10/11/03	MCM
Surrogates									
5a Androstane <surrogate>	69.5		%	AK102	B	50-150	10/09/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Benzo(a)Anthracene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Naphthalene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Phenanthrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Anthracene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluoranthene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Pyrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Chrysene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[k]fluoranthene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[e]phenanthrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[a]phenanthrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM



SGS Ref.# 1036524005
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA029SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-15 40FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/08/2003 10:35
Received Date/Time 10/08/2003 16:30
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Indeno[1,2,3-c,d] pyrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluorene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[b]Fluoranthene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[a]pyrene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Dibenzo[a,h]anthracene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[g,h,i]perylene	5.28 U	5.28	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Surrogates									
Acenaphthene-d10 <surrr/IS>	52.9		%	PAH SIM	B	22-142	10/09/03	10/13/03	SPM
1aphthalene-d8 <surrr/IS>	50.2		%	PAH SIM	B	16-138	10/09/03	10/13/03	SPM
Chrysene-d12 <surrr/IS>	49.7		%	PAH SIM	B	27-147	10/09/03	10/13/03	SPM
Solids									
Total Solids	94.2		%	SM20 2540G	B			10/09/03	AKN



SGS Ref.# 1036524006
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA030SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-15 50FT

All Dates/Times are Alaska Standard Time
 Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/08/2003 11:10
 Received Date/Time 10/08/2003 16:30
 Technical Director Stephen C. Ede

Released By

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
 Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.50 U	1.50	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Benzene	0.00748 U	0.00748	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Toluene	0.0299 U	0.0299	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Ethylbenzene	0.0299 U	0.0299	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
P & M -Xylene	0.0299 U	0.0299	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
o-Xylene	0.0299 U	0.0299	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Surrogates									
1,4-Difluorobenzene <sur>	85.9		%	AK101 8021B	A	76-113	10/08/03	10/14/03	MML
4-Bromofluorobenzene <sur>	87.5		%	AK101 8021B	A	50-150	10/08/03	10/14/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	20.4 U	20.4	mg/Kg	AK102	B		10/09/03	10/11/03	MCM
Surrogates									
5a Androstane <sur>	73.5		%	AK102	B	50-150	10/09/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Benzo(a)Anthracene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Naphthalene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Phenanthrene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Anthracene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluoranthene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Pyrene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Chrysene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[k]fluoranthene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
benzophenanthrene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
benzo[1,2,3-c,d] pyrene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM



SGS Ref.# 1036524006
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA030SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-15 50FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/08/2003 11:10
Received Date/Time 10/08/2003 16:30
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Acenaphthene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluorene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[b]Fluoranthene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[a]pyrene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Dibenzo[a,h]anthracene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[g,h,i]perylene	6.08 U	6.08	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Surrogates									
Acenaphthene-d10 <surrr/IS>	52		%	PAH SIM	B	22-142	10/09/03	10/13/03	SPM
laphthalene-d8 <surrr/IS>	49		%	PAH SIM	B	16-138	10/09/03	10/13/03	SPM
Chrysene-d12 <surrr/IS>	58.5		%	PAH SIM	B	27-147	10/09/03	10/13/03	SPM
Solids									
Total Solids	96.1		%	SM20 2540G	B			10/09/03	AKN



SGS Ref.# 1036524007 Billable Matrix Spike
 1036524008 Billable Matrix Spike Dup.

Printed Date/Time 11/13/2003 13:52
 Prep Batch VXX 11005
 Method AK101 Extraction (S)
 Date 10/08/2003

Original 1036524006
 Matrix Soil/Solid

QC results affect the following production samples:

Sample Remarks:

BMS
 BMSD

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Volatile Fuels Department										
Benzene	BMS	0.00748 U	0.371	102	(65-125)			0.356 mg/Kg	10/14/03	MML
	BMSD		0.371	103		0	(< 20)	0.352 mg/Kg	10/14/03	MML
Ethylbenzene	BMS	0.0299 U	0.210	97	(81-120)			0.217 mg/Kg	10/14/03	MML
	BMSD		0.213	99		1	(< 20)	0.214 mg/Kg	10/14/03	MML
Gasoline Range Organics	BMS	1.50 U	5.12	73	(60-120)			6.73 mg/Kg	10/14/03	MML
	BMSD		4.73	68		8	(< 20)	6.66 mg/Kg	10/14/03	MML
p-Xylene	BMS	0.0299 U	0.733	98	(85-121)			0.74 mg/Kg	10/14/03	MML
	BMSD		0.747	101		2	(< 20)	0.73 mg/Kg	10/14/03	MML
Toluene	BMS	0.0299 U	1.14	92	(75-122)			1.24 mg/Kg	10/14/03	MML
	BMSD		1.17	95		2	(< 20)	1.23 mg/Kg	10/14/03	MML
m-Xylene	BMS	0.0299 U	0.271	97	(85-118)			0.276 mg/Kg	10/14/03	MML
	BMSD		0.280	101		3	(< 20)	0.273 mg/Kg	10/14/03	MML
Surrogates										
m-Bromofluorobenzene <surr>	BMS			96	(50-150)			0.719 mg/Kg	10/14/03	MML
	BMSD			128		27		0.711 mg/Kg	10/14/03	MML
p,4-Difluorobenzene <surr>	BMS			100	(76-113)			0.719 mg/Kg	10/14/03	MML
	BMSD			100		1		0.711 mg/Kg	10/14/03	MML

Batch VFC 6069
 Method AK101 8021B
 Instrument HP 5890 Series II PID+FID VDA

Semivolatile Organic Fuels Department

Diesel Range Organics	BMS	20.4 U	169	97	(60-140)			171 mg/Kg	10/11/03	MCM
	BMSD		159	92		6	(< 50)	169 mg/Kg	10/11/03	MCM
Surrogates										
Testosterone <surr>	BMS			99	(50-150)			3.28 mg/Kg	10/11/03	MCM
	BMSD			85		16		3.25 mg/Kg	10/11/03	MCM

Batch XFC 5970
 Method AK102
 Instrument HP 5890 Series II FID SV C F



SG. # 1036524007 Billable Matrix Spike
1036524008 Billable Matrix Spike Dup.

Printed Date/Time 11/13/2003 13:52
Prep Batch XXX 12667
Method Sonication Extraction Soil PA
Date 10/09/2003

Original 1036524006
Matrix Soil/Solid

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
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Polynuclear Aromatics GC/MS



SGS Ref.# 1036524007 Billable Matrix Spike
 1036524008 Billable Matrix Spike Dup.

Printed Date/Time 11/13/2003 13:52
 Prep Batch XXX 12667
 Method Sonication Extraction Soil PA
 Date 10/09/2003

Original 1036524006
 Matrix Soil/Solid

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
Polynuclear Aromatics GC/MS										
Naphthalene	BMS 6.08 U	34.4	109	(86-129)				30.8 ug/Kg	10/13/03	SPM
	BMSD	35.5	110			3	(< 30)	31.4 ug/Kg	10/13/03	SPM
Benzo[a]pyrene	BMS 6.08 U	34.9	113	(53-122)				30.8 ug/Kg	10/13/03	SPM
	BMSD	34.6	110			1	(< 30)	31.4 ug/Kg	10/13/03	SPM
Benzo[b]Fluoranthene	BMS 6.08 U	36.7	119	(69-148)				30.8 ug/Kg	10/13/03	SPM
	BMSD	38.7	123			5	(< 30)	31.4 ug/Kg	10/13/03	SPM
Benzo[g,h,i]perylene	BMS 6.08 U	37.8	121	(75-135)				30.8 ug/Kg	10/13/03	SPM
	BMSD	39.4	124			4	(< 30)	31.4 ug/Kg	10/13/03	SPM
Benzo[k]fluoranthene	BMS 6.08 U	35.8	116	(68-142)				30.8 ug/Kg	10/13/03	SPM
	BMSD	36.4	116			2	(< 30)	31.4 ug/Kg	10/13/03	SPM
Chrysene	BMS 6.08 U	33.9	110	(80-139)				30.8 ug/Kg	10/13/03	SPM
	BMSD	34.5	109			2	(< 30)	31.4 ug/Kg	10/13/03	SPM
D' [a,h]anthracene	BMS 6.08 U	36.5	118	(75-126)				30.8 ug/Kg	10/13/03	SPM
	BMSD	37.7	120			3	(< 30)	31.4 ug/Kg	10/13/03	SPM
Fluoranthene	BMS 6.08 U	34.5	112	(80-141)				30.8 ug/Kg	10/13/03	SPM
	BMSD	33.1	105			4	(< 30)	31.4 ug/Kg	10/13/03	SPM
Phenanthrene	BMS 6.08 U	32.5	105	(58-156)				30.8 ug/Kg	10/13/03	SPM
	BMSD	29.9	95			8	(< 30)	31.4 ug/Kg	10/13/03	SPM
Indeno[1,2,3-c,d] pyrene	BMS 6.08 U	37.6	122	(78-132)				30.8 ug/Kg	10/13/03	SPM
	BMSD	39.2	124			4	(< 30)	31.4 ug/Kg	10/13/03	SPM
Acenaphthylene	BMS 6.08 U	36.4	118	(82-121)				30.8 ug/Kg	10/13/03	SPM
	BMSD	36.5	116			0	(< 30)	31.4 ug/Kg	10/13/03	SPM
Pyrene	BMS 6.08 U	35.0	114	(61-155)				30.8 ug/Kg	10/13/03	SPM
	BMSD	34.2	109			2	(< 30)	31.4 ug/Kg	10/13/03	SPM
Fluorene	BMS 6.08 U	35.2	114	(77-134)				30.8 ug/Kg	10/13/03	SPM
	BMSD	36.3	115			3	(< 30)	31.4 ug/Kg	10/13/03	SPM
Benzo(a)Anthracene	BMS 6.08 U	35.6	115	(77-130)				30.8 ug/Kg	10/13/03	SPM
	BMSD	36.6	116			3	(< 30)	31.4 ug/Kg	10/13/03	SPM
Anthracene	BMS 6.08 U	32.0	104	(54-129)				30.8 ug/Kg	10/13/03	SPM
	BMSD	28.4	90			12	(< 30)	31.4 ug/Kg	10/13/03	SPM
Acenaphthene	BMS 6.08 U	34.6	112	(82-126)				30.8 ug/Kg	10/13/03	SPM
	BMSD	35.1	111			1	(< 30)	31.4 ug/Kg	10/13/03	SPM
Surrogates										
Chrysene-d12 <surr/IS>	BMS		55	(27-147)				29.6 ug/Kg	10/13/03	SPM
	BMSD		74			32		30.2 ug/Kg	10/13/03	SPM
Fluorene-d8 <surr/IS>	BMS		51	(16-138)				29.6 ug/Kg	10/13/03	SPM
	BMSD		59			16		30.2 ug/Kg	10/13/03	SPM
Acenaphthene-d10 <surr/IS>	BMS		53	(22-142)				29.6 ug/Kg	10/13/03	SPM
	BMSD		62			18		30.2 ug/Kg	10/13/03	SPM



SGS Ref.# 1036524007 Billable Matrix Spike
 1036524008 Billable Matrix Spike Dup.

Printed Date/Time 11/13/2003 13:52
 Prep Batch XXX 12667
 Method Sonication Extraction Soil PA
 Date 10/09/2003

Original 1036524006
 Matrix Soil/Solid

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date	Init
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Polynuclear Aromatics GC/MS

Batch XMS 2830
 Method PAH SIM
 Instrument HP 6890/5973 MS SVOA

Solids

Batch SPT 5263
 Method SM20 2540G
 Instrument



SGS Ref.# 1036524009
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA031SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-15 82FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/08/2003 12:48
Received Date/Time 10/08/2003 16:30
Technical Director Stephen C. Ede
Released By *Rhonda Strucker*

Sample Remarks:

Total Organic Carbon was analyzed by Columbia Analytical Services of Kelso, WA.
Particle Size (Sieve) was analyzed by AK Test Lab of Anchorage, AK.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.19 U	1.19	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Benzene	0.00597 U	0.00597	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Toluene	0.0239 U	0.0239	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Ethylbenzene	0.0239 U	0.0239	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
P & M -Xylene	0.0239 U	0.0239	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
o-Xylene	0.0239 U	0.0239	mg/Kg	AK101 8021B	A		10/08/03	10/14/03	MML
Surrogates									
1,4-Difluorobenzene <surrogate>	85.1		%	AK101 8021B	A	76-113	10/08/03	10/14/03	MML
4-Bromofluorobenzene <surrogate>	74.1		%	AK101 8021B	A	50-150	10/08/03	10/14/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	20.5 U	20.5	mg/Kg	AK102	B		10/09/03	10/11/03	MCM
Surrogates									
5a Androstane <surrogate>	72.7		%	AK102	B	50-150	10/09/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Benzo(a)Anthracene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Naphthalene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Phenanthrene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Anthracene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluoranthene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Pyrene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Chrysene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[k]fluoranthene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Acenaphthylene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
eno[1,2,3-c,d] pyrene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM



SGS Ref.# 1036524009
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA031SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-15 82FT

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/08/2003 12:48
Received Date/Time 10/08/2003 16:30
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Acenaphthene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluorene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[b]fluoranthene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[a]pyrene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Dibenzo[a,h]anthracene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[g,h,i]perylene	5.11 U	5.11	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Surrogates									
Acenaphthene-d10 <surrr/IS>	57.7		%	PAH SIM	B	22-142	10/09/03	10/13/03	SPM
aphthalene-d8 <surrr/IS>	55.3		%	PAH SIM	B	16-138	10/09/03	10/13/03	SPM
Chrysene-d12 <surrr/IS>	53.5		%	PAH SIM	B	27-147	10/09/03	10/13/03	SPM
Solids									
Total Solids	98.2		%	SM20 2540G	B			10/09/03	AKN



SGS Ref.# 1036524010
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA802SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-15 FD-3

All Dates/Times are Alaska Standard Time
 Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/08/2003 9:38
 Received Date/Time 10/08/2003 16:30
 Technical Director Stephen C. Ede

Released By

Sample Remarks:

DRO - The pattern is consistent with a weathered middle distillate.
 GRO/BTEX - BFB surrogate recovery is biased high due to matrix interference.

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	35.5	1.68	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
Benzene	0.0974	0.00842	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
Toluene	0.0534	0.0337	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
Ethylbenzene	0.179	0.0337	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
P & M -Xylene	0.496	0.0337	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
o-Xylene	0.145	0.0337	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
Surrogates									
1,4-Difluorobenzene <surr>	88.9		%	AK101 8021B	A	76-113	10/08/03	10/16/03	MML
4-Bromofluorobenzene <surr>	466	!	%	AK101 8021B	A	50-150	10/08/03	10/16/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	581	22.4	mg/Kg	AK102	B		10/09/03	10/11/03	MCM
Surrogates									
5a Androstane <surr>	88.4		%	AK102	B	50-150	10/09/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Benzo(a)Anthracene	5.50 U	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Naphthalene	5.50 U	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Phenanthrene	20.5	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Anthracene	5.50 U	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluoranthene	5.50 U	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Pyrene	13.4	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Chrysene	5.50 U	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[k]fluoranthene	5.50 U	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Acenaphthylene	5.50 U	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Indeno[1,2,3-c,d] pyrene	5.50 U	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM



SGS Ref.# 1036524010
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA802SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-15 FD-3

All Dates/Times are Alaska Standard Time
 Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/08/2003 9:38
 Received Date/Time 10/08/2003 16:30
 Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Acenaphthene	5.50 U	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluorene	13.0	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[b]Fluoranthene	5.50 U	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[a]pyrene	5.50 U	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Dibenzo[a,h]anthracene	5.50 U	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[g,h,i]perylene	5.50 U	5.50	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Surrogates									
Acenaphthene-d10 <surrr/IS>	59.6		%	PAH SIM	B	22-142	10/09/03	10/13/03	SPM
laphthalene-d8 <surrr/IS>	36.6		%	PAH SIM	B	16-138	10/09/03	10/13/03	SPM
Chrysene-d12 <surrr/IS>	63.3		%	PAH SIM	B	27-147	10/09/03	10/13/03	SPM
Solids									
Total Solids	92.8		%	SM20 2540G	B			10/09/03	AKN



SGS Ref.# 1036524011
 Client Name AGVIQ LLC
 Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
 Client Sample ID 03FRA803SS
 Matrix Soil/Solid
 Location/Well ID FRPOLCB-15 FD-4

All Dates/Times are Alaska Standard Time

Printed Date/Time 11/05/2003 15:10
 Collected Date/Time 10/08/2003 12:48
 Received Date/Time 10/08/2003 16:30
 Technical Director Stephen S. Ede

Released By

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	1.25 U	1.25	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
Benzene	0.00623 U	0.00623	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
Toluene	0.0249 U	0.0249	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
Ethylbenzene	0.0249 U	0.0249	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
P & M -Xylene	0.0249 U	0.0249	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
o-Xylene	0.0249 U	0.0249	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
ogates									
1,4-Difluorobenzene <sur>	86.8		%	AK101 8021B	A	76-113	10/08/03	10/16/03	MML
4-Bromofluorobenzene <sur>	79		%	AK101 8021B	A	50-150	10/08/03	10/16/03	MML
Semivolatile Organic Fuels Department									
Diesel Range Organics	20.4 U	20.4	mg/Kg	AK102	B		10/09/03	10/11/03	MCM
Surrogates									
5a Androstane <sur>	69.9		%	AK102	B	50-150	10/09/03	10/11/03	MCM
Polynuclear Aromatics GC/MS									
Benzo(a)Anthracene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Naphthalene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Phenanthrene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Anthracene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Fluoranthene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Pyrene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Chrysene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[k]fluoranthene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Acenaphthylene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Indeno[1,2,3-c,d] pyrene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[e]fluoranthene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM



SGS Ref.# 1036524011
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID 03FRA803SS
Matrix Soil/Solid
Location/Well ID FRPOLCB-15 FD-4

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/08/2003 12:48
Received Date/Time 10/08/2003 16:30
Technical Director Stephen C. Ede

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Polynuclear Aromatics GC/MS									
Fluorene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[b]Fluoranthene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[a]pyrene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Dibenzo[a,h]anthracene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Benzo[g,h,i]perylene	5.31 U	5.31	ug/Kg	PAH SIM	B		10/09/03	10/13/03	SPM
Surrogates									
Acenaphthene-d10 <surrogate>	56.5		%	PAH SIM	B	22-142	10/09/03	10/13/03	SPM
Naphthalene-d8 <surrogate>	49.5		%	PAH SIM	B	16-138	10/09/03	10/13/03	SPM
Chrysene-d12 <surrogate>	59.6		%	PAH SIM	B	27-147	10/09/03	10/13/03	SPM
Solids									
Total Solids	97.6		%	SM20 2540G	B			10/09/03	AKN



SGS Ref.# 1036524012
Client Name AGVIQ LLC
Project Name/# 03-109 Ft Rich Bld 986 SVE O&M
Client Sample ID Trip Blank-03
Matrix Soil/Solid
Location/Well ID TB-03

All Dates/Times are Alaska Standard Time
Printed Date/Time 11/05/2003 15:10
Collected Date/Time 10/08/2003 9:00
Received Date/Time 10/08/2003 16:30
Technical Director Stephen C. Ede

Released By

Sample Remarks:

Parameter	Results	PQL	Units	Method	Container ID	Allowable Limits	Prep Date	Analysis Date	Init
Volatile Fuels Department									
Gasoline Range Organics	2.48 U	2.48	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
Benzene	0.0124 U	0.0124	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
Toluene	0.0496 U	0.0496	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
Ethylbenzene	0.0496 U	0.0496	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
P & M -Xylene	0.0496 U	0.0496	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
o-Xylene	0.0496 U	0.0496	mg/Kg	AK101 8021B	A		10/08/03	10/16/03	MML
ogates									
1,4-Difluorobenzene <sur>	84.3		%	AK101 8021B	A	76-113	10/08/03	10/16/03	MML
4-Bromofluorobenzene <sur>	90.3		%	AK101 8021B	A	50-150	10/08/03	10/16/03	MML
Solids									
Total Solids	100		%	SM20 2540G				10/09/03	AKN

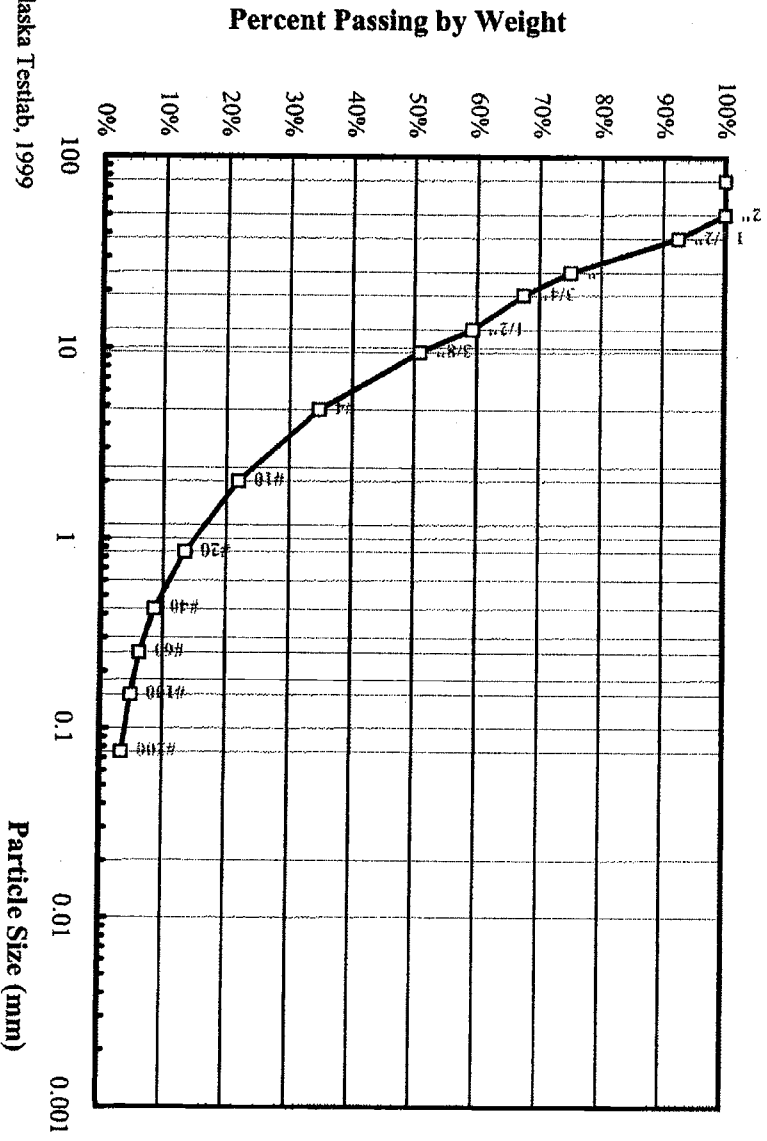
ALASKA

TESTING
A DIVISION of BOWLAB

Client: CTE Environmental Services, Inc
Project: Ft. Rich Bldg. 986

ID# 1036524001
10/08/03 0910

Engineering Classification: Well Graded GRAVEL with Sand, GW
Frost Classification: Not Measured



SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = ~0%	
3"	100%
2"	92%
1 1/2"	75%
1"	67%
3/4"	59%
1/2"	51%
3/8"	35%
No. 4	22%
Total Wt. = 1356g	
No. 8	13%
No. 10	9%
No. 16	6%
No. 20	5%
No. 30	3.4%
No. 40	
No. 50	
No. 60	
No. 80	
No. 100	
No. 200	
Total Wt. of Fine Fraction = 470.7g	
0.075 mm	

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David L. Andersen, P.E., General Manager

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ALASKA

Division of TOWLE LLC

Client: CTE Environmental Services, Inc
 Project: Ft. Rich Bldg. 986

ID# 1036524002
 10/08/03 0925

Engineering Classification: Well Graded GRAVEL with Silt and Sand, GW-GM
 Frost Classification: Not Measured

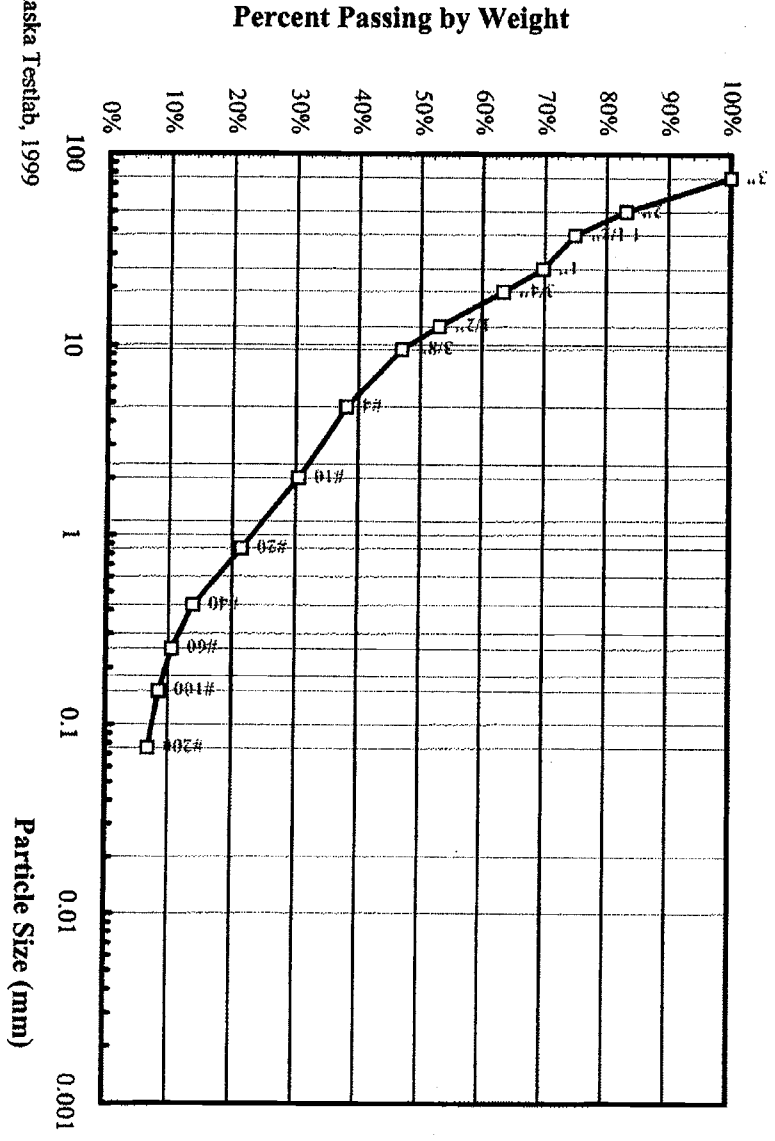
PARTICLE-SIZE
DIST. ASTM D422

W.O. A30530

Lab No. 2627

Received: 10/9/03

Reported: 10/15/03



SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = -0%	
3"	100%
2"	83%
1 1/2"	75%
1"	70%
3/4"	63%
1/2"	53%
3/8"	47%
No. 4	38%
Total Wt. = 1272g	
No. 8	
No. 10	30%
No. 16	
No. 20	21%
No. 30	
No. 40	14%
No. 50	
No. 60	11%
No. 80	
No. 100	9%
No. 200	6.8%
Total Wt. of Fine Fraction = 483.3g	
0.02 mm	

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ALASKA TEST DIVISION of DOW L L L C

Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

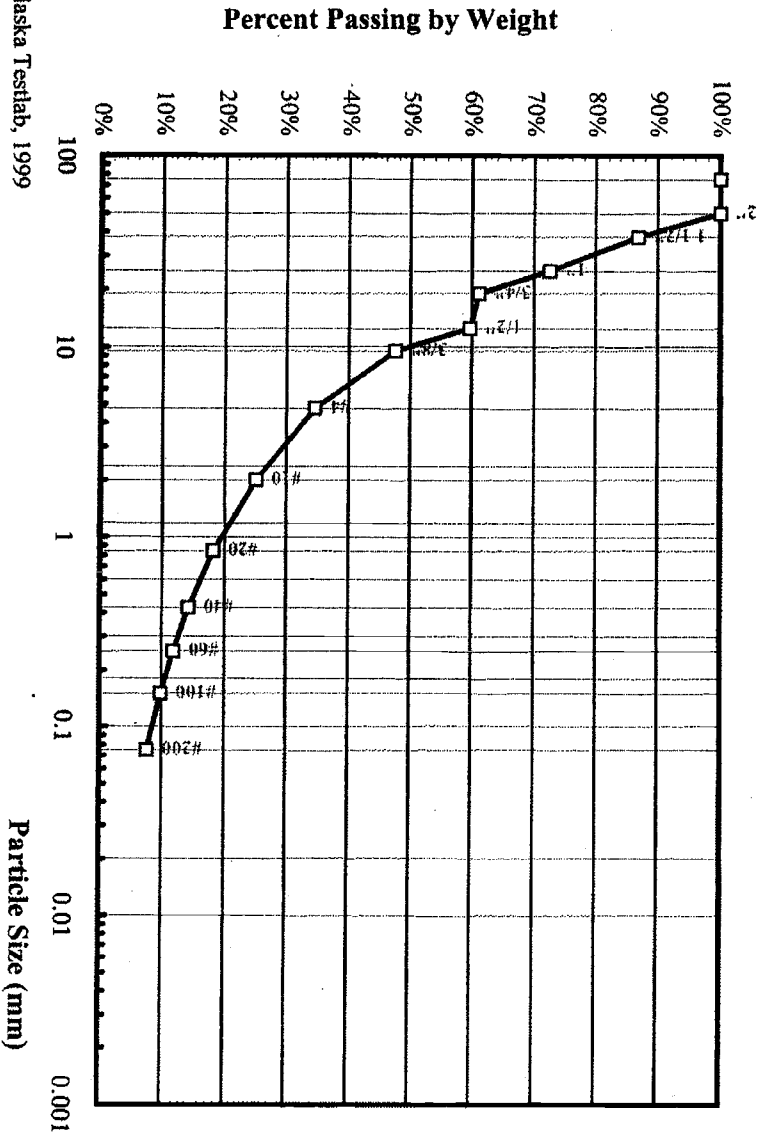
Location: By Client

ID# 1036524003

10/08/03 0938

Engineering Classification: Poorly Graded GRAVEL with Silt and Sand, GP-GM

Frost Classification: Not Measured



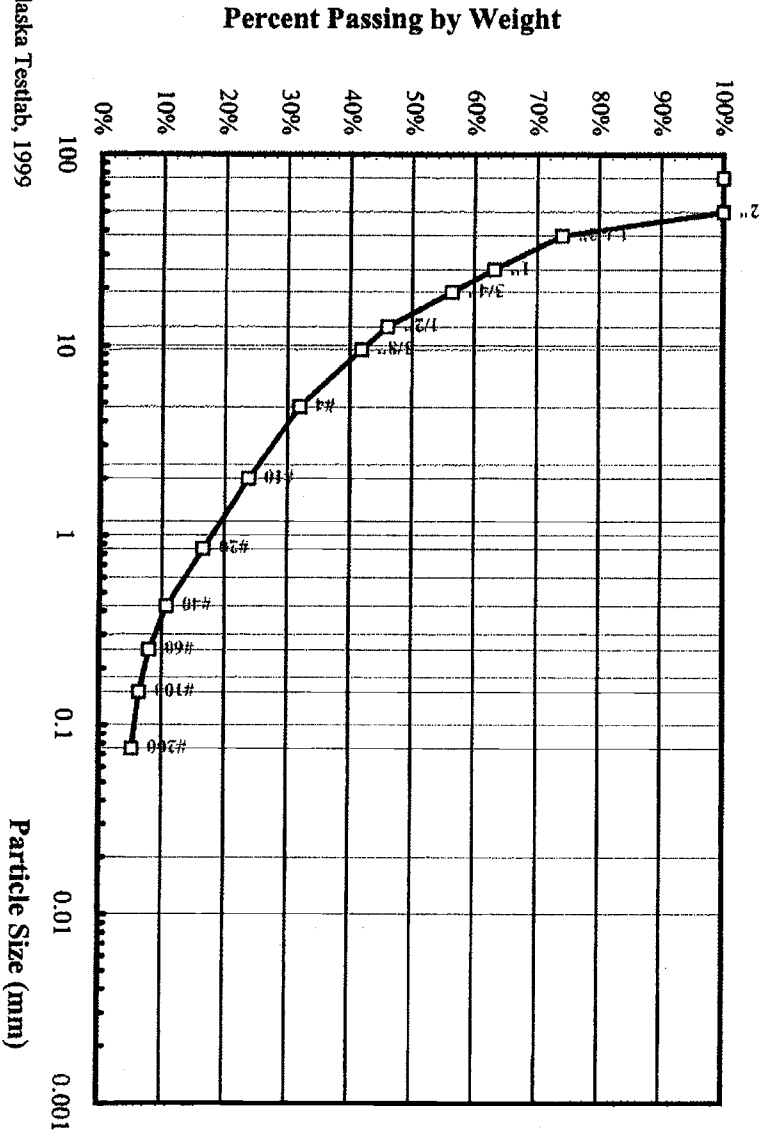
ALASKA

TEST TOWERS
A Division of DOW L L C

Client: CTE Environmental Services, Inc
Project: Ft. Rich Bldg. 986

ID# 1036524004
10/08/03 1005

Engineering Classification: Well Graded GRAVEL with Silt and Sand, GW-GM
Frost Classification: Not Measured



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PARTICLE-SIZE
DIST. ASTM D422

W.O. A30530
Lab No. 2629
Received: 10/9/03
Reported: 10/15/03

SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test	~0%	
3"		
2"	100%	
1 1/2"	74%	
1"	63%	
3/4"	56%	
1/2"	46%	
3/8"	42%	
No. 4	32%	
Total Wt. = 1511g		
No. 8		
No. 10	24%	
No. 16		
No. 20	17%	
No. 30		
No. 40	11%	
No. 50		
No. 60	8%	
No. 80		
No. 100	6%	
No. 200	5.2%	
Total Wt. of Fine Fraction = 481.9g		
0.02 mm		

ALASKA TEST TOWERS

A Division of BOWLAB
Location: By Client

Client: CTE Environmental Services, Inc

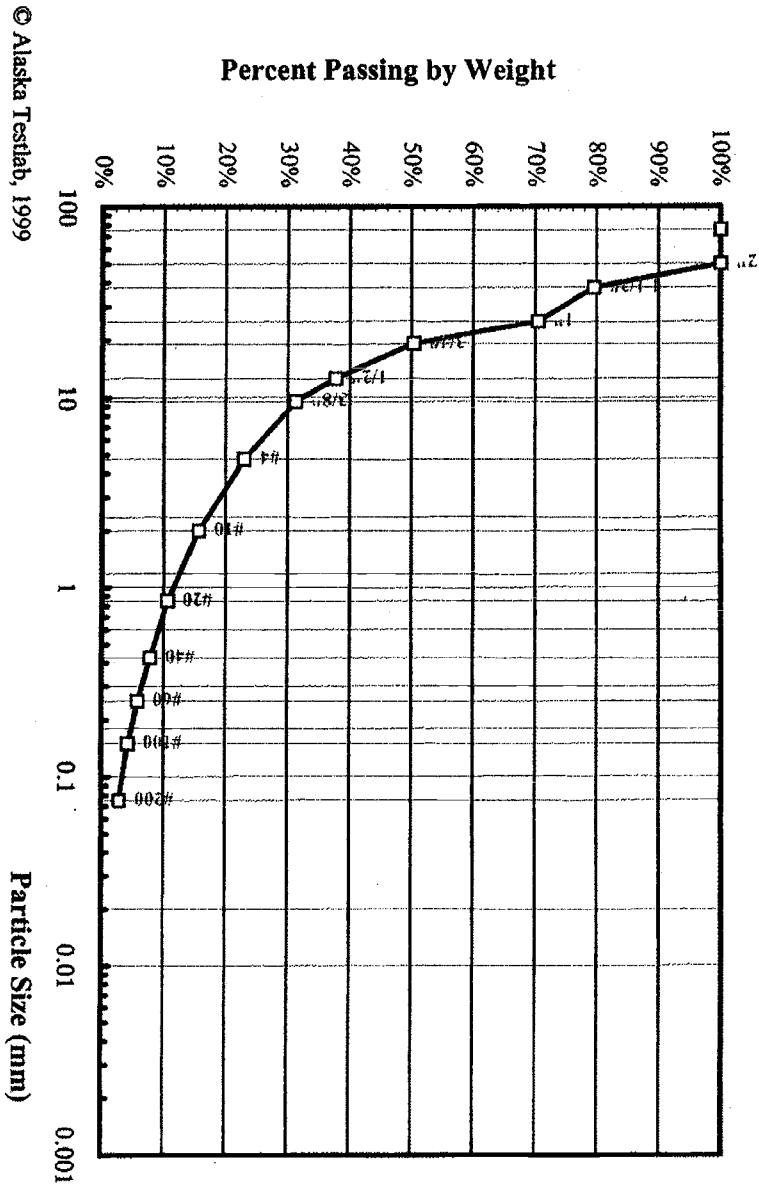
Project: Ft. Rich Bldg. 986

ID# 1036524005

10/08/03 1035

Engineering Classification: Poorly Graded GRAVEL with Sand, GP

Frost Classification: NFS MOA



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"	100%	
1 1/2"	79%	
1"	70%	
3/4"	50%	
1/2"	38%	
3/8"	31%	
No. 4	23%	
Total Wt = 1326g		
No. 8		
No. 10	16%	
No. 16		
No. 20	11%	
No. 30		
No. 40	8%	
No. 50		
No. 60	6%	
No. 80		
No. 100	4%	
No. 200	2.8%	
Total Wt. of Fine Fraction = 304.1g		
0.02 mm		

PARTICLE-SIZE

DIST. ASTM D422

W.O. A30530

Lab No. 2630

Received: 10/9/03

Reported: 10/15/03

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ALASKA TESTS TOWLLC

Client: CTE Environmental Services, Inc

Project: Ft. Rich Bldg. 986

Location: By Client

ID# 1036524006

10/08/03 1110

Engineering Classification: Poorly Graded GRAVEL with Sand, GP

Frost Classification: Not Measured

PARTICLE-SIZE

DIST. ASTM D422

W.O. A30530

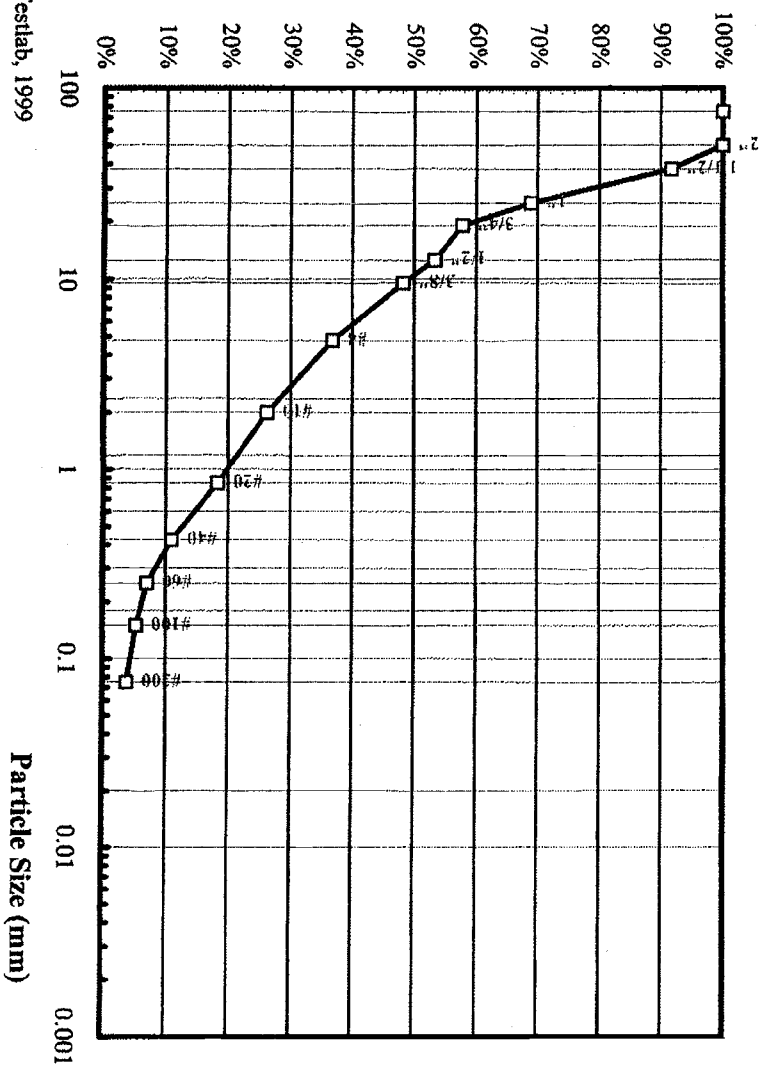
Lab No. 2631

Received: 10/9/03

Reported: 10/15/03

SIZE	PASSING SPECIFICATION
+3 in Not Included in Test = ~0%	
3"	
2"	100%
1 1/2"	92%
1"	69%
3/4"	58%
1/2"	53%
3/8"	48%
No. 4	37%
Total Wt. = 1354g	
No. 8	
No. 10	26%
No. 16	
No. 20	18%
No. 30	
No. 40	11%
No. 50	
No. 60	7%
No. 80	
No. 100	5%
No. 200	3.7%
Total Wt. of Fine Fraction = 496.3g	
0.02 mm.	

Percent Passing by Weight



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ALASKA TEST & CONSULTING

A Division of DOW L L C
 Location: By Client

Client: CTE Environmental Services, Inc

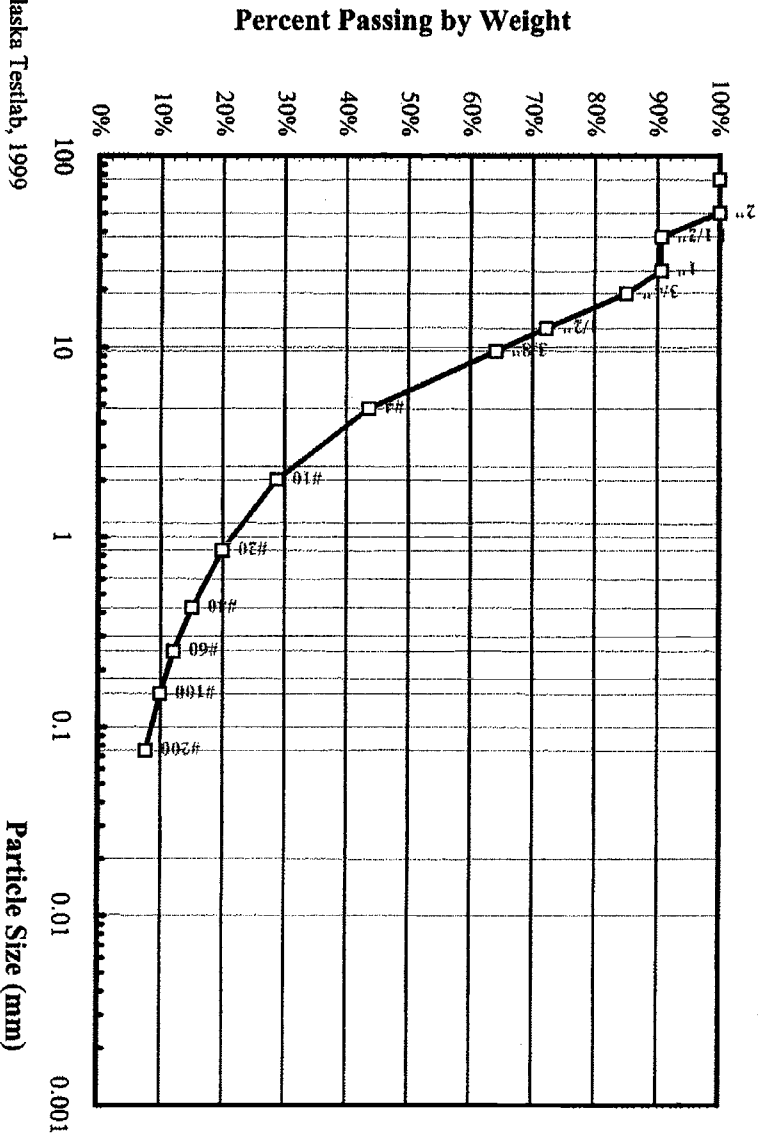
Project: Ft. Rich Bldg. 986

ID# 1036524009

10/08/03 1248

Engineering Classification: Poorly Graded GRAVEL with Silt and Sand, GP-GM

Frost Classification: Not Measured



SIZE	PASSING	SPECIFICATION
+3 in Not Included in Test = ~0%		
3"		
2"	100%	
1 1/2"	91%	
1"	91%	
3/4"	85%	
1/2"	72%	
3/8"	64%	
No. 4	44%	
Total Wt. = 1313g		
No. 8		
No. 10	29%	
No. 16		
No. 20	20%	
No. 30		
No. 40	15%	
No. 50		
No. 60	12%	
No. 80		
No. 100	10%	
No. 200	7.6%	
Total Wt. of Fine Fraction = 570.7g		
0.02 mm		

PARTICLE-SIZE
 DIST. ASTM D422

W.O. A30530

Lab No. 2632

Received: 10/9/03

Reported: 10/15/03

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 David L. Andersen, P.E., General Manager

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October 31, 2003

Service Request No: K2307983

Rhonda Strucher
CT&E Environmental Services, Inc.
200 W. Potter Dr.
Anchorage, AK 99518-1605

Dear Rhonda:

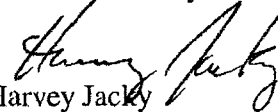
Enclosed are the results of the sample(s) submitted to our laboratory on October 11, 2003. For your reference, these analyses have been assigned our service request number K2307983.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3260.

Respectfully submitted,

Columbia Analytical Services, Inc.



Harvey Jacky
Project Chemist

HJ/jeb

Page 1 of 12

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

000002

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- J The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.
- * The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

- The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

000003

Case Narrative

000004

COLUMBIA ANALYTICAL SERVICES, INC.

Client: CT&E Environmental Services, Inc.
Project: NA
Sample Matrix: Soil

Service Request No.: K2307983
Date Received: 10/11/03

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), and Matrix Spike (MS).

Sample Receipt

Seven soil samples were received for analysis at Columbia Analytical Services on 10/11/03. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Approved by _____

AK Date *10/31/03*

000005

**Chain of Custody
Documentation**

000006



CHAIN OF CUSTODY RECORD
CT&E Environmental Services Inc.
 Laboratory Division

- Locations Nationwide
- Alaska
 - Louisiana
 - Maryland
 - Michigan
 - New Jersey
 - West Virginia
 - Hawaii

www.sgsenvironmental.com

023257

1

CLIENT: SGS Enviro

CONTACT: Rhonda Snicker PHONE NO: 907-562-2343

PROJECT: Ft. Park Bldg 98E SITE/PWSID#: _____

REPORTS TO: 300 W. Polo Her Dr

INVOICE TO: ANCH, AK 99518 FAX NO: 907-561-5301

QUOTE # _____

P.O. NUMBER _____

CT&E Reference: CA5-kelsd

Preservatives Used _____

Analyses Required 3

NO CONTAINERS

SAMPLE TYPE: CE COMP GRAV

LAB NO. SAMPLE IDENTIFICATION DATE TIME MATRIX

1 1D36524D01 10/8/03 0910 Soil

2 _____

3 _____

4 _____

5 _____

REMARKS: Client ID

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	NO CONTAINERS	SAMPLE TYPE	Analyses Required	Shipping Carrier	Shipping Ticket No.	Temperature °C	Samples Received Cold? (Circle) YES NO	Chain of Custody Seal: (Circle) INTACT BROKEN	Requested Turnaround Time and Special Instructions:
1	1D36524D01	10/8/03	0910	Soil	1	CE	3						
2													
3													
4													
5													

5

Retrieved/Relinquished By: (1) Shonda Snicker Date: 10/10/03 Time: 1130 Received By: _____

Relinquished By: (2) _____ Date: 10/14/03 Time: 1100 Received By: Tracy Beck CAA

Relinquished By: (3) _____ Date: _____ Time: _____ Received By: _____

Relinquished By: (4) _____ Date: _____ Time: _____ Received By: _____

4

Shipping Carrier: _____

Shipping Ticket No.: _____

Temperature °C: _____

Samples Received Cold? (Circle) YES NO

Chain of Custody Seal: (Circle) INTACT BROKEN

Requested Turnaround Time and Special Instructions: _____

Special Deliverable Requirements: DOE DIP + OBEIT

200 W. Parker Dr. Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301

1200 Concord Indus. Ave. Ludington, MI 49431 Tel: (231) 843-1877 Fax: (231) 845-9942

151 James Drive W. Charleston, WV 25311 Tel: (304) 346-0725 Fax: (304) 346-0761

White - and by Lab

Yellow - Returned with Report

Pink - Retained by Sampler

**Columbia Analytical Services Inc.
Cooler Receipt And Preservation Form**

Project/Client S65 Work Order K23 7983
Cooler received on 10/11/03 and opened on 10/11/03 by T. Blunt

1. Were custody seals on outside of cooler?
If yes, how many and where? 1 front Y N
2. Were seals intact and signature, & date correct? Y N
3. Is the shipper's airbill available and filed? If no, record airbill number: 12A8619W444/228185 Y N
4. COC # _____
Temperature of cooler(s) upon receipt: 0.1 _____
Temperature Blank: 0.2 _____
5. Were custody papers properly filled out (ink, signed, etc.)? Y N
6. Type of packing material present gel packs - b-wrap
7. Did all bottles arrive in good condition (unbroken)? Y N
8. Were all bottle labels complete (i.e. analysis, preservation, etc.)? Y N
9. Did all bottle labels and tags agree with custody papers? Y N
10. Were the correct types of bottles used for the tests indicated? Y N
11. Were all of the preserved bottles received at the lab with the appropriate pH? ~~Y~~ N
12. Were VOA vials checked for absence of air bubbles, and if present, noted below? ~~Y~~ N
13. Did the bottles originate from CAS/K or a branch laboratory? Y N
14. Are CWA Microbiology samples received with > 1/2 the 24 hr. hold time remaining from collection? ~~Y~~ N
15. Was Cl2/Res negative? ~~Y~~ N

Explain any discrepancies: _____

RESOLUTION:

Samples that required preservation or received out of temperature:

Sample ID	Reagent	Volume	Lot Number	Bottle Type	Rec'd out of Temperature	Initials

General Chemistry Parameters

000000

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : CT&E Environmental Services, Inc.
Project Name : NA
Project Number : NA
Sample Matrix : SOIL

Service Request : K2307983
Date Collected : 10/08/03
Date Received : 10/11/03

Carbon, Total Organic

Analysis Method : ASTM D4129-82M
Test Notes :

Units : Percent
Basis : Dry

Sample Name	Lab Code	MRL	Dilution Factor	Date Analyzed	Result	Result Notes
1036524001	K2307983-001	0.05	1	10/23/03	0.18	
1036524002	K2307983-002	0.05	1	10/23/03	0.38	
1036524003	K2307983-003	0.05	1	10/23/03	0.31	
1036524004	K2307983-004	0.05	1	10/23/03	0.68	
1036524005	K2307983-005	0.05	1	10/23/03	0.14	
1036524006	K2307983-006	0.05	1	10/23/03	0.16	
1036524009	K2307983-007	0.05	1	10/23/03	0.26	
Method Blank	K2307983-MB	0.05	1	10/23/03	ND	

000010

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CT&E Environmental Services, Inc.
Project Name : NA
Project Number : NA
Sample Matrix : SOIL

Service Request : K2307983
Date Collected : 10/08/03
Date Received : 10/11/03
Date Extracted : NA
Date Analyzed : 10/23/03

Duplicate Summary
Inorganic Parameters

Sample Name : 1036524001
Lab Code : K2307983-001DUP
Test Notes :

Units : Percent
Basis : Dry

Analyte	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Carbon, Total Organic	ASTM D4129-82M	0.05	0.18	0.17	0.18	6	

000011

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : CT&E Environmental Services, Inc.
Project Name : NA
Project Number : NA
Sample Matrix : SOIL

Service Request : K2307983
Date Collected : 10/08/03
Date Received : 10/11/03
Date Extracted : NA
Date Analyzed : 10/23/03

Matrix Spike Summary
Inorganic Parameters

Sample Name : 1036524001
Lab Code : K2307983-001MS
Test Notes :

Units : Percent
Basis : Dry

Analyte	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits	Result Notes
Carbon, Total Organic	ASTM D4129-82M	0.05	7.24	0.18	6.89	93	75-125	

000012

CHAIN OF CUSTODY RECORD

103652



CT&E Environmental Services Inc.
Laboratory Division

1 CLIENT: **AGVIA LLC**
CONTACT: **DARRIN LAWLESS** PHONE NO: (907) 365-6249 PWSID#:
PROJECT: **FTRICH BLDG 896 SVE O&M**
REPORTS TO: **DARRIN LAWLESS**
2121 ABBOTT RD
ANCHORAGE AK FAX NO: (907) 365-6256
INVOICE TO: **919507** QUOTE#
- SAME. P.O. NUMBER:

CT&E Reference:

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No. CONTAINERS	SAMPLE TYPE C = COMP G = GRAB	Preservatives Used Analysis Required	PAGE 1 OF 2		REMARKS
								AK101/8021B Mecon AK102 AK103 AK104 AK105 AK106 AK107 AK108 AK109 AK110 AK111 AK112 AK113 AK114 AK115 AK116 AK117 AK118 AK119 AK120 AK121 AK122 AK123 AK124 AK125 AK126 AK127 AK128 AK129 AK130 AK131 AK132 AK133 AK134 AK135 AK136 AK137 AK138 AK139 AK140 AK141 AK142 AK143 AK144 AK145 AK146 AK147 AK148 AK149 AK150 AK151 AK152 AK153 AK154 AK155 AK156 AK157 AK158 AK159 AK160 AK161 AK162 AK163 AK164 AK165 AK166 AK167 AK168 AK169 AK170 AK171 AK172 AK173 AK174 AK175 AK176 AK177 AK178 AK179 AK180 AK181 AK182 AK183 AK184 AK185 AK186 AK187 AK188 AK189 AK190 AK191 AK192 AK193 AK194 AK195 AK196 AK197 AK198 AK199 AK200	REMARKS	
DA-D	03 FRA 025 SS	10/18/03	0910	SO	4	G	X	X	1	10 FT
DA-D	03 FRA 026 SS		0925		4	G	X	X	1	15 FT
DA-D	03 FRA 027 SS		0938		4	G	X	X	1	20 FT
DA-D	03 FRA 028 SS		1005		4	G	X	X	1	30 FT
DA-D	03 FRA 029 SS		1035		4	G	X	X	1	40 FT
DA-H	03 FRA 030 SS		1110		4	G	X	X	1	50 FT
DA-B	03 FRA 030 SS-MS		1110		2	G	X	X	1	50 FT
DA-B	03 FRA 030 SS-MSD		1110		2	G	X	X	1	50 FT
DA-D	03 FRA 031 SS		1248		4	G	X	X	1	82 FT
DA-B	03 FRA 802 SS		0938		2	G	X	X	1	FRA 031-15 FD-3

2 Collected/Relinquished By: (1) *[Signature]* Date: 10/18/03 Time: 1440 Received By:
Relinquished By: (2) *[Signature]* Date: 10/18/03 Time: 1630 Received By:
Relinquished By: (3) Date: Time: Received By:
Relinquished By: (4) Date: 10/18/03 Time: 1630 Received For Laboratory By: *[Signature]*

Shipping Carrier: **FRPO LCB-15 FD-3**
Temperature C: **7B-1.9**
Shipping Ticket No:
Data Deliverables:
Level I Level II Level III EDD Type:
Requested Turnaround Time and Special Instructions: **NORMAL TAT**
Chain of Custody Seat: (Circle) **INTACT** BROKEN ABSENT

1036524



SGS

SAMPLE RECEIPT FORM

CT&E WO#:

Yes No NA

- Are samples RUSH, priority, or within 72 hrs. of hold time?
- If yes have you done e-mail notification?
- Are samples within 24 hrs. of hold time or due date?
- If yes, have you spoken with Supervisor?
- Archiving bottles - If required, are they properly marked?
- Are there any problems? PM Notified? _____
- Were samples preserved correctly and pH-verified? _____

Due Date: 10-17-03

Received Date: 10-8-03

Received Time: 1630

Is date/time conversion necessary? N

of hours from AK Standard Time: _____

Received Temperature*: _____ °C

Thermometer ID: D-FC6

Cooler ID	Temp Blank	Cooler Temp
<u>1</u>	<u>1.9</u> °C	<u>5.3</u> °C
_____	_____ °C	_____ °C
_____	_____ °C	_____ °C
_____	_____ °C	_____ °C

*Temperature readings include thermometer correction factors

Delivery method (circle all that apply) Client

- Alert Courier / UPS / FedEx / USPS /
- AA Goldstreak / NAC / ERA / PenAir / Carlie
- Lynden / SGS-CT&E / Other: _____

Airbill # _____

Additional Sample Remarks: (✓ if applicable)

- Extra Sample Volume? _____
- Limited Sample Volume? _____
- Field preserved for volatiles?
- Field-filtered for dissolved? _____
- Lab-filtered for dissolved? _____
- Ref Lab required? grainsill
- Foreign Soil? _____

This section must be filled out for DoD projects (USACE, Navy, AFCEE)

Yes No

Is received temperature $4 \pm 2^\circ\text{C}$?

Exceptions: TB-1.9 Samples/Analyses Affected: _____

Rad Screen performed?

Result: _____

Was there an airbill? (Note # above in the right hand column)

Was cooler sealed with custody seals? Faxed to COE?

/ where: constant / on back

Were seal(s) intact upon arrival?

Was there a COC with cooler?

Was the COC filled out properly?

Did the COC indicate ACOE / AFCEE project? (if applicable)

Did the COC and samples correspond?

Were all sample packed to prevent breakage?

Packing material: BW, cardboard

Were all samples unbroken and clearly labeled?

Were all samples sealed in separate plastic bags?

Were all bottles for volatiles free of headspace?

Were correct container / sample sizes submitted?

Is sample condition good? _____

This section must be filled if problems are found.

Yes No

Was client notified of problems? _____

Individual contacted: _____

Date/Time: _____

Phone/Fax: _____

Reason for contact: _____

SGS/CT&E Contact: _____

Notes:

Completed by (sign): [Signature]

(print): Jamey Johnson

Login proof (check one): waived required performed by: _____

1036524



CT&E Environmental Services Inc.
CUSTODY SEAL



[Handwritten Signature]

10/8/03

1440

Signature: _____ Date/Time: _____

CT&E Environmental Services Inc.
CUSTODY SEAL



[Handwritten Signature]

10/8/03

1440

Signature: _____ Date/Time: _____

APPENDIX E – ADEC METHOD THREE CALCULATOR



Contaminated Sites Remediation Program

STEP 1:

Select the zone for the site. The definitions of these zones are as follows:

Under 40-inch Zone: South Central and the Interior

Over 40-inch Zone: Southeast

Arctic Zone: Areas north of latitude 68 degrees N, see definition in 18 AAC 75.990 (4))

- Under 40-inch Zone
- Over 40-inch Zone
- Arctic Zone

Also, select whether the default residential exposure assumptions will be used, or if commercial/industrial exposure assumptions are appropriate. See the definitions of residential and commercial/industrial in 18 AAC 75.990[105] and 18 AAC 75.990 [19], respectively.

- Residential
- Commercial/Industrial

Click the "continue" button to select chemicals for the site.

Continue



Contaminated Sites Remediation Program

STEP 2:

Select the chemicals present in soil at the site. Optionally, enter the maximum concentration (in units of mg/kg) of the chemical that will be present at the site to complete cumulative risk calculations. Then, click the "continue" button to edit site parameters.

Chemical Name	Is Chemical Present at Site?	Maximum Concentration (mg/kg)
Antimony	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Arsenic	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Barium	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Beryllium	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Cadmium	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Chromium (total)	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Chromium +3	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Chromium +6	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Cyanide	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Lead	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Mercury	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Nickel	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Selenium	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Silver	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Vanadium	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Zinc	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Acenaphthene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Acetone	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Aldrin	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Anthracene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Benzene	<input checked="" type="radio"/> Yes <input type="radio"/> No	0.0974
Benzo(a)anthracene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Benzo(a)pyrene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Benzo(b)fluoranthene	<input type="radio"/> Yes <input checked="" type="radio"/> No	

		0
Benzo(k)fluoranthene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Benzoic acid	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Bis(2-chlorethyl)ether	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Bis(2-ethylhexyl)phthalate	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Bromodichloromethane	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Bromoform	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Butanol	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Butyl benzyl phthalate	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Carbazole	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Carbon disulfide	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Carbon tetrachloride	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Chlordane	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Chloroaniline, p-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Chlorobenzene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Chlorodibromomethane	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Chloroform	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Chlorophenol, 2-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Chrysene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
cis-1,2-Dichloroethylene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
DDD	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
DDE	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
DDT	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dibenzo(a,h)anthracene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dichlorobenzene, 1,2-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dichlorobenzene, 1,4-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dichlorobenzidine, 3,3-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dichloroethane, 1,1-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dichloroethane, 1,2-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dichloroethylene, 1,1-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dichlorophenol, 2,4-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dichloropropane, 1,2-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0

Dichloropropene, 1,3-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dieldrin	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Diethyl phthalate	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dimethylphenol, 2,4-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Di-n-butyl phthalate	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dinitrophenol, 2,4-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dinitrotoluene, 2,4-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dinitrotoluene, 2,6-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Di-n-octyl phthalate	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Dioxin	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Endosulfan	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Endrin	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Ethylbenzene	<input checked="" type="radio"/> Yes <input type="radio"/> No	0.178
Fluoranthene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Fluorene	<input checked="" type="radio"/> Yes <input type="radio"/> No	0.013
HCH, a-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
HCH, b-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
HCH, g- (lindane)	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Heptachlor	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Heptachlor epoxide	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Hexachloro-1,3-butadiene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Hexachlorobenzene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Hexachlorocyclopentadiene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Hexachloroethane	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Indeno(1,2,3-c,d)pyrene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Isophorone	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Methoxychlor	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Methyl bromide	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Methylene chloride	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Methylphenol, 2- (o-cresol)	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Naphthalene	<input checked="" type="radio"/> Yes <input type="radio"/> No	0.0673
Nitrobenzene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0

N-Nitrosodi-n-propylamine	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
N-Nitrosodiphenylamine	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
PCBs	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Pentachlorophenol	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Phenol	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Pyrene	<input checked="" type="radio"/> Yes <input type="radio"/> No	0.0134
Styrene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Tetrachloroethane, 1,1,2,2-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Tetrachloroethylene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Toluene	<input checked="" type="radio"/> Yes <input type="radio"/> No	0.0603
Toxaphene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
trans-1,2-Dichloroethylene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Trichlorobenzene, 1,2,4-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Trichloroethane, 1,1,1-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Trichloroethane, 1,1,2-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Trichloroethylene	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Trichlorophenol, 2,4,5-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Trichlorophenol, 2,4,6-	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Vinyl Acetate	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Vinyl chloride	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
Xylenes	<input checked="" type="radio"/> Yes <input type="radio"/> No	0.145
DRO (Total)	<input checked="" type="radio"/> Yes <input type="radio"/> No	746
DRO Aliphatic	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
DRO Aromatic	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
GRO (Total)	<input checked="" type="radio"/> Yes <input type="radio"/> No	35.5
GRO Aliphatic	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
GRO Aromatic	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
RRO (Total)	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
RRO Aliphatic	<input type="radio"/> Yes <input checked="" type="radio"/> No	0
RRO Aromatic	<input type="radio"/> Yes <input checked="" type="radio"/> No	0



Contaminated Sites Remediation Program

STEP 3:

The following parameters may be modified with site-specific information. Note that some parameters can be calculated based on other parameters - if one value is changed, others may need to change as well. These parameters are noted below. The calculated parameters will be updated automatically unless the "Fix" checkboxes are selected. Select these boxes only if you have site-specific data for these parameters. Also, some parameters have acceptable ranges of values; if a value outside the acceptable range is entered then a warning message will appear. You will be allowed to continue without changing the value; however, the results of the calculator will likely be inappropriate.

For definitions of the following parameters, [click here](#). Please refer to the Guidance on Cleanup Standards Equations and Input Parameters for details.

Parameters for derivation of the Volatilization Factor and Soil Saturation Limit:

ρ_b : Dry soil bulk density (g/cm ³)	<input type="text" value="1.5"/>	
n : Total soil porosity ($L_{\text{pore}}/L_{\text{soil}}$) ^a	<input type="text" value="0.434"/>	<input type="checkbox"/> Fix
Θ_w : Water-filled soil porosity ($L_{\text{water}}/L_{\text{soil}}$) ^b	<input type="text" value="0.15"/>	<input type="checkbox"/> Fix
Θ_a : Air-filled soil porosity ($L_{\text{air}}/L_{\text{soil}}$) ^c	<input type="text" value="0.284"/>	<input type="checkbox"/> Fix
w : average soil moisture content	<input type="text" value="0.1"/>	
f_{oc} : organic carbon content of soil (g/g)	<input type="text" value="0.001"/>	

Notes:

^a If not measured, n is calculated as $1 - (\rho_b/\rho_s)$. The default value for ρ_s is 2.65 g/cm³.

^b If not measured, Θ_w is calculated as $w * \rho_b$.

^c If not measured, Θ_a is calculated as $n - (w * \rho_b)$.

Parameters for derivation of Migration to Groundwater cleanup level:

Some parameters are the same between the equations for the Migration to Groundwater pathway and the equations for the Volatilization Factor or Soil Saturation Limit. Please make changes to the parameters n , ρ_b , and f_{oc} above.

Θ_w : Water-filled soil porosity ($L_{\text{water}}/L_{\text{soil}}$) ^a	<input type="text" value="0.3"/>	<input type="checkbox"/> Fix
Θ_a : Air-filled soil porosity ($L_{\text{air}}/L_{\text{soil}}$) ^b	<input type="text" value="0.13"/>	<input type="checkbox"/> Fix
w : average soil moisture content ($g_{\text{water}}/g_{\text{soil}}$)	<input type="text" value="0.2"/>	
K : aquifer hydraulic conductivity (m/yr)	<input type="text" value="876"/>	
i : hydraulic gradient (m/m)	<input type="text" value="0.002"/>	
L : source length parallel to groundwater flow	<input type="text" value="32"/>	

I: infiltration rate (m/yr)

 d_a : aquifer thickness (m)

Notes:

^a If not measured, Θ_w is calculated as $w * \rho_b$.^b If not measured, Θ_a is calculated as $n - (w * \rho_b)$.

After modifying the above values with any site-specific data, click the "continue" button to calculate cleanup levels.



Contaminated Sites Remediation Program

STEP 4:

The following are the calculated cleanup levels for each chemical and pathway. Where values are provided for more than one pathway, the lowest of the values should be used as the soil cleanup level. Cleanup levels are in units of mg/kg. Any other chemical-specific requirements that must be considered follow the table of cleanup levels.

Chemical Name	Chemical Type	Ingestion	Inhalation	Migration to GW
Benzene	Organic	1040	11.2	0.0186
DRO (Total)	Petroleum	12500	12500	254
Ethylbenzene	Organic	204000	88.6	5.51
Fluorene	Organic	81800		272
GRO (Total)	Petroleum	1400	1400	295
Naphthalene	Organic	40900	133	20.5
Pyrene	Organic	61300		1540
Toluene	Organic	409000	175	5.4
Xylenes	Organic	1000000		77.4

Chemical	Notes
DRO (Total)	The Maximum Allowable DRO concentration is 12500 mg/kg.
GRO (Total)	The Maximum Allowable GRO concentration is 1400 mg/kg.

These cleanup levels should be printed. To print, please select the print function on your web browser. This page may also be saved and emailed for documentation of the calculated cleanup levels. For best results, save the page as a "Web Archive for email" file (.mht) if your browser supports this; in Internet Explorer 5 choose "Save as..." from the file menu and change the "Save as type" to "Web Archive for email". Other browsers should have a similar choice.

For reference, the parameters used to calculate these levels are as follows (with defaults that have been changed listed in parentheses):

Volatilization Pathway:

ρ_b : Dry soil bulk density (g/cm ³):	1.5	(Default: 1.5)
n: Total soil porosity (L_{pore}/L_{soil}):	0.434	(Default:
θ_w : Water-filled soil porosity (L_{water}/L_{soil}):	0.15	(Default: 0.15)
θ_a : Air-filled soil porosity (L_{air}/L_{soil}):	0.284	(Default:
w: average soil moisture content	0.1	(Default: 0.1)

f_{oc} : organic carbon content of soil (g/g): 0.001 (Default:

Groundwater Pathway:

θ_w : Water-filled soil porosity (L_{water}/L_{soil}): 0.3 (Default: 0.3)
 θ_a : Air-filled soil porosity (L_{air}/L_{soil}): 0.13 (Default: 0.13)
w: average soil moisture content (g_{water}/g_{soil}): 0.2 (Default: 0.2)
K: aquifer hydraulic conductivity (m/yr): 876 (Default: 876)
i: hydraulic gradient (m/m): 0.002 (Default:
L: source length parallel to groundwater flow 32 (Default: 32)
I: infiltration rate (m/yr): 0.13 (Default: 0.13)
 d_a : aquifer thickness (m): 10 (Default: 10)

The exposure scenario and zone for this project: Under 40-inch Zone - Commercial/Industrial Exposures
Today's date: 2/10/04

Enter site name to view on printout:

If you wish to calculate cumulative risks based on concentrations that have been entered for the site, select the "continue" button below. If you do not wish to complete this step, please note that you must demonstrate that the calculated cleanup levels will not produce unacceptable cumulative risks before they will be accepted. If cumulative risks are above the benchmarks, the cleanup levels should be modified downwards. See the Guidance on Cleanup Standards Equations and Input Parameters for details.

Continue

Alternatively, to return to the first step to rerun the calculator or change parameters, [click here](#).

APPENDIX F – SITE PHOTOGRAPHS

Appendix F – Site Photographs



04/29/2003 – Gas Monitoring Points MP-1, MP-2, MP-3 South of Side Building 986



08/22/2003 – Gas Monitoring Points MP-1, MP-2, MP-3 South of Side Building 986



08/22/2003 – Groundwater Monitoring Well AP-3022, AP-3020, and AP-3648 South Side Building 986



08/22/2003 – Groundwater Monitoring Well AP-3020 South Side Building 986



08/22/2003 – CB-14 Location and Groundwater Monitoring Well AP-3648 South Side of Building 986



08/22/2003 – CB-13 Location and Vapor Extraction System South Side of Building 986



08/22/2003 – CB-15 Location and Vapor Extraction System South Side of Building 986



08/22/2003 – CB-12 Location and Building Heating Oil Storage South Side of Building 986



08/22/2003 – CB-11 Location South Side of Building 986



08/22/2003 – Soil Bore and Vapor Extraction Site South of Side Building 986



08/22/2003 – CB-13, CB-11, CB-12 Soil Bore Locations South Side of Building 986



08/22/2003 – CB-13 and Groundwater Monitoring Well South Side Building 986



10/07/2003 – Soil Boring of CB-14 South- Southeast Corner of Building 986



10/07/2003 – CB-13 in Foreground and Soil Boring of CB-14 South- Southeast Corner of Building 986



10/08/2003 – Soil Bore Testing Work Station



10/08/2003 – Soil Bore Sample and PID Meter at Work Station



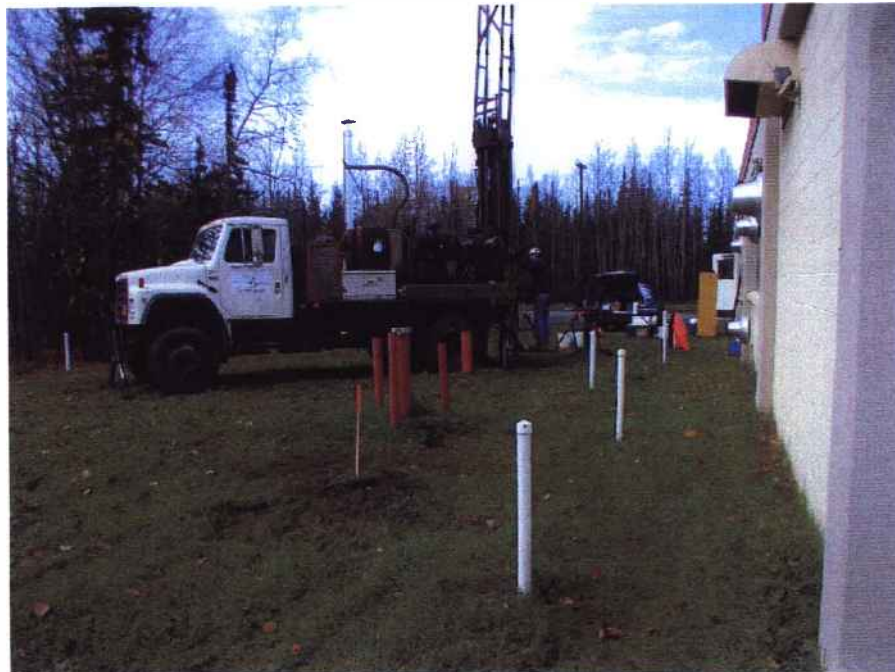
10/07/2003 – Boring of CB-14 on South-Southeast Corner of Building 986



10/08/2003 - Boring of CB-15 on Southside of Building 986



10/08/2003 - Boring of CB-15 on Southside of Building 986



10/08/2003 - Boring of CB-15 on Southside of Building 986



10/08/2003 – Backfilled and Cap of CB-15 on Southside of Building 986



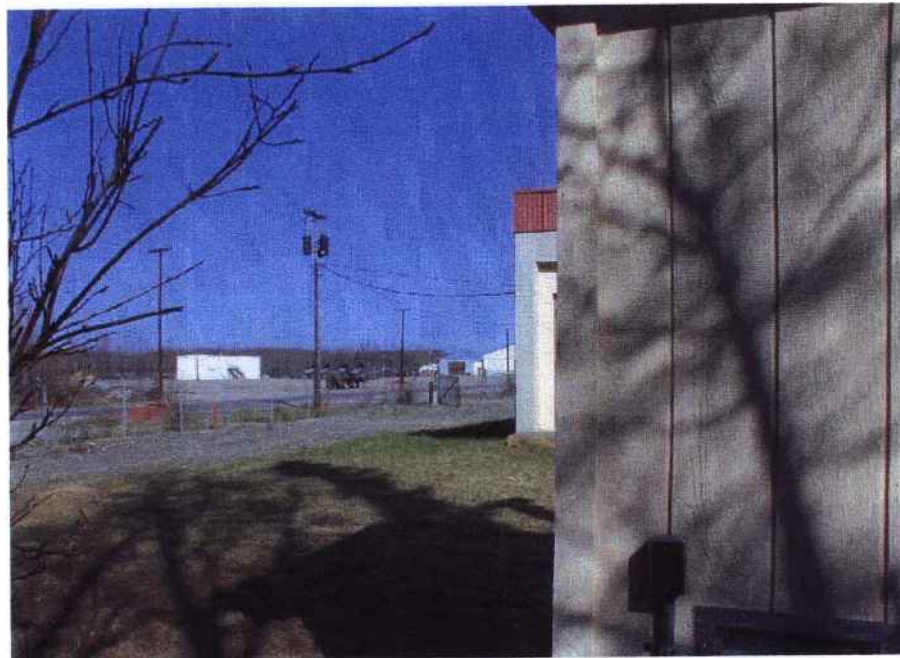
10/08/2003 – Backfilled and Cap of CB-12, CB-13, CB-14, and CB-15 on Southside of Building 986



10/08/2003 – Backfilled and Cap of CB-12, CB-13, CB-14, CB-15, and BV/SVE Building for Vapor Extraction System on Southside of Building 986



10/08/2003 – Backfilled and Cap of CB-12, CB-13, CB-14, and Building Heating Oil Storage on Southside of Building 986



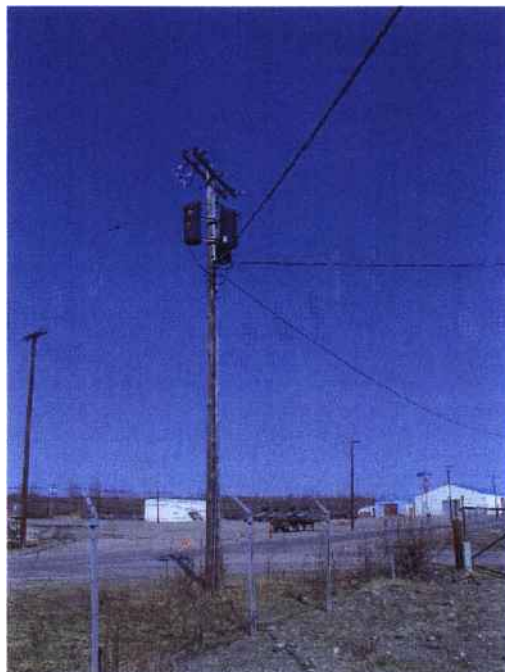
04/29/2003 – Site Electrical, Power Pole West Side of Building 986



04/29/2003 – Blower Building and Vapor Extraction Piping South of Building 986



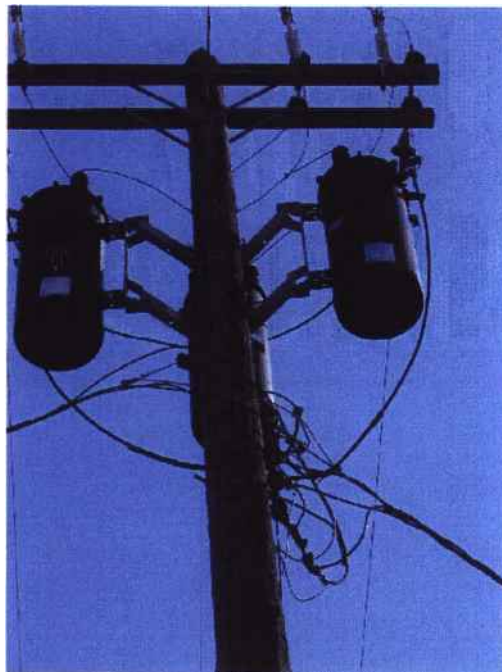
04/29/2003 – Blower Building and Vapor Extraction Piping South of Building 986



04/29/2003 – Site Electrical, Power Pole and Phone Terminal Box Northwest Side of Building 986, Electrical and Phone Lines are Underground But Terminate on Pole and Pedestal



04/29/2003 – Site Electrical, Power Pole and Phone Terminal Box Northwest Side of Building 986



04/29/2003 – Site Electrical, Power Pole and Phone Terminal Box Northwest Side of Building 986



04/29/2003 – Phone Terminal Box Northwest Side of Building 986



04/29/2003 – West View of Building 986, Power Pole and Blower House