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Pure Resources Lovington Paddock Investigation and Remediation Pilot Project

(October 2003 to June 2004)

Report Date July 2004

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ARCADIS

Infrastructure, buildings, environment, communications

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Transmittal Letter

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Oil Conservation Division
Environmental Bureau

ENVIRONMENTAL

To:
Bill Olson
NMOCD
Santa Fe, New Mexico

Copies:

From:
Frank Kieffer

Date:
13 July 2004

Subject:
Pure Resources Report

ARCADIS Project No.:
MT000803.0001

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Pure Resources Lovington Paddock Investigation and Remediation Pilot Project

(October 2003 to June 2004)

Report Date July 2004

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Our Ref.:
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Date:
June 29, 2004

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Executive Summary

Pure Resources, Inc. (Pure) contracted ARCADIS G&M, Inc. (ARCADIS) to define the downgradient limit of hydrocarbon and chloride plumes in the Ogallala Aquifer at the Lovington Paddock area of southeastern New Mexico. In addition, ARCADIS was authorized to conduct a pilot project for low-flow sparging (biosparging) as a potential remedy for hydrocarbon plumes at the site. The work plans were approved by the New Mexico Oil Conservation Division (NMOCD) and the project commenced on October 30, 2003. Well construction, development and sampling were completed on November 6, 2003. The results of both the plume delineation and the biosparge testing are discussed in this report.

Four monitor wells were drilled. Three monitor wells were constructed for the investigation of the hydrocarbon plumes and one monitoring well completed for the investigation of a potential chloride plume. Groundwater samples and water level elevations were collected from the wells to evaluate the nature and extent of contamination at the site and other data pertinent to meeting the objectives of the work plan.

One biosparge well was constructed. A pilot biosparge test was conducted for a 90-day period. The text was completed in May 2004.

Groundwater Evaluation

Groundwater samples were collected from each new monitoring well to determine the quality of the groundwater including general ionic chemistry, benzene, toluene, ethylbenzene and xylenes (BTEX), total petroleum hydrocarbons (TPH) by gasoline range and diesel range and polyaromatic hydrocarbons (PAH).

The groundwater elevation map prepared from the November 2003 water level measurements demonstrates a southeastern groundwater gradient of approximate 0.017 feet per foot, an increase from the previously determined gradient of 0.012 feet per foot.

Hydrocarbon Plume Delineation

Phase-Separated Hydrocarbons

No phase-separated hydrocarbons (PSH) were observed in any of the monitoring wells drilled for this investigation nor during a round of monitoring well water level measurements collected in November 2003.

Dissolved Phase Hydrocarbons

Only the BTEX compound xylene was detected in one of the new monitor wells (MW-O) drilled to define the downgradient extent of hydrocarbon plumes. The concentration of xylene is this groundwater sample was 0.001140 milligrams per liter mg/L, just slightly above the laboratory detection limit of 0.00100 mg/L but below the New Mexico Human Health standard of 0.62 mg/L.

Chloride Plume Delineation

A new monitoring well, MWD-2, was drilled immediately downgradient to monitor well MW-D, which had been completed in the upper 20 feet of the shallow aquifer and had a chloride concentration of 341 mg/L in the groundwater. Monitoring well MW-D2, drilled as a fully penetrating aquifer well, was completed at a total depth of 242 feet below ground level (bgl). A conductivity profile and four depth interval samples, spaced across the aquifer thickness, were collected and laboratory analyzed for general ionic chemistry. The conductivity profile showed very little variation from the base of the aquifer to the water table. None of the interval samples indicated a chloride concentration higher than what had been observed earlier in the groundwater sampling of monitor well MW-D. This indicates that brine water accumulation has apparently not occurred in the lower portion of the aquifer in this area.

Biosparge Pilot Project

The biosparge pilot project was conducted for a period of approximately 90 days, compressor problems during the 30 to 60 day interval extended the actual time period during which the testing was accomplished.

The biosparge well was positioned within an array of existing monitoring wells located in a heavily hydrocarbon impacted soil and groundwater area. The hydrocarbon impact at the site consists mainly of the volatile organic compounds of BTEX. The

groundwater impact in the central portion of the hydrocarbon plume at the time of the pilot test start-up was in the one to three mg/L benzene range.

Both groundwater and soil vapor samples were collected from the monitoring wells for the evaluation of the pilot project. Groundwater sampling consisted of the laboratory analysis of general water ionic chemistry, BTEX, total organic carbon (TOC) and dissolved permanent gases that included methane, oxygen and carbon dioxide. Soil vapor sampling consisted of laboratory analysis of BTEX and permanent gases.

Results of Biosparging

The radius of influence of the low-flow biosparging well has been determined to be at least 85 feet and less than 110 feet in the groundwater. The biosparge influence in the vadose zone extended to 250 feet. Total BTEX was volatilized from groundwater in the pilot well area into the vadose zone. Carbon dioxide concentrations increased indicating that approximately 2,600 pounds of hydrocarbons were degraded in the vadose zone during the pilot test.

Introduction

Pure is concerned about the potential human health and environmental impacts to subsurface soils and groundwater from historical releases of hydrocarbons (crude oil) that have occurred on the ATB 1-1 Site (site), located in the Lovington Paddock production area of Lea County, New Mexico. Pure contracted ARCADIS to review historical documentation of the 1998-2002 investigation of hydrocarbon sources and groundwater plumes at or adjacent to the site. After evaluating these previous investigations, ARCADIS presented Pure with a work plan to further investigate the status and sources of hydrocarbon impacts in soils and groundwater.

Following the installation of 12 monitor wells in June 2003, a summary of the extent of soil and groundwater contamination on the site was prepared and submitted to the NMOCD in September 2003. The report was entitled Environmental Investigation of the Lovington Paddock Site.

The results of the study indicated the following phenomena:

- The groundwater gradient is to the east-southeast at approximately 0.012 feet/foot (the groundwater gradient was historically to the northeast).
- The gradient increases to the southeast in response to the pumping of agricultural water wells.
- The benzene plume and other less important hydrocarbon plumes are presently elongated more or less along an east-west axis and roughly centered in the area of monitoring wells MW-N, C and A. These wells are located in the southern portion of the site.
- An apparent low concentration chloride plume exists in the MW-D area;
- The southern and eastern extent of groundwater impact was not determined by the monitoring wells drilled.
- Hydrocarbon soil impacts are most extensive vertically in the area described by monitor wells MW-A, MW-B and MW-C.

- No PSH was observed on the groundwater in any monitoring well as it had been in the past in other site monitoring wells, likely due to the rapid decline in water levels causing hydrocarbons to remain in the extended transition zone soils.

- Investigation for hydrocarbon sources at the site indicate that a portion of the responsibility may be associated with the EOTT Pipeline.

Based upon these findings, the most significant of which was that the limits of hydrocarbon impacts had not been established, Pure requested additional recommendations from ARCADIS to define the limits of hydrocarbon impact and to apply a remedial technology to the site as a pilot project acceptable to the NMOCD. ARCADIS recommended the drilling of four additional monitoring wells: three drilled to establish the downgradient extent of the hydrocarbon plumes; and one drilled to investigate a potential chloride plume.

Site Location and Background

The site is located in Lea County, southeastern New Mexico, in the southeast quarter of the southeast quarter of Section 1 Township 17 South Range 36 East (Figure 1). The site is approximately one mile west of the intersection of New Mexico State Highway 17 and Stiles Road, a few miles south of the town of Lovington.

Area operations at the site include various oil production operations and aboveground as well as buried pipelines that cross the site. In addition, there is an udder cream manufacturing facility, AST WEST, located immediately south of the site (Figure 2). Effluent from the udder cream manufacturing process is used to sprinkle irrigate an area immediately north of the AST WEST fence line and within the site investigation area.

A dairy cattle farm is located to the east and southeast of the site. Goff Dairies is using groundwater supply wells, labeled as WW-1, -2, -3 and -4 on Figure 2, for the irrigation of cattle feed crops.

Previous groundwater and soil investigations have been conducted for Pure Resources, and its antecedent operator, by Highlander Environmental Corp. (Highlander). A total of 10 monitoring wells and eleven soil borings were a part of the earlier investigative program. Of the ten monitoring wells, the groundwater in eight wells indicated impact with varying concentrations of hydrocarbons including wells with (PSH). The earlier

wells that did not indicate groundwater impact were MW-1 (located to the northwest of the ATB1-1 pit) and MW-8 (centrally located at the extreme northern extent of the site investigation). In addition, ARCADIS has drilled 18 wells including the most recent wells discussed in this report.

Goff Dairies completed several water supply wells in 2001-2002 for the purpose of irrigating lands that lay to the south and to the east of the site. As a result of the irrigation water production, significant changes in the area groundwater water levels, groundwater flow direction and gradient have occurred. Also AST WEST appears to be operating at least one water supply well. All of the monitor wells drilled prior to ARCADIS' involvement at the site were rendered useless when the water levels fell to depths below the lowest part of the well screens. The rate of water level decline in the wells on site was reported to be more than three feet in an approximate three-month interval in early 2002. New replacement monitoring wells were necessary to provide continuing monitoring of aquifer hydraulics and groundwater quality.

Based upon the previous investigations and the results of the current study, the historical uniform northeast groundwater gradient has changed to an east-southeast gradient and also steepened as an apparent result of the pumping of the four Goff Dairy water supply wells. These water supply wells are located at varying distances of approximately 600-1,300 feet from the site monitor wells. In addition, the change in the groundwater gradient from a general northeast to southeast trend means that the existing plumes are now moving in a new direction complicating the interpretation of plume geometry and the interpretation of the source(s) of groundwater plumes.

Current Site Investigations

Purposes and Objectives

The purposes and objectives of the current investigations are composed of two elements:

- Determine the present extent of the hydrocarbon plumes and in particular the downgradient edge of the plumes; and
- Determine if the elevated chloride concentration at MW-D increases in concentration at depth in the aquifer.

Investigative Program

A total of four monitoring wells were installed to delineate the extent of groundwater plumes. Three of the wells, MWO, MW-P and MW-Q, were drilled to determine the downgradient extent of hydrocarbons in the groundwater. Additionally, other site wells were tested for hydrocarbons.

The fourth monitoring well, MW-D2, was drilled to define the vertical extent of elevated chlorides observed in monitoring well MW-D.

Hydrocarbon Plume Delineation

Two activities were associated with the hydrocarbon plume delineation. These were:

- sampling agricultural water wells downgradient of the Lovington Paddock monitoring wells, and
- the drilling and sampling of three monitoring wells located between the existing upgradient monitoring well array and the downgradient agricultural water wells.

Monitoring wells MW-O, MW-P and MW-Q were drilled to determine the downgradient extent of hydrocarbons in the groundwater. The locations chosen for these wells at the downgradient portion of the groundwater plume precluded the likelihood that they would be useful for delineating source areas. Figure 2 shows the location of site groundwater wells.

Agricultural Water Well Sampling

Groundwater samples were collected from the offsite agricultural/commercial water supply wells on October 9, 2003 to determine if there were any indications of hydrocarbons in the wells. Indications of hydrocarbons in the wells would not, of itself, indicate that the source of the hydrocarbons in the agricultural well groundwater was from the hydrocarbon plume(s) associated with the Lovington Paddock site because hydrocarbons could be associated with other plume(s) or sources. The wells from which samples were collected by a Pure representative included agricultural water supply wells denoted as WW-1, WW-2, WW-3 and WW-4. A groundwater sample was also collected from the udder cream manufacturing well labeled as AST West (Figure 2). Samples were laboratory analyzed for BTEX. No hydrocarbons were detected in the five samples collected. Results of the sampling are presented in Table 1, and laboratory data is found in Appendix A. However, one of the agricultural water

wells had an elevated nitrate concentration of 22.5 mg/L. The national drinking water standard for nitrate is 10 mg/L.

Elevated nitrates in groundwater are often associated with contamination from animal waste or agricultural fertilizer application. The detected elevated nitrate concentration in this well could be the result of poor plumbing of the fertilizer application system into which the wells are connected. Irrigation water carrying elevated nitrate concentrations as a part of a fertilizer administration program with irrigation water may have siphoned back into the well if there is no check valve in the line to prevent this occurring.

Monitor Well Construction and Sampling

The three hydrocarbon plume delineation wells were drilled at locations as shown in Figure 2. The monitor well locations were chosen to be at or beyond the expected limits of the groundwater hydrocarbon plume(s). The pumping of agricultural groundwater supply wells to the south and east of the site has caused the groundwater plumes to move to the south and east in response to the lowering water table surrounding these agricultural supply wells. The rate of the plume movement is unknown but has likely been accelerated by the increasing groundwater gradient resulting from the agricultural well pumping.

Monitoring well construction began on October 30, 2003 and was completed on November 5, 2003. All wells were drilled using mud rotary equipment drilling a 7 7/8th-inch hole to total depth. The well casing consisted of 4-inch Schedule 40 PVC blank and screens with 0.0200-inch slots. The well logs with lithology and monitor wells construction details and the New Mexico Completion Reports are found in Appendix B. A tabulation of monitoring well construction is found in Table 2.

Following the drilling of the wells, the wells were developed by pumping in excess of 1,000 gallons of groundwater from each well. Following development the wells were sampled for BTEX, TPH/GRO-DRO, PAH and general water chemistry.

Groundwater Results

Water Level Data

Depth to water measurements were made on each new well and the other site monitoring wells on November 6, 2003 and is presented in Table 2. No PSH were

observed in any well. The water level measurements in November had declined an average of approximately 2.29 feet per well from the previous water level survey conducted on August 15, 2003, an indication of the continued pumping of the agricultural water wells nearby.

A contour map of the groundwater elevations from November 6, 2003 indicates a general southeastern gradient of approximately 0.017 feet per foot (Figure 3). The previously calculated gradient was approximately 0.012 feet per foot in July 2003. The increase in the gradient is most likely the result of the pumping of the downgradient water supply wells.

Hydrocarbons in Groundwater

Samples collected from monitoring wells MW-P, MW-O and MW-Q were analyzed for BTEX, TPH GRO/DRO, and semivolatile organic compounds. No TPH species or semivolatile organic compounds were detected. The only detection of the BTEX compounds occurred in MW-O. Xylene was detected at a concentration of 0.00140 mg/L in the sample from MW-O. The laboratory detection limit concentration for xylene is 0.00100 mg/L. The New Mexico human health standard for xylenes is 0.62 mg/L.

Monitor well MW-O is located approximately 400 feet east-southeast and downgradient to monitoring well MW-C and 600 feet west-northwest of the nearest receptor which is water well WW-3 (Figure 2).

No other samples for hydrocarbon plume delineation were collected from any other site monitoring well. However, samples were collected from selected monitoring wells as a part of the biosparge remedial pilot project. Those results are discussed in the Biosparge Pilot Project portion of this report.

Figure 4 shows the location and BTEX analyses from the October 2003 sampling of water supply wells and the November 2003 sampling of new monitoring wells. Superimposed onto the map are the July 2003 benzene plume contours and the November groundwater gradients at the edges of the plume. The figure is one way to demonstrate that the monitor wells drilled for this investigation should be adequate to detect the downgradient movement of the plume in the future so that, with continued groundwater monitoring, exposure to a receptor can be avoided.

Chloride Plume Delineation

The results of the first round of drilling to define the plumes at the Lovington Paddock site indicated an elevated chlorides hydrocarbon in monitoring well MW-D. While the concentration of chlorides in MW-D was at 356 mg/L, this was from the upper part of the aquifer. It is known that chlorides often associated with brine contamination from oil and gas operations will generally increase in concentration with increasing depth within an aquifer and are especially concentrated in the very deepest part of the aquifer.

To determine if the chloride concentration of the aquifer at the MW-D location would be significantly higher at depth, MW-D2 was drilled approximately 30 feet to the east and downgradient of MW-D. MW-D2 was drilled completely through the shallow aquifer and into the underlying red beds. The well was completed at a total depth of 242 feet. The base of the shallow aquifer was determined to be at a depth of approximately 215-220 feet at the base of a thin gravel layer.

The well was developed and 2,000 gallons of groundwater produced from the well prior to sampling. The chloride concentration of the "after purge" sample was 274 mg/L chlorides, similar to the concentration recorded in MW-D of 356 mg/L when it was developed and sampled from a total depth of 105 feet.

After allowing the water column in MW-D2 to stabilize for approximately two weeks, a conductivity profile and interval sampling of the well was conducted.

A conductivity profile is performed by using a downhole probe on an electrical cable which measures the conductivity of the water in the well at various depths. For the purpose of this profile, conductivity measurements were made every ten feet beginning at five feet below the water table. A total of 13 measurements were made and recorded while the probe was lowered into the wellbore with the last reading at an approximate depth of 217 feet, the present total depth inside the casing. The original total depth of the well is 242 feet bgl. However, it appears that sediment (probably from the clays below the shallow aquifer) may have entered the well during its development and settled in the lower portion of the casing. The process of stopping every ten feet and recording the conductivity was repeated while the probe was being removed from the wellbore. The measurements are presented in Table 3. The conductivity did not vary significantly throughout the profile. The lowest conductivity from the conductivity profiling indicating the least mineralized water was 1600 $\mu s/cm^2$. The highest reading, indicating the most mineralized water, had a conductivity of 2100 $\mu s/cm^2$. There was some concern that the probe was not registering properly because there was so little

variation in the conductivity. The temperature readings were known to be incorrect. However, the conductivity and the temperature readings are from different sensors on the probe.

To calibrate the conductivity reading to the chloride concentration in that depth interval, groundwater samples were collected using an interval sampler. An interval sampler is a hollow tube which has a sealable top and bottom plug. The open sampler is lowered on a wire line to the desired depth in the well. To this point the open sampler is not disturbing the water column and has not trapped any sample. A messenger weight is dropped down the wire line connecting the sampler to the surface. The messenger trips the top and bottom plugs to close and secures the sample from that interval inside the interval sampler. The sampler is retrieved to the surface and the sample containerized and preserved for laboratory analysis.

Four interval samples were collected and laboratory analyzed for general water chemistry. Interval groundwater samples were collected at depths of 90 feet, 125 feet, 175 feet and 215 feet in MW-D2. The depth to water in the MWD-2 at the time of the sampling was 86.30 feet.

The results of the laboratory analyses of the samples are shown in Table 4. The conductivity probe and sampler would not go below 217 feet even though screened casing had been set to 242 feet. The depth of 217 feet is approximately the depth of the basal aquifer gravel observed while drilling. It is possible that the clays beneath the aquifer came into the casing through the screens during well development filling the lower portion of the casing and blocking sampling below this point.

The samples were analyzed for general water chemistry including alkalinity, chlorides, sodium, potassium, magnesium, carbonate and bicarbonate, sulfate, total dissolved solids, pH and conductivity.

The laboratory determined chloride concentrations from the interval sampling varied from 314 mg/L at 90' bgl to 248 mg/L at 174' bgl.

The results of the laboratory analysis show strong correlation to the borehole conductivity profile. This indicates that the conductivity probe was working properly. The laboratory reports and field observations support one another in indicating that there is no significant increase in the conductivity or the general ionic make up, including the chloride concentration, of the groundwater across the thickness of the aquifer.

The chloride concentrations exhibited in the MW-D and MW-D2 area are not significantly different; however they do, in general, slightly exceed the New Mexico Domestic Water Supply standard of 250 mg/L.

Plume Delineation Conclusions and Recommendations

The hydrocarbon plume(s) at the Lovington Paddock site have been defined in areal extent by the three downgradient monitor wells, MW-O, MW-P and MW-Q.

The potential chloride plume associated with MW-D and MWD-2 appears to be of minor significance in this area.

There is no further recommendation for defining the groundwater hydrocarbon plume except to continue monitoring the movement of the plume (s) in response to natural or artificial forces and prevent exposure of a receptor to the plume.

Investigation for hydrocarbon sources at the site indicate that a portion of the responsibility may be associated with the EOTT Pipeline.

Purposes and Objectives of the Biosparge Pilot System

The purposes and objectives of the remedial pilot project were to evaluate the potential remedial technology of low-flow air sparging (biosparging) to diminish the concentrations of hydrocarbons in groundwater and soils.

Remedial Pilot Project Plan

Concept and Plan

Biosparging is a process for in situ remediation that is particularly effective for the remediation of soils and groundwater impacted with petroleum hydrocarbons. The air injection rates into the sparge wells are relatively low, generally less than 10 standard cubic feet per minute (SCFM). The injected air provides oxygen to stimulate the aerobic biodegradation of the impacting hydrocarbons in the groundwater and vadose zone and induces some amount of circulatory groundwater flow around the sparge well enhancing the radius of influence of the sparge point.

For remediation of the groundwater hydrocarbon plume at the Lovington Paddock area, ARCADIS recommended a biosparging system that would use low flow rate air sparging to stimulate in-situ aerobic bacteria to increase in numbers and to consume the hydrocarbons as a food source. The advantage of these systems is the effectiveness of the process in reducing hydrocarbon contents in the media, the simplicity of operation and the relatively low costs of operation and maintenance.

Biosparge Well Location and Monitoring Scheme

The location for the pilot project was selected so the monitoring wells surrounding the sparge well could be used to evaluate the effectiveness of the sparging process. This meant that the distribution of monitoring points, both for vapor and groundwater monitoring should be able to indicate the range and intensity of the biosparging process upgradient, downgradeint and crossgradient. In addition, using existing wells rather than drilling observation wells lowered the cost of the pilot project. The plan was also able to utilize former monitoring wells which are now dry, a result of the water supply well pumping, for the measurement of soil vapors.

The zone of influence around a sparge well is mainly determined by the type of soil/rock and the homogeneity of the soil/rock. For planning purposes, the zone of influence around the biosparge well was estimated to be approximately 50 feet.

In the saturated wellbore there will be some volatilization of impacting BTEX hydrocarbons, as well as stimulation of aerobic biodegradation. The volatilized BTEX hydrocarbons will flow into the vadose zone, where mixed with the oxygen in the injected air, they will be rapidly be biodegraded. The oxygen in the injected air will also stimulate the biodegradation of petroleum hydrocarbons that are present as an absorbed phase in the vadose zone and the capillary fringe.

The rise of the air in the wellbore will also cause some upwelling of the groundwater adjacent to the well. This will stimulate some level of advective groundwater flow away from the well, extending the lateral impact of the air injected into the biosparge well.

With the aerobic stimulation accompanying air sparging, native aerobic biota will increase in number and increase the manufacture of biosurfactants. Biosurfactants can be useful in releasing hydrocarbons adsorbed to the soil and may increase the potential

for PSH recovery, particularly in the capillary fringe, further increasing the hydrocarbon removal rate from impacted media.

Biosparge well BW-1 was positioned approximately 30 feet northwest of monitoring well, MW-A. The selection of the biosparge well location was based upon the distribution of monitoring points optimized to provide data in the crossgradient, downgradient and upgradient position from the biosparge well. The pilot test was designed to evaluate the radius of influence in soils and groundwater in both the vadose and saturated zones. The existing monitoring wells were used to evaluate the efficiency of the biosparge system through the collection of groundwater samples and soil vapor samples.

The well was drilled and constructed similarly to the monitoring wells at the site. Details of the construction are found in Appendix B. Screens in the biosparge well extended from a depth of approximately 20 feet bgl to 125 bgl with the bottom of the screen more or less 45 feet below the water table and the screened interval extending approximately 60 feet into the vadose zone above the water table. The purpose of the extended screened interval was to allow the injected air to also make contact with the vadose zone soils as well as with the groundwater. The availability of the air to both the unsaturated and saturated zone increases its usefulness for destroying hydrocarbons in both zones.

One soil sample was collected from biosparge well BW-1 to evaluate soil conditions in the well bore which was to be used for the air injection well. A photo ionization detector (PID) was used to screen the soil samples for volatile hydrocarbons. The soil sample collected from the interval 56-57 feet bgl had a PID reading of 856 ppm and was submitted to the laboratory for analysis of BTEX and TPH DRO/GRO. The soil sample did not detect benzene but did detect the other BTEX compounds. Both the GRO (157 mg/kg) and the DRO (1160 mg/kg) analyses were consistent with other soil samples taken in this area and exceed the NMOCD Standard for TPH at this site of 100 ppm.

The biosparge well was developed by pumping more than 1,000 gallons of purge water, and then sampled for BTEX, TPH DRO/GRO, PAH and general water chemistry parameters. The results of that testing are shown in Table 1 and are consistent with previous groundwater impacts defined in the area.

A compressor run by an electric motor was placed at the biosparge well. A manifold consisting of steel piping with appropriate flow regulators and gauges, pressure gauges and air filters was connected from the compressor to the wellhead. The wellhead connect is attached to the drop tube which extends to the base of the well where the sparge point is located at the bottom of the screened interval. The wellhead assembly seals the wellbore so that vapors do not escape from the well. Injected air primarily flows up the wellbore causing a density driven air lift of the water in the well bore stimulating circulatory flow adjacent to the sparge well. A minor secondary flow of injected air migrates out of the sparge well screen into the adjacent saturated zone. The injected air travels up the wellbore, migrates to some degree into the adjacent saturated zone formation, exits the water surface in the wellbore, and then migrates into the adjacent vadose zone. Because there are no emissions from the sparge well or the nearby sealed monitoring wells, there is no need for off-gas treatment.

Biosparge Operating Plan

The compressed air is delivered to the well continuously from the air tank at the compressor. The compressor cycles on and off to maintain the minimum tank pressure necessary for operation of the system. The only scheduled non-operating sparge time is when the compressor is undergoing maintenance or the sparge well is being sampled.

Every day a Pure employee checks the operational status of the system and records temperature, pressure and flow conditions.

Biosparge Evaluation Plan

Details of the biosparging project routines are specified in the Work Plan submitted to the NMOCD. Overall the plan describes the techniques which are to be employed to operate and evaluate the biosparge system. The evaluation of the system consisted of monitoring well bore vapors and groundwater chemistry. This evaluation included the collection of field data and the submission of samples for laboratory analysis to establish baseline, one week, 30 day, 60 day and 90 day conditions during the pilot project. These sampling intervals were approximations and were not intended to infer a rigid schedule. Results of the sampling were to establish the efficiency of biosparging at the Lovington Paddock site. Sampling parameters were chosen to determine two criteria. These criteria were:

- Indications of the magnitude and aerial extent of the biological activity stimulated by the sparging; and

- Indications that hydrocarbon concentrations in soil vapors and groundwater where decreasing as a result of air sparging.

Biological activity was gauged by the analysis of samples for:

- iron (ferrous iron, dissolved iron and total iron in groundwater);
- oxygen (O_2) dissolved in groundwater and in vapors;
- carbon dioxide (CO_2) dissolved in groundwater and in vapors;
- methane in groundwater and vapors;
- alkalinity in groundwater;
- total dissolved solids (TDS) in groundwater;
- sulfate in groundwater; and
- hydrogen sulfide in groundwater.

Hydrocarbon concentrations were determined by using:

- PID;
- BTEX in vapors;
- BTEX dissolved in groundwater; and
- Total organic carbon (TOC) in groundwater.

The schedule for the pilot project groundwater and soil vapor sampling is shown below.

Table A Biosparging Pilot Study - Sampling Schedule for Injection Well, Groundwater Monitor Wells, and Vapor Phase Monitor Wells and Points

	Base Line	Week 1	30 Days	60 Days	90 Days
Groundwater					
Field Parameters	X	X	X	X	X
BTEX	X		X	X	X
Other Lab Parameters	X		X		X
Lab Permanent Gases	X		X		X
Vapor Phase					
Field VOC	X	X	X	X	X
Lab Gases	X		X	X	X
Soil Vapor Probe[1]	X		X		X
Physical Parameters					
Water Level	X	X	X	X	X
Injection Well Data	X	X	X	X	X

[1]Three points at a depth of 3 to 4 feet and radial distance from injection well at 10, 30 and 90 feet

Figure 5 is a map which shows the study area and the wells used for the biosparge monitoring of groundwater and soil vapors.

Groundwater Measurements

The following wells were used to measure groundwater parameters:

- MW-A (at 30 feet from the sparge well & slightly down gradient);
- MW-B (at 140 feet & downgradient);
- MW-C (at 85 feet & upgradient);
- MW-H (at 110 feet and slightly upgradient to crossgradient);
- MW-I (at 140 feet & upgradient);

- MW-N (at 185 feet and upgradient); and
- BW-1 (biosparge well).

Groundwater samples were collected from monitoring wells using low-flow sampling techniques. The low-flow technique uses a pneumatically driven (CO_2) bladder pump to lift groundwater to the surface where groundwater parameters were measured in a flow-through cell. The parameters included:

- Temperature;
- Dissolved oxygen;
- Redox potential;
- pH;
- Specific conductance;
- Ferrous iron concentration (via a field kit); and
- Hydrogen sulfide concentration (via a field kit).

Upon stabilization of the groundwater flow parameters, samples for laboratory analysis were collected for the determination of the concentrations of:

- BTEX by EPA Method 8021B;
- Total alkalinity;
- Total dissolved solids;
- Total iron;
- Dissolved iron;
- Sulfate;
- Total organic carbon; and
- Permanent gases in groundwater (nitrogen, carbon dioxide, oxygen, & methane) by Microseeps.

Water levels in the biosparge project monitoring wells were also measured during each sampling event.

Soil Vapor Measurements

The following wells were used to measure soil gas (vapor phase):

- MW-A;
- MW-B;
- MW-C;
- MW-H;
- MW-I;

- MW-N;
- MW-10 (at 90 feet and upgradient);
- MW-4 (at 185 feet & upgradient);
- MW-D (at 250 feet & upgradient);
- BW-1; and
- Soil vapor probes, VP-10, VP-30 & VP-90 (at 10 feet, 30 feet and 90 feet from the sparge well).

Vapor phase monitoring was conducted using a photo-ionization detector for field measurements of volatile organic compounds in wellbores. In most cases, the field vapor observations were made both at the wellhead and at an approximate depth of 50 feet inside the casing of each scheduled well. To collect the vapor from a depth of 50 feet, a new piece of tubing was lowered to that depth and a vacuum applied to the upper end of the tubing. A PID was used to measure the vapor concentration when the monitored soil gas arrived at the surface. Afterwards the hose was used to collect a vapor sample into a summa canister. Soil gas for laboratory analysis was collected using the summa canister for the determination of BTEX and permanent gases (carbon dioxide, oxygen and methane). In addition, several soil vapor probes with adsorbent elements were placed into the surface of the ground approximately 3-4 feet in depth at distances of 10, 30 and 90 feet (respectively) from the biosparge well. Samples were collected from them as shown in the accompanying Pilot System Monitoring Table A. It should be remembered that baseline measurements may indicate preexisting shallow soil hydrocarbon contamination and not soil vapor generated by the sparge well and escaping to the atmosphere. In addition, because the vapor holes are shallow, there is the possibility that surface hydrocarbons may be detected.

Low Flow Biosparge Pilot Project Implementation

Appendix C contains the daily record of the operational status of the biosparge system. The biosparge pilot project was conducted for a compressor operational period of approximately 90 days although compressor problems during the thirty to sixty day interval extended the actual time period during which the testing was accomplished.

The following were the dates of sampling for the biosparge pilot project:

- baseline event began on November 19, 2003;
- one week sampling on December 19, 2003;
- one month sampling on January 15, 2004;
- sixty day sampling began on April 15, 2004; and
- ninety day sampling began on May17, 2004.

Due to compressor malfunctions which occurred shortly after the 30-day sampling event (and continued to mid March when a new compressor was installed), later sampling events were delayed for the shut down period.

The following is the program of sampling events as they actually occurred for the pilot project:

Baseline (November 19-21, 2003)

Baseline readings were collected prior to any sparging in order to indicate the starting conditions of the groundwater and soil vapors in wells. A complete round of water quality and vapor samples was collected.

One Week Sampling (December 19-23, 2003)

The one-week sampling was conducted beginning approximately seven days after the startup of the biosparge well on December 12, 2003. The one week sampling included field parameters for groundwater, field PID readings for soil vapors and water levels.

30 Day Sampling (January 12-15, 2004)

After the biosparge system had been operating approximately 30 days, a complete round of water quality and vapor samples were collected for laboratory analysis along with all field parameters.

60 day Sampling (April 12-14, 2004)

Approximately two weeks after the 30-day sampling event the compressor began a series of malfunctions. Each of the malfunctions was addressed by repairs. However, the repairs were not successful in restoring operations for any extended period of time. A new compressor began operation at the biosparge well on March 16, 2004.

After the biosparge system had approximately an additional 30 days of operational uptime with the new compressor, a round of sampling for field water quality parameters and the collection of water samples for laboratory analysis of BTEX were conducted. In addition, field PID readings as well as vapor samples for laboratory determination of BTEX and permanent gases were collected.

90 Day Sampling (May 17-19, 2004)

After the biosparge system had approximately 90 days of operational uptime, a complete round of water quality and vapor samples were collected for laboratory analysis along with all field parameters.

During this sampling event, a complete round of monitoring well water levels was taken. Water level data is found in Table 2 and the groundwater gradient map prepared from the May 17, 2004 data is found as Figure 7. Note that the water level for RW-1 has not been used in preparing Figure 7 because the air sparging affects the water level in the well.

Low Flow Biosparge Pilot Project Data Review

The sampling routine was modified during the project due to a failure of the air sparging compressor beginning approximately 2 weeks after the 30-day sampling event in week 8 and culminating in week 14. The 60-day sampling was delayed to account for the pilot system downtime resulting from the malfunction and ultimate failure of the compressor. Summaries of the daily field records of the biosparge system operational status are found in Appendix C.

Low Flow Biosparge Pilot Project Results

The results of the biosparge pilot project are presented in this portion of the report.

The vapor and groundwater monitoring of the pilot project is summarized in Table 5. The table presents only the biosparge sampling results for both the field and laboratory data. Appendix D contains the laboratory analytical reports for the project. Figure 5 presents the benzene plume for the study area immediately prior to biosparging (baseline condition). Figure 6 shows the benzene plume for the 90-day sampling event (existing condition) and Figure 7, the groundwater table at that time.

Graphs have been prepared for individual monitor wells over time during the course of the pilot test showing the changes in concentration of constituents of interest and the chemistry of groundwater and vapors during the pilot project.

The graphs include:

- Total BTEX concentrations in wells;
- TOC concentrations in wells;
- O2 concentration in wells; and
- CO2 concentrations in wells.

Lastly, selected data was graphed exhibiting key parameters vs. distance from the biosparge well at the beginning and end of the pilot test. This includes the following parameters for groundwater and soil vapor:

- Groundwater
- Total BTEX
- Dissolved oxygen
- Dissolved carbon dioxide
- Dissolved methane
- Total iron

- Soil Gas
- Total BTEX
- Oxygen
- Carbon dioxide

Interpretations of the Biosparge Data

The low flow biosparge pilot study had two key goals: the first was to determine if low flow biosparging could be a feasible approach for the remediation of the hydrocarbon impacted soils and groundwater at the Paddock Area Site; and the second was to determine the specific dynamics of the biosparge system with a particular focus on the potential radius of influence on the low flow biosparge well. The radius of influence is the key parameter that determines the number of low flow biosparge wells that would be required for site wide treatment of hydrocarbon impacted soils and groundwater.

Of secondary interest is the radius of influence of the air injection into the vadose zone and the dynamics of the hydrocarbon volatilization and aerobic biodegradation stimulated by the air injection process.

Groundwater

The impact of the low-flow biosparge program in the groundwater was pronounced in the following sets of parameters:

- Total BTEX hydrocarbons;
- Dissolved oxygen;
- Dissolved carbon dioxide;
- Methane; and
- Total iron.

A comparison of the values for these parameters at the start of the pilot test and at the end of 90 days of biosparge operation all show significant impact out to a radial distance of 85 feet. Figures 5 and 6 can be compared to visualize the effects of the radius of influence for the remediation.

- **BTEX**

Total BTEX declined from approximately 2 mg/L to 0.03 mg/L at an 85 foot cross gradient well. Removal of BTEX from the groundwater is the core goal of the remediation program.

Figures 6 and 7 illustrate the dynamics of dissolved benzene over the course of the pilot study. In Figure 6 two important results are illustrated. The first is the attenuation of the benzene centered around the low flow biosparge well. The second is the slight increase in benzene concentrations along a NW /SE axis to the SW of the biosparge well. In the ARCADIS report dated September 24, 2003 on the Environmental Investigation of the Lovington Paddock Site there is data presented that documents the configuration of the hydrocarbon source areas, or areas impacted by proximal hydrocarbon releases. Figure 3 of that report, an NW to SE PID cross section, illustrates elevated hydrocarbon impact at the capillary fringe of MW-I and the entire vadose zone interval (including the capillary fringe) in MW-H. The zone of increased benzene concentration in the groundwater illustrated by Figure 6 of this report is co-axial with MW-I and MW-H. The increase in the benzene concentration in the groundwater is due to the effects of the bio-surfactants released by the oxygen stimulated aerobic bacteria. The biosurfactants have made the hydrocarbons in the source areas more available to the bacteria. As the operation of the low flow biosparge well continues, the now bioavailable hydrocarbons will continue to degrade. The configuration of this biosurfactant zone is further indication of the extent of lateral influence of the pilot biosparge well.

- **Oxygen**

Prior to operation of the low-flow biosparge well, dissolved oxygen in the pilot area was in the range of 1 to 1.5 mg/L in the treatment area. After 90 days of biosparge operation the dissolved oxygen ranged from 8 to 1.8 mg/L in an almost linear trend with distance from the biosparge well. Oxygen is the key stimulator for biodegradation of the BTEX hydrocarbons.

- **Carbon Dioxide**

The carbon dioxide in the 85 foot well increased from 43 mg/L to 900 mg/L, indicative of significant aerobic biodegradation of hydrocarbons. Zones closer to the biosparge well had lower levels of carbon dioxide likely due to the stripping action of the biosparge process near the biosparge well.

4. Methane

The methane was also stripped from the groundwater and not replenished in the zone of the biosparge influence, since aerobic processes are dominant there. Prior to the pilot study, at 85 feet the methane was 5.3 µg/L. over the course of the pilot test it was reduced by stripping to 0.31 µg/L. This reduction is indicative of the effect of the stripping action taking place in the low-flow biosparge well.

5. Total Iron

The total iron appears to be subject to a concentration process at the edge of the zone of influence to the biosparge well. The respective concentrations of total iron (in mg/L) in the injection well, the 35 foot distance well and the 85 foot distance well over the course of the study was as follows:

- BW-1 Biosparge well
- Base Line Less than 0.05
- Day 30 0.124
- Day 90 6.06

- MW-A 35 foot distance well
- Base Line 0.211
- Day 30 1.43
- Day 90 0.12

- MW-C 85 foot distance well
- Base Line Less than 0.05
- Day 30 8.25
- Day 90 14.3

- This iron dynamic is likely due to complex causes. The iron in a mineral matrix exposed to hydrocarbons tends to be reduced to soluble ferrous iron by iron reducing bacteria. Upon exposure to aerobic conditions the soluble ferrous iron is oxidized to insoluble ferric iron, initially in a colloidal form. The circulation associated with the low flow biosparge well may be scavenging soluble ferrous iron from the anaerobic portions of the saturated zone impacted with hydrocarbons. As the sparge well creates aerobic conditions there is an oxidation front at which the precipitating ferrous to ferric iron may collect. In general the presence of ferric iron (total iron with no ferrous present) is indicative of the conversion to an aerobic condition.

Soil Gas

The soil gas in wells surrounding the low flow biosparge well also exhibited impact from the pilot program. Influence was seen in three key parameters: Total BTEX, oxygen, and carbon dioxide. The three parameters are interrelated. The BTEX is being volatilized by the low flow biosparging well, oxygen is being introduced into the BTEX vapors, and carbon dioxide is being produced by the oxygen stimulated biodegradation of the BTEX vapors. Specifically:

- Total BTEX concentrations in the vapor phase have increased 2 to 4 fold at distances ranging from 85 to 250 feet from the sparging well.
- Oxygen concentrations have increased out to 30 feet, but have generally decreased significantly out to 250 feet.
- Within 35 feet of the sparge well carbon dioxide has decreased from near 7% to approximately 0.05%. However, in general the carbon dioxide concentrations have increased out to 250 feet from a general concentration of 8% to 12%.

The sparge rate near the injection well is high enough to displace carbon dioxide with oxygen. At distances out to 250 feet, oxygen is being consumed by aerobic activity towards the BTEX hydrocarbons and being converted to carbon dioxide. A rough calculation indicates that approximately 2,600 pounds of BTEX has been biodegraded

to carbon dioxide within a 250 foot radius of the injection well. There are a total of 2000 pounds of BTEX vapors remaining, which can be degraded by the amount of oxygen supplied by the biosparge well in approximately an additional 60 days of run time.

Vapor Point Results

Three shallow soil vapor measuring points were installed to a depth of 2 feet below ground level. The vapor points consisted of a 2-inch PVC pipe placed into the ground. The bottom of the pipe was open and the top had a removable cap. The vapor points were placed in reference to the biosparge well, BW-1. The first vapor point, VP-10 was placed 10 feet to the east of BW-1. Vapor Point VP-30 was placed 30 feet east of BW-1 and the third vapor point, VP-90, was placed 90 feet east of BW-1.

A passive type BTEX sampler (badge) used to measure daily exposure to BTEX was suspended in each VP so that it did not touch the ground because moisture can affect the results of testing. The badges were sent to EA Group Laboratory, Mentor, Ohio for analysis.

The result of the vapor point testing is shown in Table 6.

The first sampling event allowed the badges to reside in the vapor points for 1 week. A detection of benzene was observed in VP-30 during this period but no other BTEX compounds were detected. Subsequent sampling events only allowed the badges to remain in the vapor points for one day, approximately 8 hours.

From time to time BTEX compounds have been detected in the vapor points. The highest recorded benzene concentration was at 3.8 ppm in VP-90 at the 90 day testing. This is below the Time Waited Average (TWA) of 10 ppm recognized by the American Conference of Industrial Hygienists (ACGIH) as the concentration to which nearly all workers may be exposed during an eight hour day, 40 hours per week, without adverse effects.

Conclusions

The low-flow biosparge pilot test was a success. It demonstrated the capacity to stimulate the aerobic degradation of impacting BTEX hydrocarbons in the groundwater and vadose zone, with a saturated zone radius of influence of at least 85 feet. Using this design data there are two treatment approaches for the site. One is to simply create

a reactive barrier using the low flow biosparging technology. This barrier would incorporate the existing pilot biosparge well and extend approximately 200 feet south and 350 feet north-northwest with the addition of a total of 3 biosparge wells and some monitoring wells. The operation of this system would be for an indefinite period of time. It would offer treatment of groundwater leaving the site, but not treatment of the source area.

The second approach is to treat the entire plume including the source areas and the down gradient impacted zones. In that case 8 additional biosparge wells and some monitoring wells would be required. This system would be operated for a period of approximately 2 to 3 years to a clean-up level at an appropriate closure standard. The specific closure standard would be a key factor in the overall treatment time frame.

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Table 1
Pure Resources-Lovington Paddock Site
Groundwater Volatile Hydrocarbon Compound Analytical Results
Lovington, Lea County, New Mexico

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)	TPH DRO (mg/L)	TPH GRO (mg/L)	TOC (mg/L)	Naphthalene (mg/L)
MW-A	7/2/2003	1.64	0.233	0.0314	0.0722	<5.00	2.3	4.77	<0.000200
MW-B	7/2/2003	0.287	0.0264	0.0051	0.0133	<5.00	0.879	5.34	NS
DUP (of B)	7/2/2003	0.308	0.0282	0.0056	0.0143	<5.00	0.951	NS	NS
MW-C	7/1/2003	2.16	0.0285	<0.0100	0.0507	<5.00	4.7	3.52	NS
MW-D	6/27/2003	0.134	<0.00100	<0.00100	0.0022	<5.00	0.349	6.77	NS
MW-E	6/27/2003	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100	<1.00	NS
MW-F	6/26/2003	<0.00500	<0.00500	<0.00500	<0.00500	<5.00	<0.500	34.9	NS
MW-G	6/26/2003	<0.00500	<0.00500	<0.00500	<0.00500	<5.00	<0.500	1.03	NS
MW-H	7/2/2003	0.0682	0.0366	0.0019	0.0058	<5.00	0.707	1.94	<0.000200
MW-I	7/2/2003	0.0547	0.0192	0.0015	0.0016	<5.00	0.294	71.8	NS
MW-J	7/1/2003	<0.00500	<0.00500	<0.00500	<0.00500	<5.00	0.668	4.77	NS
MW-L	7/1/2003	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100	<1.00	NS
MW-M	7/1/2003	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100	<1.00	<0.000200
MW-N	7/2/2003	2.41	<0.0500	<0.0500	<0.0500	<5.00	2.14	NS	<0.000200
WW-1	10/9/2003	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100	NS	NS
WW-2	10/9/2003	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100	NS	NS
WW-3	10/9/2003	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100	NS	NS
WW-4	10/9/2003	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100	NS	NS
AST-West	10/9/2003	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100	NS	NS
BW-1	11/3/2003	0.989	0.0139	0.0026	0.0277	<5.00	0.397	0.00587	0.00587
	11/20/2003	1.09	<0.100	<0.100	<0.100		NS	NS	NS
MW-0	11/6/2003	<0.00100	<0.00100	<0.00100	0.00140	<5.00	<0.100	NS	<0.000200
MW-P	11/6/2003	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100	NS	<0.000200
MW-Q	11/6/2003	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100	NS	<0.000200
MW-D2	11/3/2003	<0.00500	<0.00500	<0.00500	0.00570	<5.00	<0.100	NS	<0.000200

NS - Not Sampled

14.1 detected

4690 detected > NMOCD Std.

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Table 1
Pure Resources-Lovington Paddock Site
Groundwater Major Minerals Analytical Results
Lovington, Lea County, New Mexico

Well ID	Sample Date	Total Alkalinity (mg/L as CaCO3)	Bromide (mg/L)	Dissolved Calcium (mg/L)	Dissolved Potassium (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Sodium (mg/L)	Dissolved Iron (mg/L)	Total Iron (mg/L)	Chloride (mg/L)	Fluoride (mg/L)
DUP	7/2/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-A	7/2/2003	254	NS	95.1	2.35	15.3	26.3	<0.0500	1.69	61.7	1.39
MW-B	7/2/2003	210	NS	74.2	5.37	11.1	21.6	<0.0500	0.875	53.3	1.56
MW-C	7/1/2003	332	NS	108	2.71	17.7	35.1	<0.0500	0.352	29	1.3
MW-D	6/27/2003	264	1.27	203	2.81	29.9	76	<0.0500	3.48	356	<1.00
MW-E	6/27/2003	190	<1.00	44.8	2.92	6.99	63.1	<0.0500	0.611	29.8	1.75
MW-F	6/26/2003	158	NS	78	2.17	11.3	42.2	<0.0500	4.63	61.4	1.61
MW-G	6/26/2003	154	NS	68.3	2.13	10.3	39.2	<0.0500	2.34	48.7	1.55
MW-H	7/2/2003	222	NS	63.4	2.46	11.9	31.5	<0.0500	0.707	35.2	1.64
MW-I	7/2/2003	284	NS	111	2.79	17	37.5	<0.0500	4.69	43	1.35
MW-J	7/1/2003	170	NS	72	3.12	11.5	44.7	<0.0500	0.129	64.9	1.58
MW-L	7/1/2003	178	NS	72.3	2.75	11.5	55.2	<0.0500	2.65	106	2.21
MW-M	7/1/2003	156	NS	100	3.25	16.2	61.4	<0.0500	0.874	181	1.58
MW-N	7/2/2003	264	NS	94	2.4	14.9	40.6	<0.0500	0.527	67.4	1.61
WW-1	10/9/2003	178	1.57	119	5.27	23.9	145	NS	NS	312	1.16
WW-2	10/9/2003	162	2.12	203	5.07	35.5	76.6	NS	NS	411	1.1
WW-3	10/9/2003	182	<1.00	80.2	2.99	14.7	43.3	NS	NS	65	1.19
WW-4	10/9/2003	158	<1.00	91.1	3.15	15.5	47	NS	NS	89.9	1.12
AST-West	10/9/2003	178	<1.00	76.1	3.57	12.1	33.6	NS	NS	30.9	1.3
BW-1	11/3/2003	320	<1.0	139	3.41	21.5	49.8	<0.0500	8.54	95.1	1.19
	11/20/2003	344						<0.0500	<0.0500	24.5	NS
MW-0	11/6/2003	182	<1.00	73.2	2.93	12.9	41.2	0.895	1.84	60.9	1.37
MW-P	11/6/2003	176	<1.00	71	2.87	12.2	35.2	<0.0500	0.77	54.6	1.41
MW-Q	11/6/2003	180	<1.00	66	2.8	11.4	29.6	<0.0500	3.04	35.5	1.47
MW-D2	11/3/2003	248	<1.00	150	5.16	23.4	123	<0.0500	3.48	274	<1.0

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Table 1
Pure Resources-Lovington Paddock Site
Groundwater Major Minerals Analytical Results
Lovington, Lea County, New Mexico

Well ID	Sample Date	Sulfate (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	pH (s.u.)	Specific Conductance (umhos/cm)	TDS (mg/L)	Carbon Dioxide (mg/L)	Methane (ug/L)	Nitrogen (mg/L)	Oxygen (mg/L)
DUP	7/2/2003	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-A	7/2/2003	28.5	0.0229	3.14	7.3	759	488	NS	NS	NS	NS
MW-B	7/2/2003	33.1	<0.0100	3.33	7.4	653	386	27	4.1	15	3.4
MW-C	7/1/2003	42.2	<0.0100	2.12	7.3	784	508	72	16	16	1.2
MW-D	6/27/2003	88.5	0.0533	2.54	7.2	1750	1144	50	2.4	15	3.3
MW-E	6/27/2003	56.1	<0.0100	2.47	7.4	620	392	12	0.4	13	5.3
MW-F	6/26/2003	59.9	<0.0100	2.95	7.5	689	420	10	0.66	13	6.2
MW-G	6/26/2003	45.5	<0.0100	3.05	7.5	619	404	11	0.79	15	5.9
MW-H	7/2/2003	40.1	0.0243	3.35	7.5	614	392	20	3.2	15	5.1
MW-I	7/2/2003	46.5	<0.0100	2.79	7.2	856	541	NS	NS	NS	NS
MW-J	7/1/2003	44.6	<0.0100	3.6	7.6	704	416	17	1.4	17	5.2
MW-L	7/1/2003	31.2	<0.0100	3.46	7.6	802	497	NS	NS	NS	NS
MW-M	7/1/2003	51.5	<0.0100	3.74	8.9	1020	664	14	0.59	15	6.2
MW-N	7/2/2003	38.4	<0.0100	3.09	7.1	796	493	NS	NS	NS	NS
WW-1	10/9/2003	60.2	NS	3.41	7.5	1510	912	NS	NS	NS	NS
WW-2	10/9/2003	85.1	NS	22.5	7.5	2040	1106	NS	NS	NS	NS
WW-3	10/9/2003	59.5	NS	2.95	7.7	737	453	NS	NS	NS	NS
WW-4	10/9/2003	68.9	NS	3.2	7.6	841	517	NS	NS	NS	NS
AST-West	10/9/2003	60	NS	2.77	7.7	626	397	NS	NS	NS	NS
BW-1	11/3/2003	56.4	<0.0100	1.93	7.41	988	620	64	12	15	1.5
	11/20/2003	37.9	NS	NS	NS	NS	510	75	19	13	0.7
MW-0	11/6/2003	38.1	<0.0100	2.42	7.5	660	417	11	2.3	16	7.1
MW-P	11/6/2003	36	<0.0100	2.39	7.7	608	385	9.5	2.6	13	6.2
MW-Q	11/6/2003	34.9	<0.0100	4.05	7.8	561	391	10	3.1	15	7.9
MW-D2	11/3/2003	89.1	0.257	2.28	7.5	1530	1062	37	2.5	16	4.3

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Table 1
Pure Resources-Lovington Paddock Site
Groundwater Semi-volatile Organic Compound Analytical Results
Lovington, Lea County, New Mexico

Well ID	Sample Date	Naphthalene (mg/L)	Acenaphthylene (mg/L)	Acenaphthene (mg/L)	Fluorene (mg/L)	Phenanthrene (mg/L)	Anthracene (mg/L)	Fluoranthene (mg/L)	Pyrene (mg/L)
DUP	7/2/2003	NS	NS	NS	NS	NS	NS	NS	NS
MW-A	7/2/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
MW-B	7/2/2003	NS	NS	NS	NS	NS	NS	NS	NS
MW-C	7/1/2003	NS	NS	NS	NS	NS	NS	NS	NS
MW-D	6/27/2003	NS	NS	NS	NS	NS	NS	NS	NS
MW-E	6/27/2003	NS	NS	NS	NS	NS	NS	NS	NS
MW-F	6/26/2003	NS	NS	NS	NS	NS	NS	NS	NS
MW-G	6/26/2003	NS	NS	NS	NS	NS	NS	NS	NS
MW-H	7/2/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
MW-I	7/2/2003	NS	NS	NS	NS	NS	NS	NS	NS
MW-J	7/1/2003	NS	NS	NS	NS	NS	NS	NS	NS
MW-L	7/1/2003	NS	NS	NS	NS	NS	NS	NS	NS
MW-M	7/1/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
MW-N	7/2/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
WW-1	10/9/2003	NS	NS	NS	NS	NS	NS	NS	NS
WW-2	10/9/2003	NS	NS	NS	NS	NS	NS	NS	NS
WW-3	10/9/2003	NS	NS	NS	NS	NS	NS	NS	NS
WW-4	10/9/2003	NS	NS	NS	NS	NS	NS	NS	NS
AST-West	10/9/2003	NS	NS	NS	NS	NS	NS	NS	NS
BW-1	11/3/2003	0.00587	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
	11/20/2003								
MW-0	11/6/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
MW-P	11/6/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
MW-Q	11/6/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
MW-D2	11/3/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200

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Table 1
Pure Resources-Lovington Paddock Site
Groundwater Semi-volatile Organic Compound Analytical Results
Lovington, Lea County, New Mexico

Well ID	Sample Date	Benzo(a)anthracene (mg/L)	Chrysene (mg/L)	Benzo(b)fluoranthene (mg/L)	Benzo(k)fluoranthene (mg/L)	Benzo(a)pyrene (mg/L)	Indeno(1,2,3-cd)pyrene (mg/L)
DUP	7/2/2003	NS	NS	NS	NS	NS	NS
MW-A	7/2/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
MW-B	7/2/2003	NS	NS	NS	NS	NS	NS
MW-C	7/1/2003	NS	NS	NS	NS	NS	NS
MW-D	6/27/2003	NS	NS	NS	NS	NS	NS
MW-E	6/27/2003	NS	NS	NS	NS	NS	NS
MW-F	6/26/2003	NS	NS	NS	NS	NS	NS
MW-G	6/26/2003	NS	NS	NS	NS	NS	NS
MW-H	7/2/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
MW-I	7/2/2003	NS	NS	NS	NS	NS	NS
MW-J	7/1/2003	NS	NS	NS	NS	NS	NS
MW-L	7/1/2003	NS	NS	NS	NS	NS	NS
MW-M	7/1/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
MW-N	7/2/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
WW-1	10/9/2003	NS	NS	NS	NS	NS	NS
WW-2	10/9/2003	NS	NS	NS	NS	NS	NS
WW-3	10/9/2003	NS	NS	NS	NS	NS	NS
WW-4	10/9/2003	NS	NS	NS	NS	NS	NS
AST-West	10/9/2003	NS	NS	NS	NS	NS	NS
BW-1	11/3/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
	11/20/2003						
MW-0	11/6/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
MW-P	11/6/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
MW-Q	11/6/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
MW-D2	11/3/2003	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200

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Table 1
Pure Resources-Lovington Paddock Site
Groundwater Semi-volatile Organic Compound Analytical Results
Lovington, Lea County, New Mexico

Well ID	Sample Date	Dibenzo(a,h)anthracene (mg/L)	Benzo(g,h,i)perylene (mg/L)
DUP	7/2/2003	NS	NS
MW-A	7/2/2003	<0.000200	<0.000200
MW-B	7/2/2003	NS	NS
MW-C	7/1/2003	NS	NS
MW-D	6/27/2003	NS	NS
MW-E	6/27/2003	NS	NS
MW-F	6/26/2003	NS	NS
MW-G	6/26/2003	NS	NS
MW-H	7/2/2003	<0.000200	<0.000200
MW-I	7/2/2003	NS	NS
MW-J	7/1/2003	NS	NS
MW-L	7/1/2003	NS	NS
MW-M	7/1/2003	<0.000200	<0.000200
MW-N	7/2/2003	<0.000200	<0.000200
WW-1	10/9/2003	NS	NS
WW-2	10/9/2003	NS	NS
WW-3	10/9/2003	NS	NS
WW-4	10/9/2003	NS	NS
AST-West	10/9/2003	NS	NS
BW-1	11/3/2003	<0.000200	<0.000200
	11/20/2003		
MW-0	11/6/2003	<0.000200	<0.000200
MW-P	11/6/2003	<0.000200	<0.000200
MW-Q	11/6/2003	<0.000200	<0.000200
MW-D2	11/3/2003	<0.000200	<0.000200

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Table 1
Pure Resources-Lovington Paddock Site
Soil Volatile Hydrocarbon Compound Analytical Results
Lovington, Lea County, New Mexico

Well ID	Depths	Sample Date	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylenes (mg/Kg)	BTEX (mg/Kg)	FOC %	TPH DRO (mg/Kg)	TPH GRO (mg/Kg)	Naphthalene (mg/Kg)
MW-A	70-71	6/16/2003	0.469	30.3	24.3	85.6	140.669	1.28	4690	762	<0.00594
MW-B	65-66	6/18/2003	<0.100	13.9	10.9	43.9	68.7	NS	2180	843	NS
MW-C	0-2	6/18/2003	<0.0100	0.041	0.0638	0.166	0.2708	NS	<50.0	14.1	NS
MW-C	60-61	6/18/2003	0.0458	4.75	5.54	25.3	35.6358	NS	2930	153	NS
MW-D	70-75	6/19/2003	<0.0100	<0.0100	<0.0100	0.0672	0.0672	NS	<50.0	10.7	NS
MW-E	70-75	6/20/2003	<0.0100	<0.0100	<0.0100	0.0258	0.0258	0.96	<50.0	3.62	NS
MW-F	75-76	6/23/2003	<0.0100	<0.0100	<0.0100	<0.0100	0	0.7	<50.0	13	<0.00594
MW-G	0-1	6/24/2003	<0.0100	<0.0100	<0.0100	<0.0100	0	NS	<50.0	13.7	NS
MW-G	71-72	6/24/2003	NS	NS	NS	NS	0	0.57	NS	NS	NS
MW-H	0-0.5	6/24/2003	<0.0100	<0.0100	<0.0100	<0.0100	0	NS	<50.0	2.9	NS
MW-H	20-21.5	6/24/2003	2.72	9.39	3.55	25.7	41.36	0.58	162	201	0.422
MW-H	40-41	6/24/2003	<0.0100	0.709	0.611	4.64	5.96	NS	726	101	NS
MW-H	74-75	6/24/2003	8.08	65.1	26.9	87.7	187.78	0.75	3970	793	2.79
MW-I	10-15	6/25/2003	<0.0100	<0.0100	<0.0100	<0.0100	0	NS	<50.0	15.4	NS
MW-I	55-56	6/25/2003	1.08	7.34	4.62	16.1	29.14	0.79	1500	188	<0.00594
MW-I	70-71	6/25/2003	<0.0500	0.173	0.603	2.06	2.836	1	208	43.9	<0.00594
MW-J	55-60	6/26/2003	<0.0100	<0.0100	<0.0100	<0.0100	0	NS	<50.0	2.92	NS
MW-J	75-76	6/26/2003	<0.0100	<0.0100	<0.0100	<0.0100	0	0.63	<50.0	13	<0.00594
MW-L	0-0.3	6/26/2003	<0.0100	<0.0100	<0.0100	<0.0100	0	NS	<50.0	13.9	NS
MW-L	74-75	6/26/2003	<0.0100	<0.0100	<0.0100	<0.0100	0	0.4	<50.0	14.3	<0.00594
MW-M	0-0.5	6/27/2003	<0.0500	<0.0500	<0.0500	<0.0500	0	NS	<50.0	14.8	NS
MW-M	74-75	6/27/2003	<0.0100	<0.0100	<0.0100	<0.0100	0	0.43	<50.0	13.1	<0.00594
MW-N	0-0.3	6/27/2003	<0.0100	0.016	<0.0100	<0.0100	0.016	NS	<50.0	14	NS
MW-N	5-10	6/27/2003	<0.0100	<0.0100	<0.0100	<0.0100	0	NS	<50.0	13.3	NS
MW-N	74-75	6/27/2003	<0.0100	<0.0100	<0.0100	<0.0100	0	0.51	<50.0	13.7	<0.00594
BW-1	56-57	11/3/2003	<0.0100	0.144	0.96	3.89	4.994	0.91	1160	157	NS
AST West Effluent	surface	10/8/2003	<1.00	<1.00	<1.00	<1.00	<1.00	NS	<50.0	<100	NS

14.1 detected
4690 detected < NMOCD Std.

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Table 1
Pure Resources-Lovington Paddock Site
Soil Semi-Volatile Compound Analytical Summary
Lovington, Lea County, New Mexico

Well ID	Depths	Sample Date	Naphthalene (mg/Kg)	Acenaphthylene (mg/Kg)	Acenaphthene (mg/Kg)	Fluorene (mg/Kg)	Phenanthrene (mg/Kg)
MW-A	70-71	6/16/2003	<0.00594	<0.00594	<0.00594	<0.00594	<0.00594
MW-B	65-66	6/18/2003	NS	NS	NS	NS	NS
MW-C	0-2	6/18/2003	NS	NS	NS	NS	NS
MW-C	60-61	6/18/2003	NS	NS	NS	NS	NS
MW-D	70-75	6/19/2003	NS	NS	NS	NS	NS
MW-E	70-75	6/20/2003	NS	NS	NS	NS	NS
MW-F	75-76	6/23/2003	<0.00594	<0.00594	<0.00594	<0.00594	0.0241
MW-G	0-1	6/24/2003	NS	NS	NS	NS	NS
MW-G	71-72	6/24/2003	NS	NS	NS	NS	NS
MW-H	0-0.5	6/24/2003	NS	NS	NS	NS	NS
MW-H	20-21.5	6/24/2003	0.422	<0.00594	<0.00594	<0.00594	0.224
MW-H	40-41	6/24/2003	NS	NS	NS	NS	NS
MW-H	74-75	6/24/2003	2.79	<0.00594	<0.00594	<0.00594	1.82
MW-I	10-15	6/25/2003	NS	NS	NS	NS	NS
MW-I	55-56	6/25/2003	<0.00594	<0.00594	<0.00594	<0.00594	0.237
MW-I	70-71	6/25/2003	<0.00594	<0.00594	<0.00594	<0.00594	0.0446
MW-J	55-60	6/26/2003	NS	NS	NS	NS	NS
MW-J	75-76	6/26/2003	<0.00594	<0.00594	<0.00594	<0.00594	<0.00594
MW-L	0-0.3	6/26/2003	NS	NS	NS	NS	NS
MW-L	74-75	6/26/2003	<0.00594	<0.00594	<0.00594	<0.00594	<0.00594
MW-M	0-0.5	6/27/2003	NS	NS	NS	NS	NS
MW-M	74-75	6/27/2003	<0.00594	<0.00594	<0.00594	<0.00594	<0.00594
MW-N	0-0.3	6/27/2003	NS	NS	NS	NS	NS
MW-N	5-10	6/27/2003	NS	NS	NS	NS	NS
MW-N	74-75	6/27/2003	<0.00594	<0.00594	<0.00594	<0.00594	<0.00594

NS - Not Sampled

14.1 detected

4690 detected > NMOCD Std.

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Table 1
Pure Resources-Lovington Paddock Site
Soil Semi-Volatile Compound Analytical Summary
Lovington, Lea County, New Mexico

Well ID	Depths	Sample Date	Anthracene (mg/Kg)	Fluoranthene (mg/Kg)	Pyrene (mg/Kg)	Benzo(a)anthracene (mg/Kg)	Chrysene (mg/Kg)
MW-A	70-71	6/16/2003	<0.00594	<0.00594	<0.00594	<0.00594	<0.00594
MW-B	65-66	6/18/2003	NS	NS	NS	NS	NS
MW-C	0-2	6/18/2003	NS	NS	NS	NS	NS
MW-C	60-61	6/18/2003	NS	NS	NS	NS	NS
MW-D	70-75	6/19/2003	NS	NS	NS	NS	NS
MW-E	70-75	6/20/2003	NS	NS	NS	NS	NS
MW-F	75-76	6/23/2003	<0.00594	0.0356	0.038	0.0135	0.0208
MW-G	0-1	6/24/2003	NS	NS	NS	NS	NS
MW-G	71-72	6/24/2003	NS	NS	NS	NS	NS
MW-H	0-0.5	6/24/2003	NS	NS	NS	NS	NS
MW-H	20-21.5	6/24/2003	<0.00594	<0.00594	<0.00594	<0.00594	<0.00594
MW-H	40-41	6/24/2003	NS	NS	NS	NS	NS
MW-H	74-75	6/24/2003	<0.00594	<0.00594	<0.00594	<0.00594	<0.00594
MW-I	10-15	6/25/2003	NS	NS	NS	NS	NS
MW-I	55-56	6/25/2003	0.0314	<0.00594	<0.00594	<0.00594	<0.00594
MW-I	70-71	6/25/2003	0.0066	<0.00594	<0.00594	<0.00594	<0.00594
MW-J	55-60	6/26/2003	NS	NS	NS	NS	NS
MW-J	75-76	6/26/2003	<0.00594	<0.00594	<0.00594	<0.00594	<0.00594
MW-L	0-0.3	6/26/2003	NS	NS	NS	NS	NS
MW-L	74-75	6/26/2003	<0.00594	<0.00594	<0.00594	<0.00594	<0.00594
MW-M	0-0.5	6/27/2003	NS	NS	NS	NS	NS
MW-M	74-75	6/27/2003	<0.00594	<0.00594	<0.00594	<0.00594	<0.00594
MW-N	0-0.3	6/27/2003	NS	NS	NS	NS	NS
MW-N	5-10	6/27/2003	NS	NS	NS	NS	NS
MW-N	74-75	6/27/2003	<0.00594	<0.00594	<0.00594	<0.00594	<0.00594

NS - Not Sampled

14.1 detected

4690 detected > NMOCD Std.

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Table 1
Pure Resources-Lovington Paddock Site
Soil Semi-Volatile Compound Analytical Summary
Lovington, Lea County, New Mexico

Well ID	Depths	Sample Date	Benzo(b)fluoranthene (mg/Kg)	Benzo(k)fluoranthene (mg/Kg)	Benzo(a)pyrene (mg/Kg)
MW-A	70-71	6/16/2003	<0.00594	<0.00594	<0.00594
MW-B	65-66	6/18/2003	NS	NS	NS
MW-C	0-2	6/18/2003	NS	NS	NS
MW-C	60-61	6/18/2003	NS	NS	NS
MW-D	70-75	6/19/2003	NS	NS	NS
MW-E	70-75	6/20/2003	NS	NS	NS
MW-F	75-76	6/23/2003	0.0158	0.0116	<0.00594
MW-G	0-1	6/24/2003	NS	NS	NS
MW-G	71-72	6/24/2003	NS	NS	NS
MW-H	0-0.5	6/24/2003	NS	NS	NS
MW-H	20-21.5	6/24/2003	<0.00594	<0.00594	<0.00594
MW-H	40-41	6/24/2003	NS	NS	NS
MW-H	74-75	6/24/2003	<0.00594	<0.00594	<0.00594
MW-I	10-15	6/25/2003	NS	NS	NS
MW-I	55-56	6/25/2003	<0.00594	<0.00594	<0.00594
MW-I	70-71	6/25/2003	<0.00594	<0.00594	<0.00594
MW-J	55-60	6/26/2003	NS	NS	NS
MW-J	75-76	6/26/2003	<0.00594	<0.00594	<0.00594
MW-L	0-0.3	6/26/2003	NS	NS	NS
MW-L	74-75	6/26/2003	<0.00594	<0.00594	<0.00594
MW-M	0-0.5	6/27/2003	NS	NS	NS
MW-M	74-75	6/27/2003	<0.00594	<0.00594	<0.00594
MW-N	0-0.3	6/27/2003	NS	NS	NS
MW-N	5-10	6/27/2003	NS	NS	NS
MW-N	74-75	6/27/2003	<0.00594	<0.00594	<0.00594

NS - Not Sampled

14.1 detected

4690 detected > NMOCD Std.

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Table 1
Pure Resources-Lovington Paddock Site
Soil Semi-Volatile Compound Analytical Summary
Lovington, Lea County, New Mexico

Well ID	Depths	Sample Date	Indeno(1,2,3-cd)pyrene (mg/Kg)	Dibenzo(a,h)anthracene (mg/Kg)	Benzo(g,h,i)perylene (mg/Kg)
MW-A	70-71	6/16/2003	<0.00594	<0.00594	<0.00594
MW-B	65-66	6/18/2003	NS	NS	NS
MW-C	0-2	6/18/2003	NS	NS	NS
MW-C	60-61	6/18/2003	NS	NS	NS
MW-D	70-75	6/19/2003	NS	NS	NS
MW-E	70-75	6/20/2003	NS	NS	NS
MW-F	75-76	6/23/2003	<0.00594	<0.00594	<0.00594
MW-G	0-1	6/24/2003	NS	NS	NS
MW-G	71-72	6/24/2003	NS	NS	NS
MW-H	0-0.5	6/24/2003	NS	NS	NS
MW-H	20-21.5	6/24/2003	<0.00594	<0.00594	<0.00594
MW-H	40-41	6/24/2003	NS	NS	NS
MW-H	74-75	6/24/2003	<0.00594	<0.00594	<0.00594
MW-I	10-15	6/25/2003	NS	NS	NS
MW-I	55-56	6/25/2003	<0.00594	<0.00594	<0.00594
MW-I	70-71	6/25/2003	<0.00594	<0.00594	<0.00594
MW-J	55-60	6/26/2003	NS	NS	NS
MW-J	75-76	6/26/2003	<0.00594	<0.00594	<0.00594
MW-L	0-0.3	6/26/2003	NS	NS	NS
MW-L	74-75	6/26/2003	<0.00594	<0.00594	<0.00594
MW-M	0-0.5	6/27/2003	NS	NS	NS
MW-M	74-75	6/27/2003	<0.00594	<0.00594	<0.00594
MW-N	0-0.3	6/27/2003	NS	NS	NS
MW-N	5-10	6/27/2003	NS	NS	NS
MW-N	74-75	6/27/2003	<0.00594	<0.00594	<0.00594

NS - Not Sampled

14.1 detected

4690 detected > NMOCD Std.

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Table 2
Well Construction and Water Levels
Pure Resources
Lovington, Lea County, New Mexico

Well ID	Date Drilled	Well Diameter	Stick Up	Surveyed Top of Casing Elevation	Surveyed Concrete Elevation	Surveyed Ground Elevation	Completed Well Depth (BGL)	Completed Well Depth Elevation
MW-A	6/16/2003	4	2.5	3816.04	3813.53	3813.03	97.5	3715.53
	11/6/2003							
MW-B	6/19/2003	4	2.57	3816.09	3813.48	3812.98	105	3707.98
	11/6/2003							
MW-C	6/18/2003	4	2.52	3817.04	3814.49	3813.99	105	3708.99
	11/6/2003							
MW-D	6/19/2003	4	2.51	3816.08	3813.56	3813.16	105	3708.16
	11/6/2003							
MW-E	6/20/2003	4	2.38	3816.31	3813.82	3813.32	105	3708.32
	11/6/2003							

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Table 2
Well Construction and Water Levels
Pure Resources
Lovington, Lea County, New Mexico

MW-F	6/20/2003	4	2.59	3816.69	3814.10	3813.60	105	3708.6
	11/6/2003							
MW-G	6/24/2003	4	2.43	3818.23	3815.68	3815.18	105	3710.18
	11/6/2003							
MW-H	6/25/2003	4	2.58	3816.74	3814.14	3813.64	105	3708.64
	11/6/2003							
MW-I	6/25/2003	4	2.56	3816.94	3814.37	3813.87	105	3708.87
	11/6/2003							
MW-J	6/26/2003	4	2.5	3817.66	3815.11	3814.61	105	3709.61

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Table 2
Well Construction and Water Levels
Pure Resources
Lovington, Lea County, New Mexico

MW-L	6/26/2003	4	2.55	3818.35	3815.78	3815.28	105	3710.28
MW-M	6/27/2003	4	2.5	3817.88	3815.34	3814.84	105	3709.84
MW-N	6/27/2003	4	2.55	3817.70	3815.12	3814.62	105	3709.62
MW-0	11/5/2003	4	3.05	3814.74	3812.14	3811.69	110	3701.69
MW-P	11/4/2003	4	3.05	3814.24	3811.64	3811.19	110	3701.19
MW-Q	11/4/2003	4	3.07	3814.23	3811.61	3811.16	105	3706.16
MW-D2	10/30/2003	4	3.05	3815.94	3813.34	3812.89	242	3570.89
BW-1	11/3/2003	4	3.04	3816.14	3813.55	3813.10	125	3688.10

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Table 2
Well Construction and Water Levels
Pure Resources
Lovington, Lea County, New Mexico

Well ID	Date Drilled	Top of Screen (BGL)	Bottom of Screen (BGL)	Top of Screen Elevation	Bottom of Screen Elevation	Depth to Water	GWE Date	Groundwater Elevation
MW-A	6/16/2003	57.5	97.5	3755.53	3715.53	83.26	7/9/2003	3732.78
						86.26	8/15/2003	3729.78
						88.73	11/6/2003	3727.31
						83.33	5/18/2004	3732.71
MW-B	6/19/2003	65	105	3747.98	3707.98	84.22	7/9/2003	3731.87
						87.69	8/15/2003	3728.40
						90.71	11/6/2003	3725.38
						83.95	5/18/2004	3732.14
						84.13	5/20/2004	3731.96
MW-C	6/18/2003	65	105	3748.99	3708.99	83.58	7/9/2003	3733.46
						86.16	8/15/2003	3730.88
						88.56	11/6/2003	3728.48
						83.91	5/18/2004	3733.13
MW-D	6/19/2003	65	105	3748.16	3708.16	81.68	7/9/2003	3734.40
						83.77	8/15/2003	3732.31
						86.16	11/6/2003	3729.92
						82.36	5/18/2004	3733.72
MW-E	6/20/2003	65	105	3748.32	3708.32	81.26	7/9/2003	3735.05
						83.04	8/15/2003	3733.27
						85.26	11/6/2003	3731.05
						82.19	5/18/2004	3734.12

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Table 2
Well Construction and Water Levels
Pure Resources
Lovington, Lea County, New Mexico

MW-F	6/20/2003	65	105	3748.6	3708.6	80.87	7/9/2003	3735.82
						82.37	8/15/2003	3734.32
						84.49	11/6/2003	3732.20
						82.05	5/18/2004	3734.64
MW-G	6/24/2003	65	105	3750.18	3710.18	81.28	7/9/2003	3736.95
						82.61	8/15/2003	3735.62
						84.61	11/6/2003	3733.62
						82.66	5/18/2004	3735.57
MW-H	6/25/2003	65	105	3748.64	3708.64	83.28	7/9/2003	3733.46
						86.16	8/15/2003	3730.58
						88.60	11/6/2003	3728.14
						83.43	5/18/2004	3733.31
MW-I	6/25/2003	65	105	3748.87	3708.87	82.40	7/9/2003	3734.54
						84.93	8/15/2003	3732.01
						87.25	11/6/2003	3729.69
						82.88	5/18/2004	3734.06
MW-J	6/26/2003	65	105	3749.61	3709.61	80.43	7/9/2003	3737.23
						82.21	8/15/2003	3735.45
						84.27	11/6/2003	3733.39
						81.53	5/18/2004	3736.13

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Table 2
Well Construction and Water Levels
Pure Resources
Lovington, Lea County, New Mexico

MW-L	6/26/2003	65	105	3750.28	3710.28	81.69	7/9/2003	3736.66
						83.47	8/15/2003	3734.88
						85.57	11/6/2003	3732.78
						82.74	5/18/2004	3735.61
MW-M	6/27/2003	65	105	3749.84	3709.84	80.02	7/9/2003	3737.86
						81.55	8/15/2003	3736.33
						83.54	11/6/2003	3734.34
						81.30	5/18/2004	3736.58
MW-N	6/27/2003	65	105	3749.62	3709.62	82.41	7/9/2003	3735.29
						84.63	8/15/2003	3733.07
						86.87	11/6/2003	3730.83
						83.11	5/18/2004	3734.59
MW-0	11/5/2003	60	110	3751.69	3701.69	92.93	11/6/2003	3721.81
						85.00	5/18/2004	3729.74
						85.19	5/20/2004	3729.55
MW-P	11/4/2003	60	110	3751.19	3701.19	95.82	11/6/2003	3718.42
						85.92	5/20/2004	3728.32
MW-Q	11/4/2003	55	105	3756.16	3706.16	94.89	11/6/2003	3719.34
						85.46	5/20/2004	3728.77
MW-D2	10/30/2003	62	242	3750.89	3570.89	86.30	11/6/2003	3729.64
						82.56	5/20/2004	3733.38
BW-1	11/3/2003	20	125	3793.1	3688.1	88.48	11/6/2003	3727.66

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Table 3
MWD-2 Conductivity Profile
Pure Resources
Lovington, Lea County, New Mexico

Depth (ft)	Conductivity in S/cm		Conductivity out S/cm		Conductivity in S/cm		Sample Depth (ft)
WL 86.30					**Rerun**		
91.30	1.7		1.7		2.1		90
101.3	1.7		1.7		2.0		
111.3	1.6		1.7		1.9		
121.3	1.6		1.7		1.9		125
131.3	1.7		1.7		1.9		
141.3	1.6		1.7		1.9		
151.3	1.7		1.7		1.9		
161.3	1.7		1.7		1.9		
171.3	1.7		1.7		1.9		175
181.3	1.8		1.7		1.9		
191.3	1.8		1.7		1.9		
201.3	1.8		1.7		1.9		
211.3	1.8		1.7		1.9		
215*	1.8		1.8		1.9		215

* = log shows 221.30 feet but probe was on bottom at approximately 215 feet

Table 4
MWD-2 Interval Sampling Analytical Data
Pure Resources
Lovington, Lea County, New Mexico

Well ID	Sample Date	Total Alkalinity (mg/L as CaCO3)	Bromide (mg/L)	Dissolved Calcium (mg/L)	Dissolved Potassium (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Sodium (mg/L)	Specific Conductance (umhos/cm)	Dissolved Iron (mg/L)
MW-D2	11/3/2003	248	<1.00	150	5.16	23.4	123	1530	<0.0500
@90 feet	11/14/2003	268	<1.00	157	6.35	21.8	127	1670	NA
@125 feet	11/14/2003	238	<1.00	142	4.87	22.2	108	1470	NA
@175 feet	11/14/2003	238	<1.00	137	4.85	22.5	107	1440	NA
@215 feet	11/14/2003	232	<1.00	141	4.85	22.5	105	1440	NA

Table 4
MWD-2 Interval Sampling Analytical Data
Pure Resources
Lovington, Lea County, New Mexico

Well ID	Sample Date	Total Iron (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	Nitrite-N (mg/L)	Nitrate-N (mg/L)	pH (s.u.)	TDS (mg/L)	Benzene (mg/L)
MW-D2	11/3/2003	3.48	274	<1.00	89.1	0.257	2.28	7.5	1062	<0.00500
@90 feet	11/14/2003	NA	314	<1.00	90.5	0.517	1.82	7.4	1030	<0.00100
@125 feet	11/14/2003	NA	259	<1.00	84.7	0.377	2.21	7.5	912	<0.00100
@175 feet	11/14/2003	NA	248	<1.00	84.8	0.34	2.25	7.4	874	<0.00100
@215 feet	11/14/2003	NA	258	<1.00	85.2	0.328	2.31	7.4	912	<0.00100

Table 4
MWD-2 Interval Sampling Analytical Data
Pure Resources
Lovington, Lea County, New Mexico

Well ID	Sample Date	Ethylbenzene (mg/L)	Toluene (mg/L)	Xylenes (mg/L)	TPH DRO (mg/L)	TPH GRO (mg/L)
MW-D2	11/3/2003	<0.00500	<0.00500	0.00570	<5.00	<0.100
@90 feet	11/14/2003	<0.00100	<0.00100	<0.00100	<5.00	<0.100
@125 feet	11/14/2003	<0.00100	<0.00100	<0.00100	<5.00	<0.100
@175 feet	11/14/2003	<0.00100	<0.00100	<0.00100	<5.00	<0.100
@215 feet	11/14/2003	<0.00100	<0.00100	<0.00100	<5.00	<0.100

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Table 5
Biosparge Pilot Project Field and Analytical Data
Pure Resources
Lovington, Lea County, New Mexico

Well ID	Event/Description	Date	DTW (feet)	Field Parameters								VOCs					
				pH (SU)	DO (mg/L)	ORP (mV)	SpC (mS)	Turbidity (NTUs)	Temp °C	Fe2	S	PID 50'	PID 0'	Benzene	Toluene	Ethylbenzene	Xylenes
												(mg/L)					
BW-1	Pre baseline	11/05/03		8.05	9.07	172.00	49.20		18.3								
	Baseline	11/19/03	88.48	6.74	4.51	114	93.600	-10.00	20.6	0.0	0.0	1480.0	NA	1.09	<0.100	<0.100	<0.100
Injection well	Week 1	12/19/03										0.6	2.9				
	30 Day	01/12/04	86.30	7.70	10.54	207	50.100	-1.60	15.8	0.0	0.0	0.9	9.6	<0.00100	<0.00100	<0.00100	<0.00100
	60 Day	04/12/04	85.21	7.78	7.80	107.60	24.00	10.30	21.7	0.0	0.0	0.8	2.4	<0.00100	<0.00100	<0.00100	<0.00100
	90 Day	05/17/04	85.66	8.07	4.12	23	38.800	9.70	25.0	0.0	0.0	0.9	4.4	<0.00100	<0.00100	<0.00100	<0.00100
MW-A	Baseline	11/19/03	88.72	6.66	4.43	72	0.107	14.50	20.0	0.0	0.0	924.0	NA	2.18	<0.200	<0.200	<0.200
Monitoring W	Week 1	12/19/03		6.73	5.33	78.00	11.00	NA	18.6	0.0	0.0	836.0	1999.0				
	30 Day	01/12/04	86.48	6.63	4.23	80.0	11.100	123.00	18.1	0.0	0.0	1760.0	1999.0	7.81	<0.200	<0.200	<0.200
15' dg of	60 Day	04/12/04	82.86	6.91	1.93	63.60	68.00	4.50	21.9	0.0	0.0	123.0	507.0	0.0881	<0.00100	<0.00100	<0.00100
injection	90 Day	05/17/04	83.33	7.29	3.80	39.0	51.900	4.80	24.5	0.0	0.0	275.0	360.0	0.0292	<0.00500	<0.00500	0.0086
transect																	
MW-B	Baseline	11/19/03	89.96	7.10	4.76	151	75.900	-9.40	19.4	0.0	0.0	957.0	NA	0.139	0.00990	<0.00100	0.0202
Monitoring W	Week 1	12/19/03		7.49	7.54	207.00	55.80	NA	17.8	0.0	0.0	325.0	1297.0				
	30 Day	01/12/04	86.86	7.46	9.69	143	50.600	42.50	18.1	0.0	0.0	1999.0	1379.0	0.0066	0.00300	<0.00100	<0.00100
	60 Day	04/12/04	83.13	6.92	1.87	95.00	59.00	5.00	21.3	0.0	0.0	42.8	126.2	0.0211	0.0089	<0.00100	0.0018
	90 Day	05/17/04	83.95	7.01	0.70	-31.5	70.400	5.10	22.4	0.0	0.0	37.4	97.1	0.368	0.0228	<0.0100	<0.0100
MW-C	Baseline	11/19/03	88.83	7.02	3.76	79	74.800	24.00	19.8	0.0	0.0	190.1	NA	0.588	<0.0200	<0.0200	<0.0200
	Duplicate																
	Week 1	12/19/03		7.21	6.97	189.00	66.80	NA	17.9	0.0	0.0	1529.0	712.1				
Monitoring W	30 Day	01/12/04	87.03	7.24	8.80	203	58.100	9.30	20.0	0.0	0.0	802.0	1550.0	0.0086	0.0021	<0.00100	<0.00100
	60 Day	04/12/04	83.51	7.14	3.18	70.10	62.00	10.50	19.8	0.0	0.0	64.8	126.2	0.147	0.0526	0.0016	0.00400
	90 Day	05/17/04	83.91	5.85	1.17	91.5	99.700	9.00	23.4	0.0	0.0	63.8	160.0	0.0225	0.0103	<0.00100	0.0012
MW-H	Baseline	11/19/03	88.71	6.90	3.35	87	86.600	-10.00	20.3	0.0	0.0	450.8	NA	0.813	0.0228	<0.0100	0.0133
	Week 1	12/19/03		7.10	5.11	160.00	75.30	NA	18.1	0.0	0.0	603.0	547.0				
Monitoring W	30 Day	01/12/04	86.30	7.19	6.42	128	53.100	-6.90	19.2	0.0	0.0	1999.0	1199.0	0.06	0.0115	<0.0100	0.0105
	60 Day	04/12/04	82.90	7.02	0.82	23.40	64.00	5.00	20.2	0.0	0.0	64.9	118.0	1.53	0.0944	<0.0100	0.374
	90 Day	05/17/04	83.43	6.98	0.48	-96.2	70.500	4.80	22.2	0.0	0.0	67.6	44.8	1.79	<0.0500	<0.0500	<0.0500

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Table 5
Biosparge Pilot Project Field and Analytical Data
Pure Resources
Lovington, Lea County, New Mexico

Well ID	Event/Description	Date	DTW (feet)	Field Parameters								VOCs					
				pH	DO	ORP	SpC	Turbidity	Temp	Fe2	S	PID 50'	PID 0'	Benzene	Toluene	Ethylbenzene	Xylenes
				(SU)	(mg/L)	(mV)	(mS)	(NTUs)	°C			(mg/L)					
MW-I	Baseline	11/19/03	87.43	5.98	4.23	65	0.153	399.00	21.0	1.2	0.0	1999.0	NA	1.590	<0.200	<0.200	<0.200
	Week 1	12/19/03		6.68	4.63	164.00	71.30	NA	17.7	0.0	0.0	1665.0	1106.0				
Monitoring W	30 Day	01/12/04	85.68	7.07	7.51	64	65.100	5.20	19.1	0.0	0.0	1999.0	891.0	0.708	0.0193	<0.0100	<0.0100
	60 Day	04/12/04	82.49	6.95	0.71	41.60	68.00	6.30	20.0	0.0	0.0	78.4	313.0	1.57	0.104	<0.0100	0.0301
	90 Day	05/17/04	82.88	6.85	1.40	50	73.500	5.80	23.8	0.0	0.0	157.4	72.4	2.14	<0.0500	<0.0500	<0.0500
MW-N	Baseline	11/19/03	87.11	7.05	5.69	167	94.300	10.00	20.0	0.0	0.0	742.0	NA	<0.00100	<0.00100	<0.00100	<0.00100
	Week 1	12/19/03		5.93	7.65	188.00	12.00	NA	18.1	0.0	0.0	915.3	667.0				
Monitoring W	30 Day	01/12/04	85.85	7.31	10.06	99	65.500	7.10	18.2	0.0	0.0	1357.0	534.0	<0.00100	<0.00100	<0.00100	<0.00100
	60 Day	04/12/04	82.79	5.30	0.89	130.50	69.00	5.60	20.1	0.0	0.0	117.7	151.9	0.0338	0.0387	0.0021	0.0051
	90 Day	05/17/04	83.11	7.19	4.65	33.1	73.000	4.50	25.6	0.0	0.0	118.9	10.3	<0.00100	<0.00100	<0.00100	<0.00100
MW-D	Baseline	11/19/03										0.0	NA				
	Week 1	12/19/03										0.6	0.0				
Monitoring W	30 Day	01/12/04										0.6	0.4				
	60 Day	04/12/04										0.8	3.1				
	90 Day	05/17/04	82.36									6.2	3.1				
MW-4	Baseline	11/19/03	None									NA	NA				
	Week 1	12/19/03										2.5	19.7				
Monitoring W	30 Day	01/12/04	None									1948.0	420.0				
	60 Day	04/12/04	None									111.6	341.0				
	90 Day	05/17/04	None									33.6	87.6				
MW-10	Baseline	11/19/03	None									1999.0	NA				
	Week 1	12/19/03										637.5	998.0				
Monitoring W	30 Day	01/12/04	None									792.0	1011.0				
	60 Day	04/12/04	None									68.7	213.1				
	90 Day	05/17/04	None									59.7	319.0				

Notes:

--	Indicates parameter was not measured or analyzed
mg/L	Milligrams per liter, equivalent to parts per million
VP10	
baseline	
ug/L	Micrograms per liter, equivalent to parts per billion
n/L	Nanograms per liter, equivalent to parts per trillion
SU	Standard Unit
mV	Millivolts
mS	Milli Siemens
°C	Degrees Celcius
NTU	Nephelometric Turbidity Unit
P1	Performance monitoring event
F1	Field monitoring event
BL	Baseline
*	ug per sample

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Table 5
Biosparge Pilot Project Field and Analytical Data
Pure Resources
Lovington, Lea County, New Mexico

Well ID	Event/Description	Date	Dissolved Gasses-Microseeps							Wet Chemistry				Vapor - AirToxics						
			Carbon Dioxide	Nitrogen	Methane	Oxygen	Dissolved Iron (Fe^{2+})	Total Iron	TDS	TOC	Alkalinity	Sulfate	Sulfide	Benzene	Toluene	Ethyl Benzene	Xylene	Oxygen	Methane	Carbon Dioxide
			(mg/L)		(mg/L)		(mg/L)							(ppbv)					(%)	
BW-1	Pre baseline	11/05/03	64	15	12	1.5														
	Baseline	11/19/03	75	13	19	0.7	<0.0500	<0.0500	510	4.74	344	37.9	--	300000	76000	2000	13000	11	0.14	7.1
Injection well	Week 1	12/19/03																		
	30 Day	01/12/04	2.6	15	0.61	9.6	<0.0500	0.124	295	<1.00	120	64.3		130	120	<11	35	19	0.00023	0.055
	60 Day	04/12/04																		
	90 Day	05/17/04	1.6	14	0.29	7.8	<0.0500	6.06	257	1.45	204	45.1		67	100	ND	50	20	ND	0.041
MW-A	Baseline	11/19/03	100	15	5	1.4	<0.0500	0.211	614	8.62	428	37.8		840000	210000	3800	57000	7.2	0.15	7.3
Monitoring W	Week 1	12/19/03																		
	30 Day	01/12/04	140	15	62	1.1	<0.0500	1.43	670	12.3	490	33.7		1500000	590000	27000	113000	17	0.016	2.8
15' dg of	60 Day	04/12/04												14000	18000	2600	11500	22	ND	0.061
injection	90 Day	05/17/04	16	15	0.56	3.3	<0.0500	0.12	360	8	180	26.1		160000	92000	6700	18200	21	ND	0.061
transect																				
MW-B	Baseline	11/19/03	28	14	2.9	3.1	<0.0500	<0.0500	450	3.29	228	36.4		570000	210000	8200	33200	9.4	0.071	6.5
Monitoring W	Week 1	12/19/03																		
	30 Day	01/12/04	12	14	0.54	7.4	<0.0500	0.475	324	<1.0	120	33.7		1200000	400000	19000	93000	1.6	0.16	11
	60 Day	04/12/04												*460000*	*120000*	*1300*	*2500*	14	0.082	5.2
	90 Day	05/17/04	39	19	9.4	2.4	<0.0500	0.123	449	3.47	248	36.7		730000	300000	11000	31200	8.8	0.12	7.6
										#REF!										
MW-C	Baseline	11/19/03	43	15	5.3	0.94	<0.0500	<0.0500	435	2.56	270	29.2		160000	74000	5100	15800	16	0.0034	2.8
	Duplicate																	16	0.0036	2.8
	Week 1	12/19/03																		
Monitoring W	30 Day	01/12/04	22	13	2.3	3.6	<0.0500	8.25	362	1.31	220	32.2		740000	340000	26000	90000	1.6	0.031	12
	60 Day	04/12/04												160000	39000	290	260	17	0.0069	3.7
	90 Day	05/17/04	990	4.6	0.31	1.8	<0.0500	14.3	886	<1.00	604	38.5		690000	350000	20000	41000	6.8	0.015	12
MW-H	Baseline	11/19/03	45	16	4.4	0.98	<0.0500	<0.0500	428	4.15	248	64.4		520000	200000	9900	33600	15	0.09	3.2
	Week 1	12/19/03																		
Monitoring W	30 Day	01/12/04	20	14	2.3	1.9	<0.0500	0.2	321	<1.00	180	37.9		1600000	670000	40000	116000	1.4	0.44	12
	60 Day	04/12/04												950000	290000	3100	8100	11	0.21	6.8
	90 Day	05/17/04	44	16	8	0.65	0.092	0.112	452	1.47	252	38.4		1600000	700000	33000	80000	2.4	0.34	12

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Table 5
Biosparge Pilot Project Field and Analytical Data
Pure Resources
Lovington, Lea County, New Mexico

Well ID	Event/Description	Date	Dissolved Gasses-Microseeps				Wet Chemistry							Vapor - AirToxics						
			Carbon Dioxide	Nitrogen	Methane	Oxygen	Dissolved Iron (Fe^{2+})	Total Iron	TDS	TOC	Alkalinity	Sulfate	Sulfide	Benzene	Toluene	Ethyl Benzene	Xylene	Oxygen	Methane	Carbon Dioxide
			(mg/L)		(mg/L)		(mg/L)							(ppbv)					(%)	
MW-I	Baseline	11/19/03	900	3.9	2.6	1.6	0.446	5.5	882	7.43	672	38.9		1600000	590000	26000	109000	7	0.042	9.6
	Week 1	12/19/03																		
Monitoring W	30 Day	01/12/04	31	13	2.5	1.3	<0.0500	0.354	393	1.71	206	41.3		1200000	460000	4800	79000	6.7	0.054	9.2
	60 Day	04/12/04												850000	180000	<1400	2100	9.4	0.061	6.9
	90 Day	05/17/04	52	15	3.4	0.65	0.082	0.919	466	1.82	250	37.3		770000	280000	1800	25100	12	0.05	5.8
MW-N	Baseline	11/19/03	24	13	0.94	4.9	<0.0500	<0.0500	477	<1.00	192	40.1		1600	530	39	128	10	0.0014	8.1
	Week 1	12/19/03																		
Monitoring W	30 Day	01/12/04	16	14	0.66	5.9	<0.0500	0.333	379	<1.00	182	40.6		<540*	<540*	<540*	<540*	2.7	0.0029	14
	60 Day	04/12/04												<12	70	<12	<12	13	0.0021	6
	90 Day	05/17/04	19	12	0.43	5.2	<0.0500	<0.0500	474	<1.00	182	40.7		4200	92	14	48	4.1	0.002	13
MW-D	Baseline	11/19/03												70	77	ND	12	20	ND	0.72
	Week 1	12/19/03																		
Monitoring W	30 Day	01/12/04												67	63	ND	23	15	ND	2.9
	60 Day	04/12/04												190	33	<12	<12	21	ND	0.31
	90 Day	05/17/04												410	120	ND	ND	18	ND	2.6
MW-4	Baseline	11/19/03												missed	missed	missed	missed	missed	missed	missed
	Week 1	12/19/03																		
Monitoring W	30 Day	01/12/04												400000	230000	27000	68000	2.5	0.0071	13
	60 Day	04/12/04												180000	41000	320	330	9.2	0.01	9.1
	90 Day	05/17/04												360000	220000	18000	37800	3.8	0.013	12
MW-10	Baseline	11/19/03												840000	350000	2800	67000	6.8	0.21	8.2
	Week 1	12/19/03																		
Monitoring W	30 Day	01/12/04												720000	250000	15000	38800	9.6	0.23	7
	60 Day	04/12/04												1100000	42000	24000	64000	5.7	0.28	10
	90 Day	05/17/04												1600000	670000	35000	71000	5.7	0.18	12
VP10 baseline														1300	350	ND	29	16	0.00028	3.4

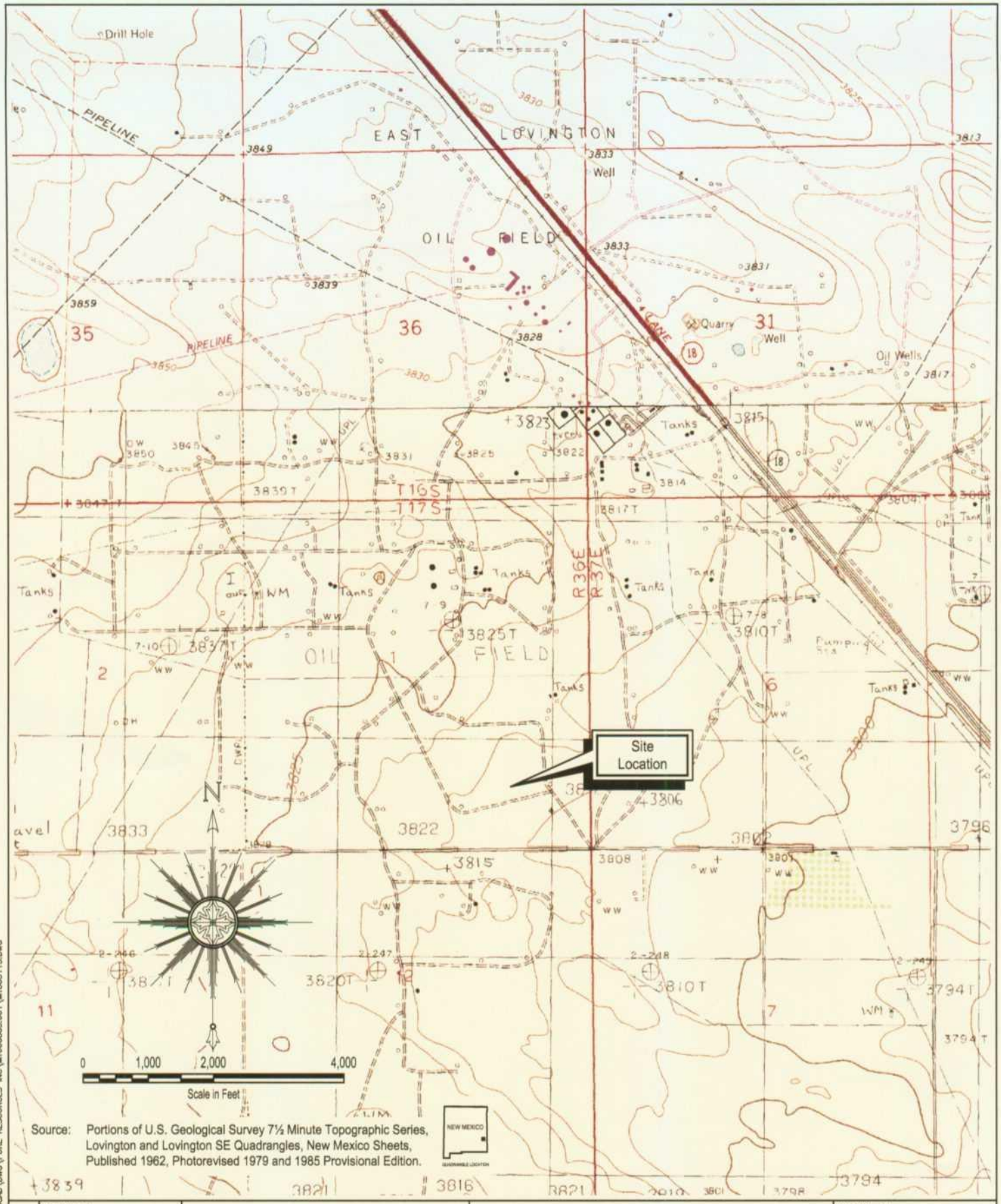
Notes:

--	Indicates parameter was not measured or s
mg/L	Milligrams per liter, equivalent to parts per r
ug/L	Micrograms per liter, equivalent to parts pe
n/L	Nanograms per liter, equivalent to parts pe
SU	Standard Unit
mV	Millivolts
mS	Milli Siemens
*C	Degrees Celcius
NTU	Nephelometric Turbidity Unit
P1	Performance monitoring event
F1	Field monitoring event
BL	Baseline
*	ug per sample

ARCADIS

Table 6
Vapor Point Analytical Data
Pure Resources
Lovington, Lea County, New Mexico

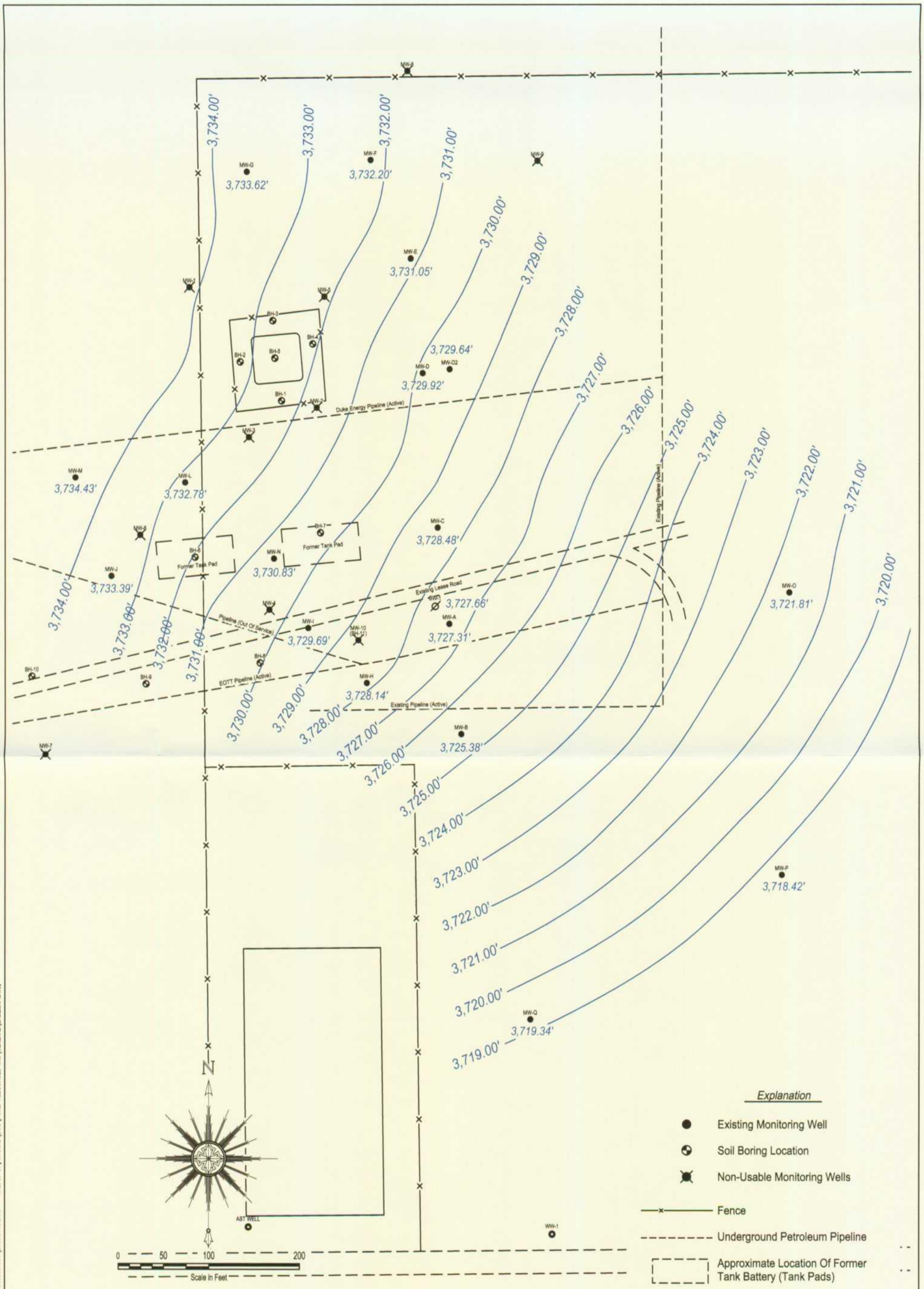
		Units	VP10	VP30	VP90
Baseline	B	µg/sample	<3.0	41	<3.0
	T	µg/sample	<3.0	<3.0	<3.0
	E	µg/sample	<3.0	<3.0	<3.0
	X	µg/sample	<3.0	<3.0	<3.0
30 day	B	ppm	2.4	<0.058	0.098
	T	ppm	0.18	<0.045	0.068
	E	ppm	0.057	<0.057	<0.057
	X	ppm	0.085	0.10	0.068
60 day	B	ppm	<0.99	<0.99	1.9
	T	ppm	<0.84	<0.84	<0.84
	E	ppm	<0.89	<0.89	<0.89
	X	ppm	<0.96	<0.96	1.1
90 day	B	ppm	<0.87	<0.87	3.8
	T	ppm	<0.74	<0.74	<0.74
	E	ppm	<0.78	<0.78	<0.74
	X	ppm	<0.84	<0.84	<0.84



Area Manager: A. Schmidt Project Manager: F. Kieffer Task Manager: F. Kieffer Technical Review: S. Tischer	ARCADIS 1004 North Big Spring Street Suite 300 Midland, TX 79701-3383 Tel: 432-687-5400 Fax: 432-687-5401 www.arcadis-us.com	Pure Resources, Inc. Lovington Paddock Site Site Location Map Lea County, New Mexico	Project Number: MT000803.0001 Drawing Date: 17 May 2003 Figure: 1

7/1/04 09:16 HCLARDY R16 G:\AUTOCAD\DWG\PURE RESOURCES INC\MT000803.001\MT803113.DWG
31-014-00666

31-014-00668



Source: Client-provided copy of Benzene Concentration Map, 2/12/02 created by Highlander Environmental Corp., supplemented by Piper Surveying Company plat prepared July 9, 2003. ARCADIS does not warrant the accuracy of this map data.

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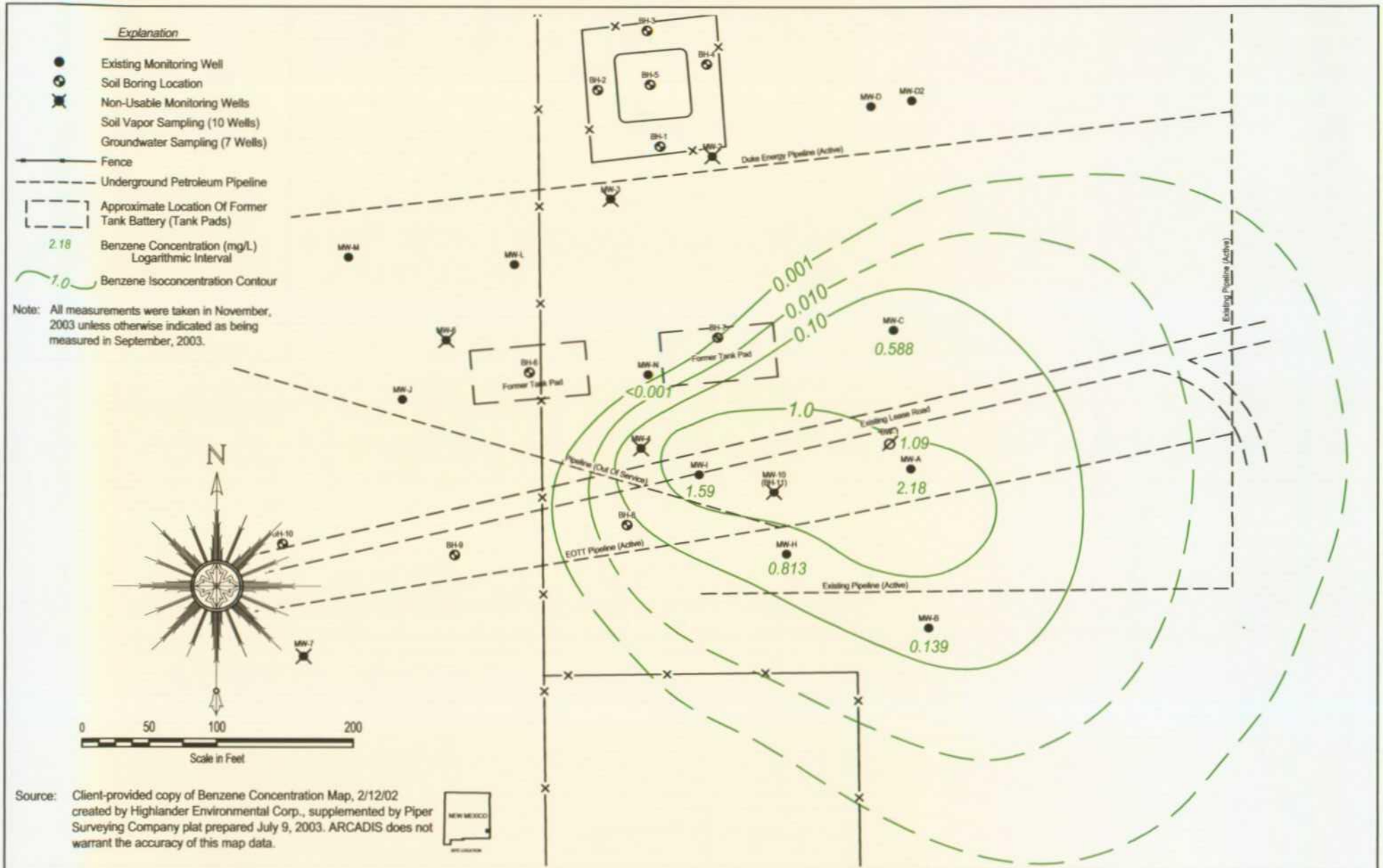
Pure Resources, Inc.
Lovington Paddock Site

Groundwater Gradient Map - November, 2003

Lea County, New Mexico

Project Number	MT000803.0001
Drawing Date	15 May 2004
Figure	3



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Task Manager	F. Kieffer
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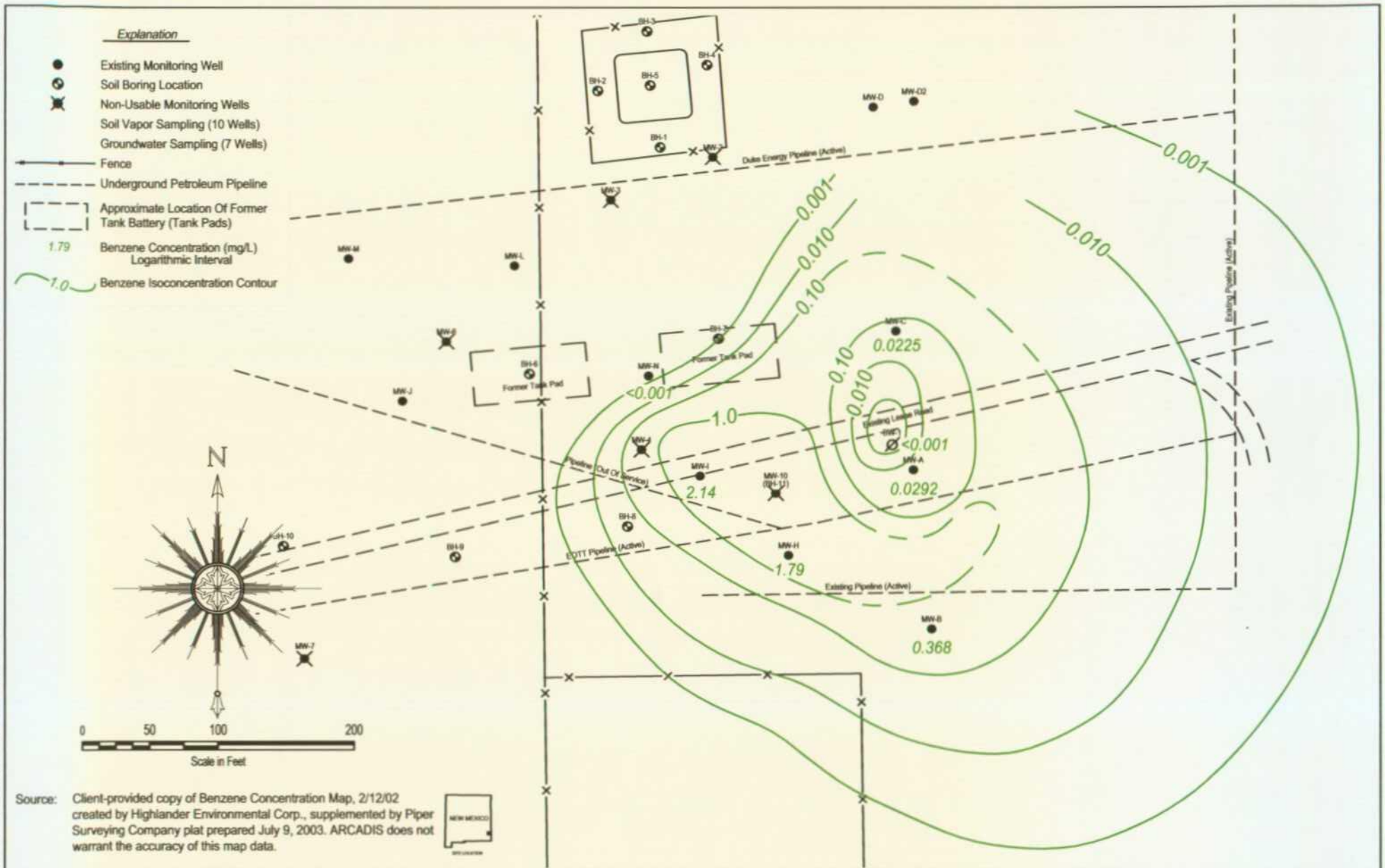
Pure Resources, Inc.
Lovington Paddock Site

Biosparge Baseline Benzene Isoconcentration Map

Lea County, New Mexico

Project Number	MT000803.0001
Drawing Date	21 June 2004
Figure	5



Source: Client-provided copy of Benzene Concentration Map, 2/12/02 created by Highlander Environmental Corp., supplemented by Piper Surveying Company plat prepared July 9, 2003. ARCADIS does not warrant the accuracy of this map data.

NEW MEXICO

Area Manager	A. Schmidt
Project Manager	F. Kieffer
Task Manager	F. Kieffer
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Pure Resources, Inc.
Lovington Paddock Site

Biosparge 90 Day Benzene Isoconcentration Map

Lea County, New Mexico

Project Number	MT000803.0001
Drawing Date	21 June 2004
Figure	6

31-014-00672

Explanation

- Existing Monitoring Well
- Soil Boring Location
- Non-Usable Monitoring Wells
- Soil Vapor Sampling (10 Wells)
- Underground Petroleum Pipeline
- Approximate Location Of Former Tank Battery (Tank Pads)
- 3,733.13' Groundwater Elevation (Feet AMSL) Contour Interval - 1 Foot
- 3,730.00' Groundwater Gradient Contour

MW-B
MW-G 3,735.57'
MW-F 3,734.64'
MW-9
MW-E 3,734.12'
MW-J
MW-5
BH-3
BH-4
BH-2
BH-5
BH-1
MW-2
MW-D 3,733.72'
MW-D2 3,733.38'
Duke Energy Pipeline (Active)
MW-3
MW-M 3,736.58'
MW-L 3,735.61'
MW-6
BH-7
Former Tank Pad
BH-6
Former Tank Pad
MW-N 3,734.59'
MW-C 3,733.13'
MW-J 3,736.13'
MW-4
Pipeline (Out Of Service)
MW-I 3,734.06'
MW-10 (BH-11)
Existing Lease Road
BW-1
MW-A 3,732.71'
BH-8
BH-10
BH-9
EOTT Pipeline (Active)
MW-H 3,733.31'
Existing Pipeline (Active)
MW-8 3,732.10'
MW-7
MW-O 3,729.74'
MW-P 3,728.32'
MW-Q 3,728.77'
AST WELL
WW-1

3,736.00' 3,735.00' 3,734.00' 3,733.00' 3,732.00' 3,731.00' 3,730.00' 3,729.00'

N

0 50 100 200
Scale in Feet

Source: Client-provided copy of Benzene Concentration Map, 2/12/02 created by Highlander Environmental Corp., supplemented by Piper Surveying Company plat prepared July 9, 2003. ARCADIS does not warrant the accuracy of this map data.

NEW MEXICO
SITE LOCATION

Area Manager	A. Schmidt
Project Manager	F. Kieffer
Task Manager	F. Kieffer
Technical Review	S. Tischer

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Pure Resources, Inc.
Lovington Paddock Site

Groundwater Gradient Map
May, 2004

Lea County, New Mexico

Project Number	MT000803.0001
Drawing Date	21 June 2004
Figure	7

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31-014-00689

Explanation

- Existing Monitoring Well
- Soil Boring Location
- Non-Usable Monitoring Wells
- Fence
- Underground Petroleum Pipeline
- Approximate Location Of Former Tank Battery (Tank Pads)
- 2.16 Benzene Concentration (mg/L)
- 1.0 Benzene Isoconcentration Contour Logarithmic Interval

MW-G <0.00500
MW-F <0.00500
MW-E <0.00100
MW-D 0.134
MW-C 2.16
MW-N 2.41
MW-A 1.64
MW-I 0.0547
MW-H 0.0682
MW-B 0.287
MW-M <0.00100
MW-L <0.00100
MW-J <0.00500

Approximate November 2003 Groundwater Gradient

Approximate November 2003 Groundwater Gradient

July 2003 Benzene Plume

0.1
1.0
0.1
1.0

Former Tank Pad
Former Tank Pad
Duke Energy Pipeline (Active)
Existing Pipeline (Active)
Existing Lease Road
Pipeline (Out Of Service)
EOTT Pipeline (Active)
Existing Pipeline (Active)

MW-4 10-8-03
B <0.00100
T <0.00100
E <0.00100
X <0.00100

MW-G 11-6-03
B <0.00100
T <0.00100
E <0.00100
X =0.00140

MW-3 10-8-03
B <0.00100
T <0.00100
E <0.00100
X <0.00100

MW-P 11-6-03
B <0.00100
T <0.00100
E <0.00100
X <0.00100

MW-Q 11-6-03
B <0.00100
T <0.00100
E <0.00100
X <0.00100

AST WELL 10-8-03
B <0.00100
T <0.00100
E <0.00100
X <0.00100

MW-1 10-8-03
B <0.00100
T <0.00100
E <0.00100
X <0.00100

MW-2 10-8-03
B <0.00100
T <0.00100
E <0.00100
X <0.00100

N

0 50 100 200
Scale in Feet

Source: Client-provided copy of Benzene Concentration Map, 2/12/02 created by Highlander Environmental Corp., supplemented by Piper Surveying Company plat prepared July 9, 2003. ARCADIS does not warrant the accuracy of this map data.

NEW MEXICO

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Pure Resources, Inc.
Lovington Paddock Site

BTEX Analysis for October and November, 2003

Lea County, New Mexico

Project Number	MT000803.0001
Drawing Date	17 May 2004
Figure	4

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31-014-00667

Explanation

- Existing Monitoring Well
- Soil Boring Location
- Non-Usable Monitoring Wells
- Fence
- Underground Petroleum Pipeline
- Approximate Location Of Former Tank Battery (Tank Pads)

MW-9, MW-F, MW-G, MW-E, MW-1, MW-5, BH-3, BH-4, BH-5, BH-2, BH-1, MW-O, MW-22, MW-3, Duke Energy Pipeline (Active), MW-M, MW-L, MW-K, MW-C, BH-7, Former Tank Pad, BH-6, Former Tank Pad, MW-N, MW-J, MW-4, Existing Lease Road, MW-D, MW-A, Pipeline (Out Of Service), MW-I, MW-15 (R-17), BH-8, BH-10, BH-9, EGTT Pipeline (Active), MW-H, Existing Pipeline (Active), MW-8, MW-7, MW-P, MW-Q, AST - BELL, MW-1, MW-2, WW-4, WW-3, Existing Pipeline (Active)

N

0 50 100 200

Scale in Feet

Source: Client-provided copy of Benzene Concentration Map, 2/12/02 created by Highlander Environmental Corp., supplemented by Piper Surveying Company plat prepared July 9, 2003. ARCADIS does not warrant the accuracy of this map data.

NEW MEXICO

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Pure Resources, Inc.
Lovington Paddock Site

Well Location Map

Lea County, New Mexico

Project Number	MT000803.0001
Drawing Date	17 May 2004
Figure	2

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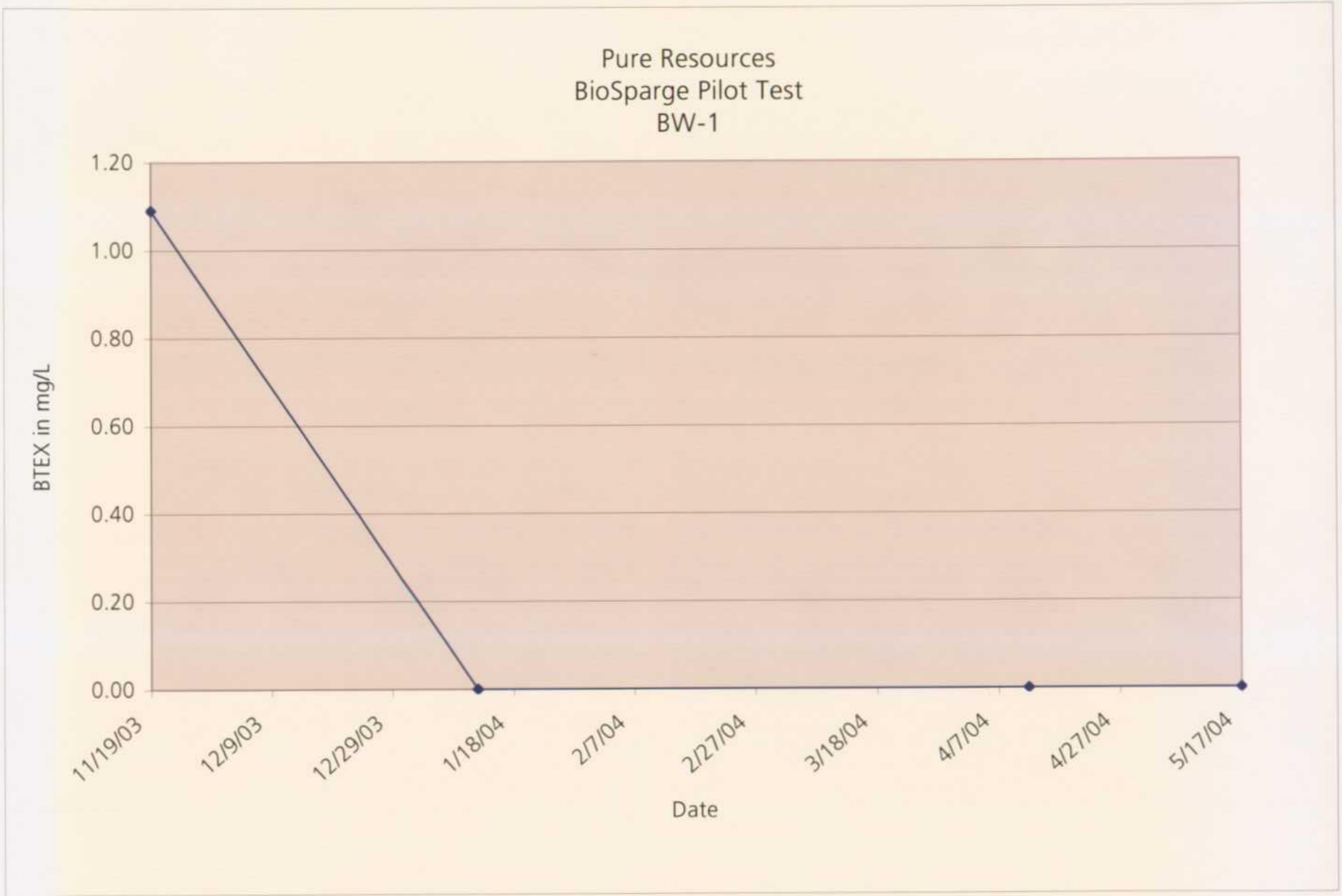

Pure Resources
BioSparge Pilot Test
BW-1
BTEX in mg/L
1.20
1.00
0.80
0.60
0.40
0.20
0.00
11/19/03
12/9/03
12/29/03
1/18/04
2/7/04
2/27/04
3/18/04
4/7/04
4/27/04
5/17/04
Date

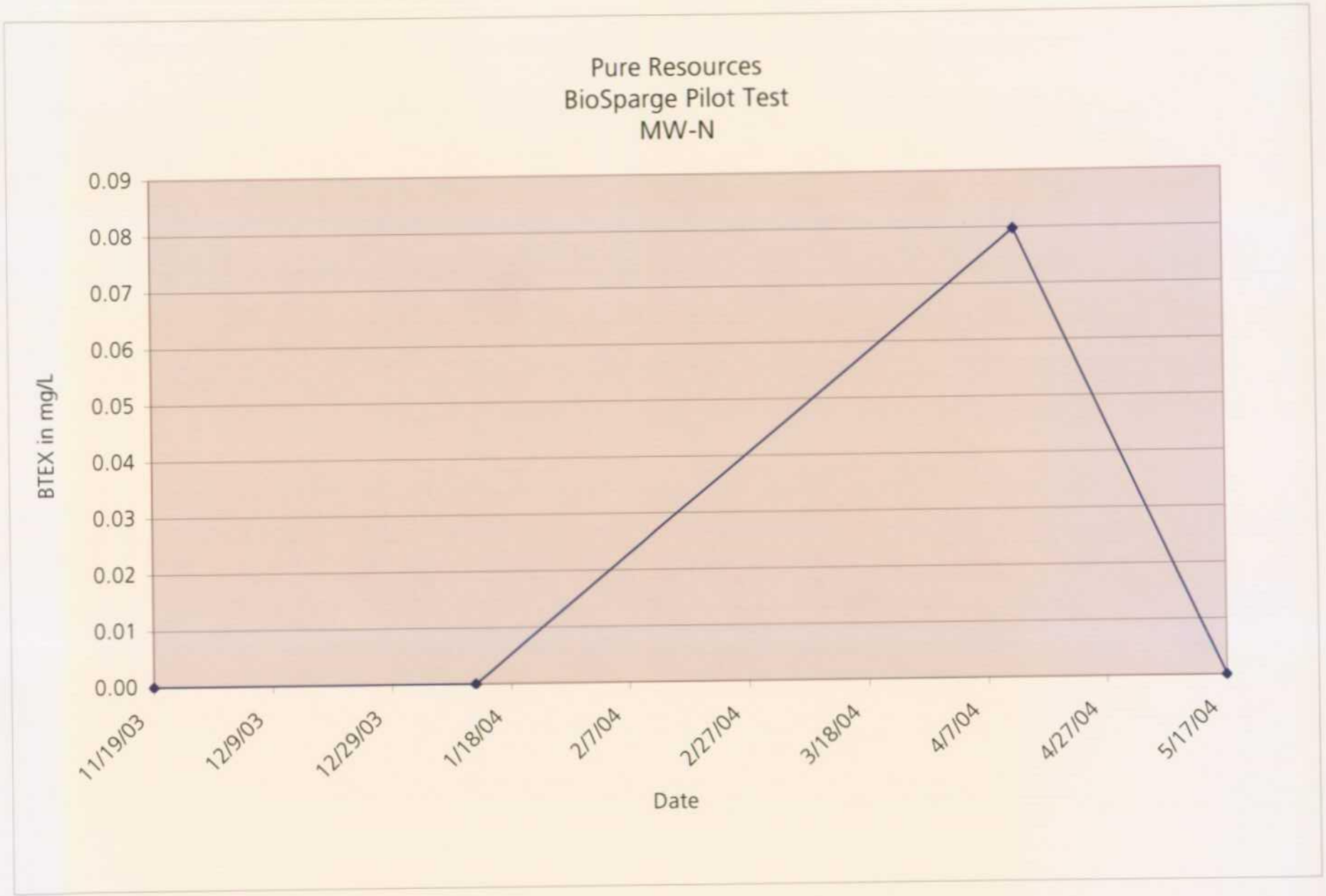

Pure Resources
BioSparge Pilot Test
MW-A
BTEX in mg/L
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/19/03
12/9/03
12/29/03
1/18/04
2/7/04
2/27/04
3/18/04
4/7/04
4/27/04
5/17/04
Date

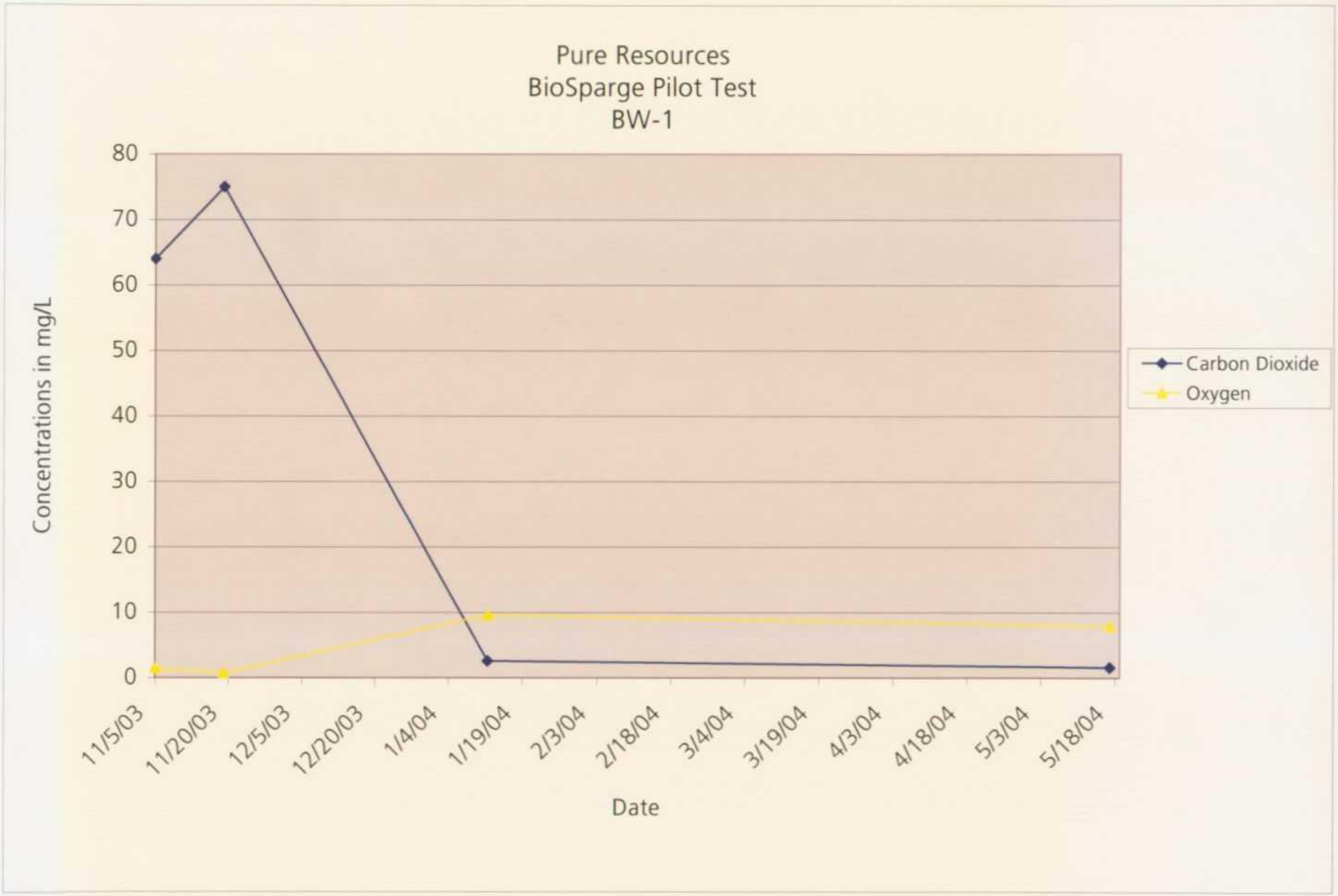

Pure Resources
BioSparge Pilot Test
MW-B
BTEX in mg/L
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
11/19/03
12/9/03
12/29/03
1/18/04
2/7/04
2/27/04
3/18/04
4/7/04
4/27/04
5/17/04
Date

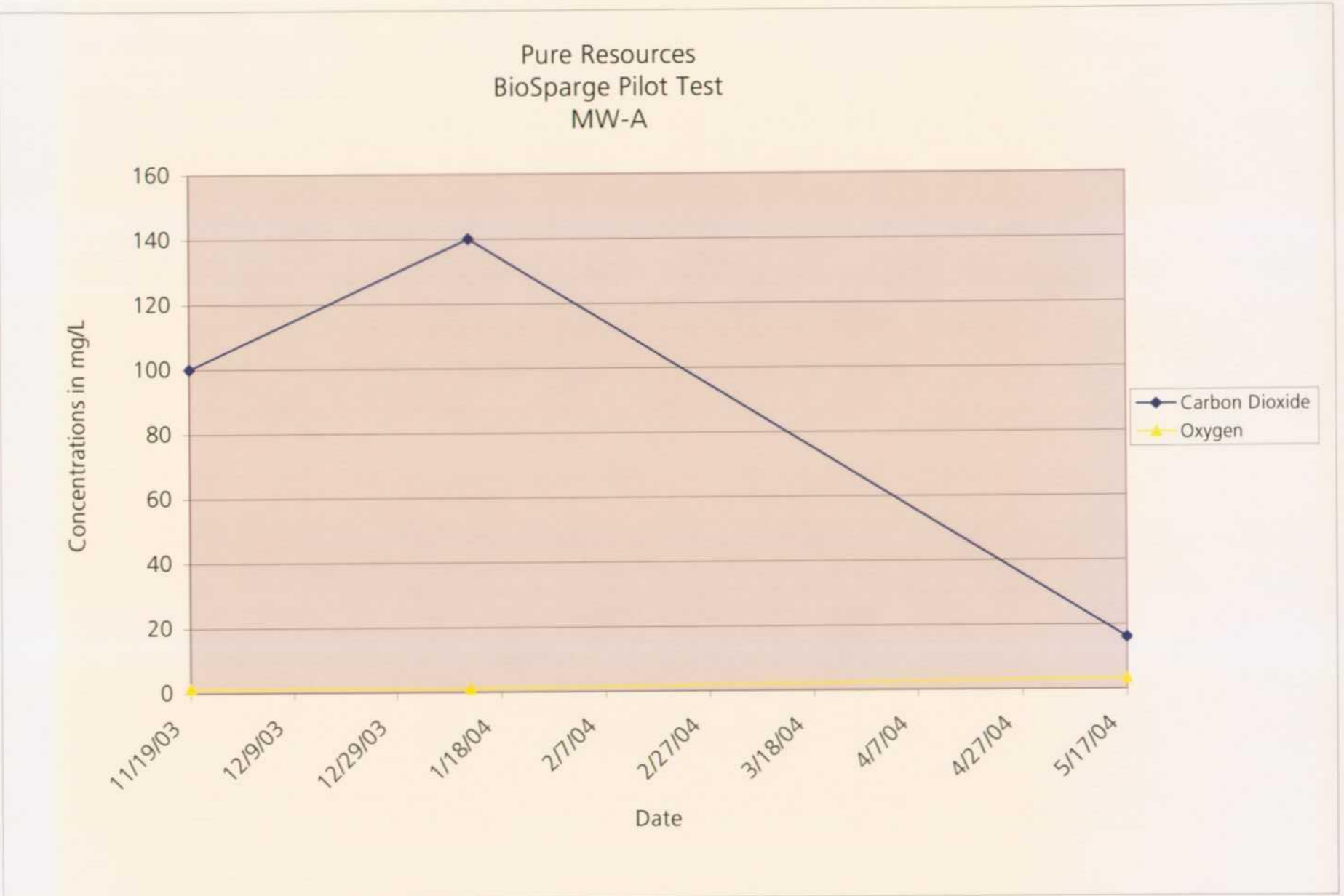

Pure Resources
BioSparge Pilot Test
MW-C
BTEX in mg/L
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
11/19/03
12/9/03
12/29/03
1/18/04
2/7/04
2/27/04
3/18/04
4/7/04
4/27/04
5/17/04
Date


Pure Resources
BioSparge Pilot Test
MW-H
BTEX in mg/L
2.50
2.00
1.50
1.00
0.50
0.00
11/19/03
12/9/03
12/29/03
1/18/04
2/7/04
2/27/04
3/18/04
4/7/04
4/27/04
5/17/04
Date

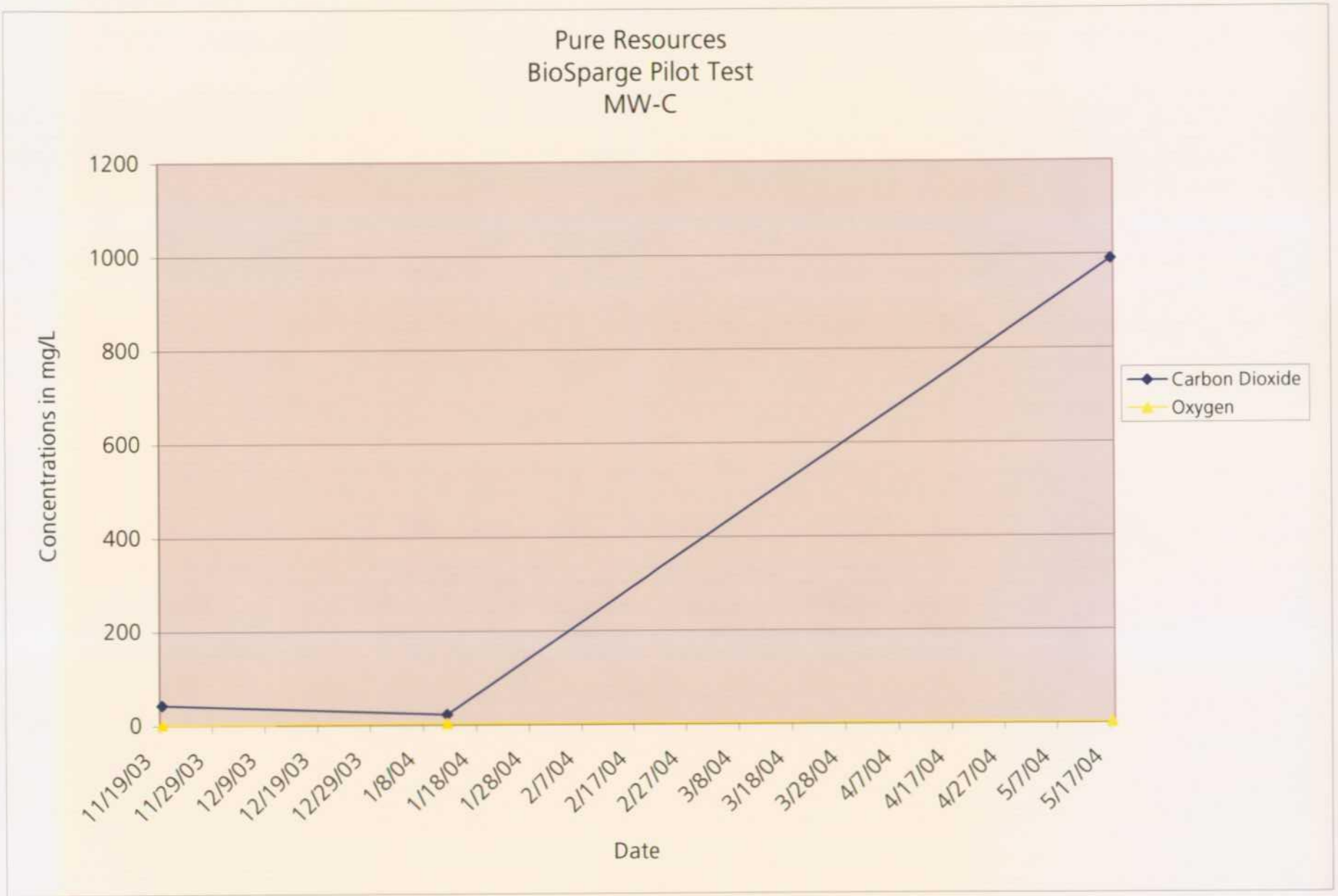

Pure Resources
BioSparge Pilot Test
MW-I
BTEX in mg/L
2.50
2.00
1.50
1.00
0.50
0.00
11/19/03
12/9/03
12/29/03
1/18/04
2/7/04
2/27/04
3/18/04
4/7/04
4/27/04
5/17/04
Date


Pure Resources
BioSparge Pilot Test
MW-N
BTEX in mg/L
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
11/19/03
12/9/03
12/29/03
1/18/04
2/7/04
2/27/04
3/18/04
4/7/04
4/27/04
5/17/04
Date

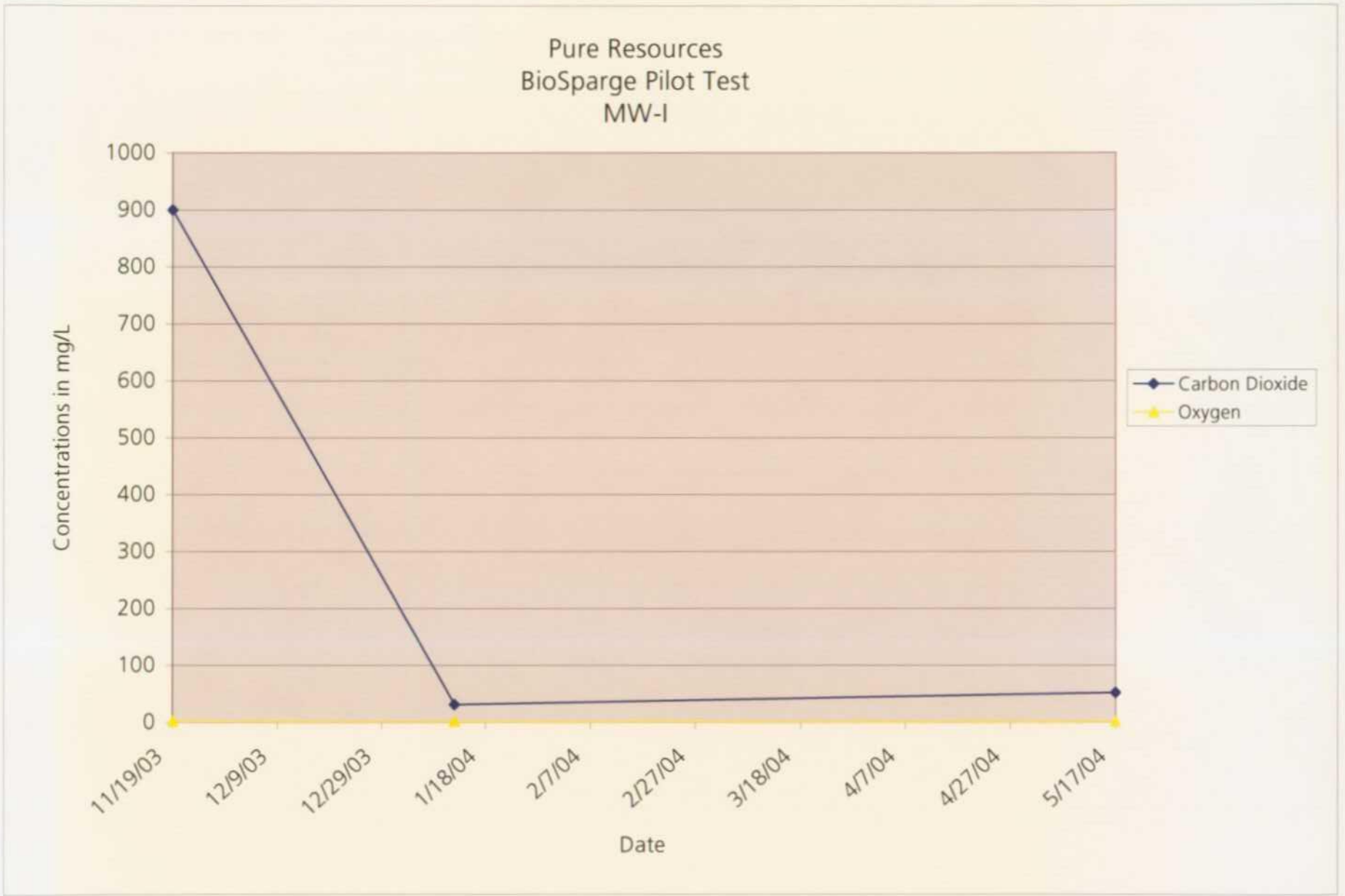

Pure Resources
BioSparge Pilot Test
BW-1
Concentrations in mg/L
80
70
60
50
40
30
20
10
0
11/5/03
11/20/03
12/5/03
12/20/03
1/4/04
1/19/04
2/3/04
2/18/04
3/4/04
3/19/04
4/3/04
4/18/04
5/3/04
5/18/04
Date
Carbon Dioxide
Oxygen


Pure Resources
BioSparge Pilot Test
MW-A
Concentrations in mg/L
160
140
120
100
80
60
40
20
0
11/19/03
12/9/03
12/29/03
1/18/04
2/7/04
2/27/04
3/18/04
4/7/04
4/27/04
5/17/04
Date
Carbon Dioxide
Oxygen

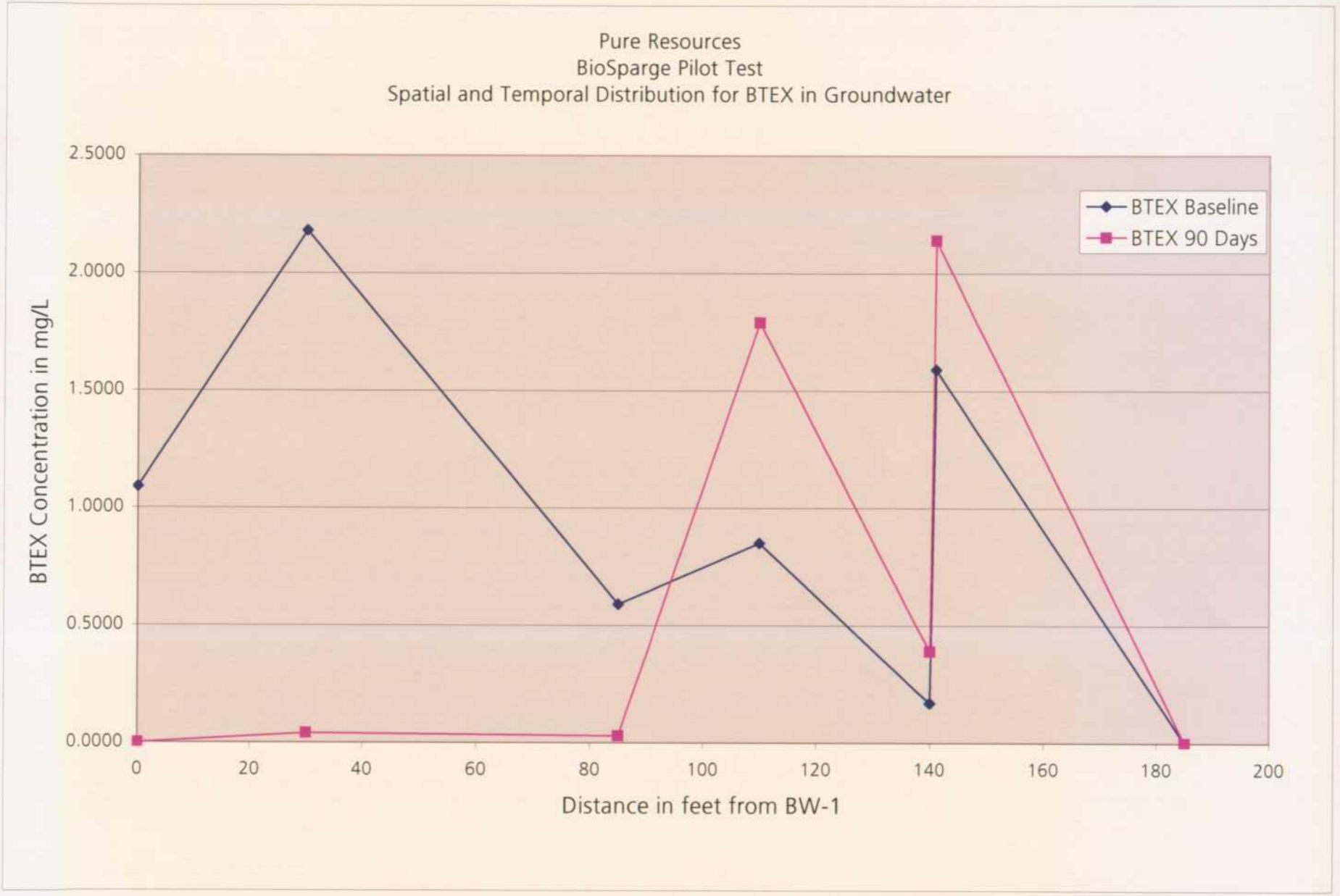

Pure Resources
BioSparge Pilot Test
MW-B
Concentrations in mg/L
45
40
35
30
25
20
15
10
5
0
11/19/03
12/9/03
12/29/03
1/18/04
2/7/04
2/27/04
3/18/04
4/7/04
4/27/04
5/17/04
Date
Carbon Dioxide
Oxygen

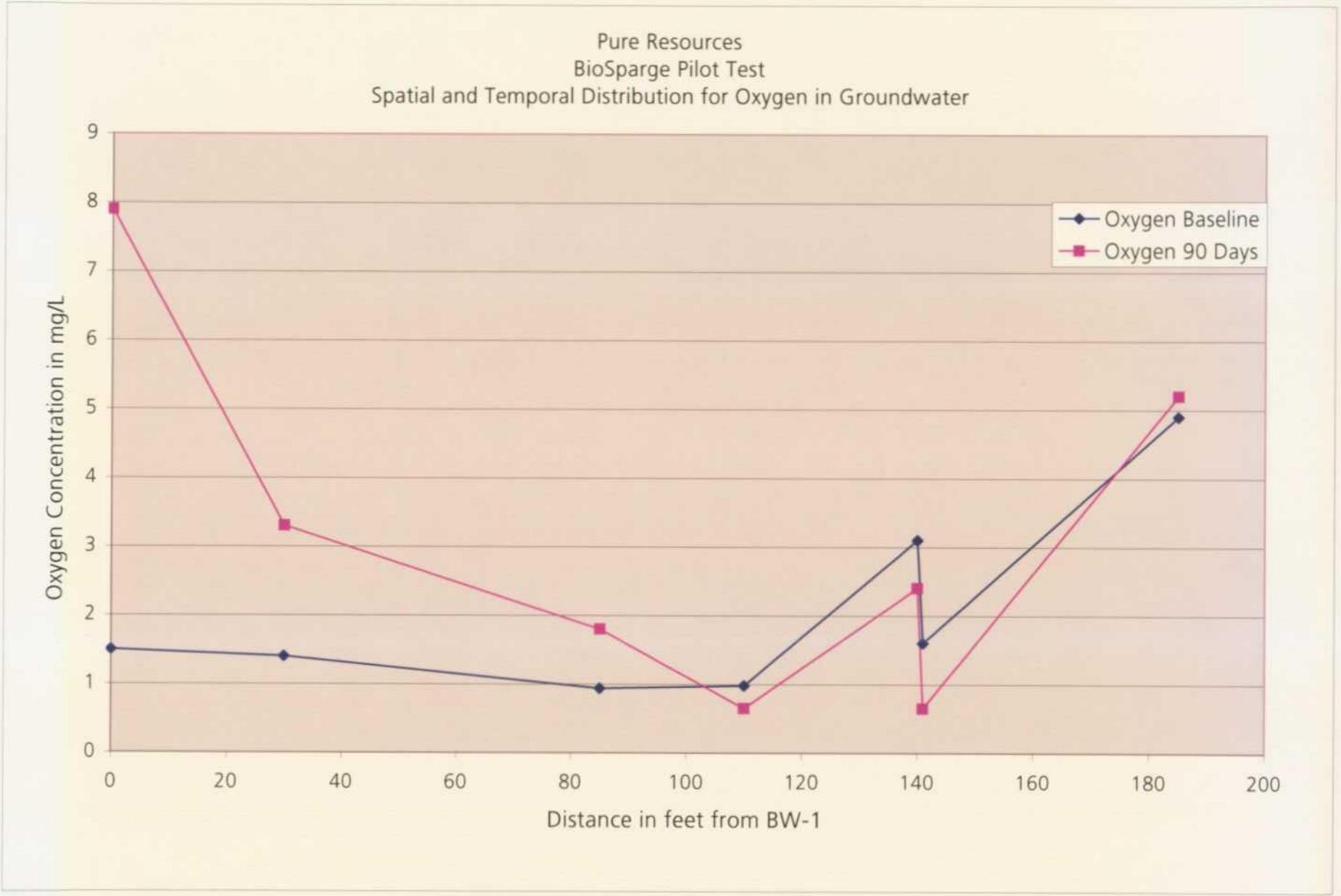

Pure Resources
BioSparge Pilot Test
MW-C
Concentrations in mg/L
1200
1000
800
600
400
200
0
11/19/03
11/29/03
12/9/03
12/19/03
12/29/03
1/8/04
1/18/04
1/28/04
2/7/04
2/17/04
2/27/04
3/8/04
3/18/04
3/28/04
4/7/04
4/17/04
4/27/04
5/7/04
5/17/04
Date
Carbon Dioxide
Oxygen

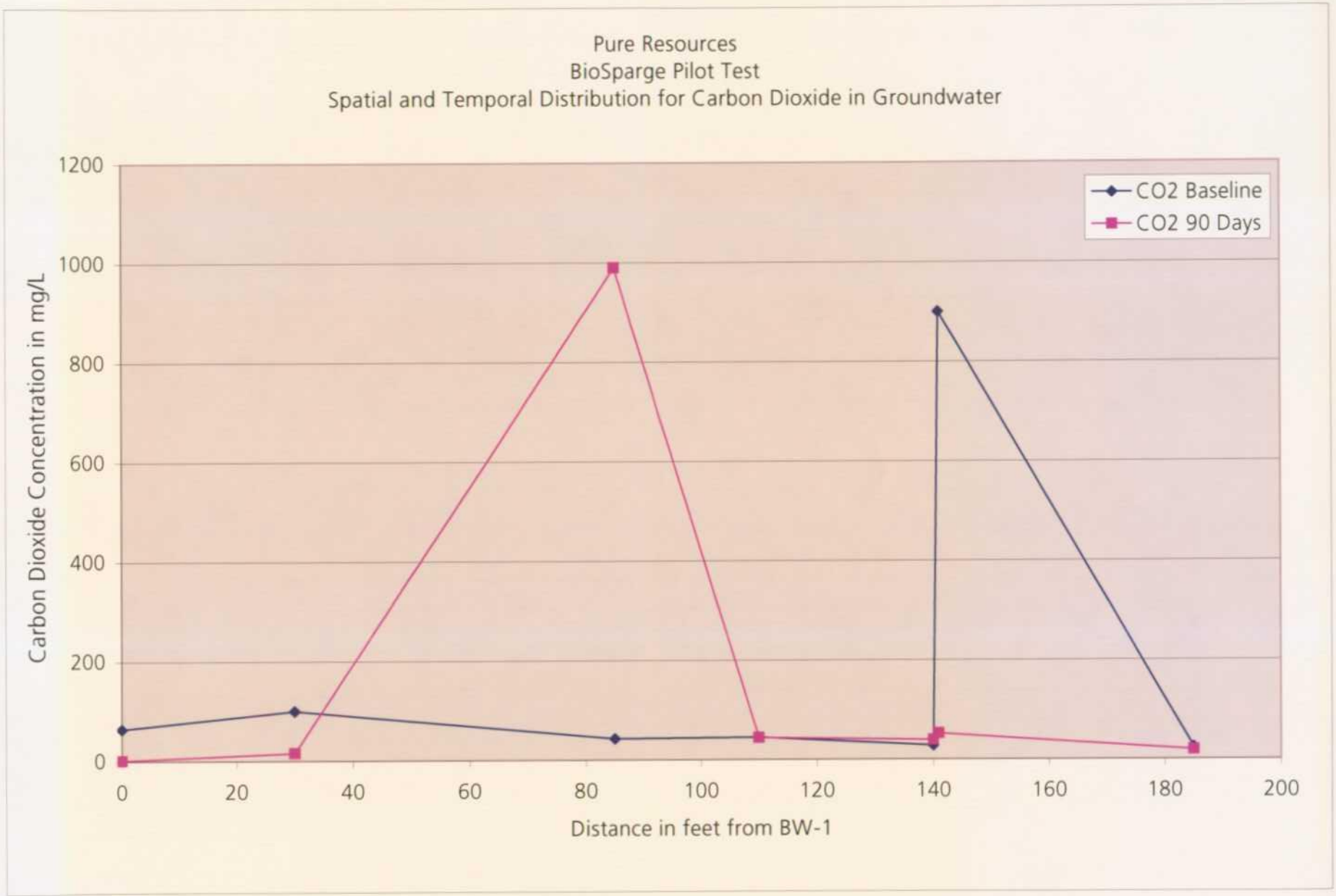

Pure Resources
BioSparge Pilot Test
MW-H
Concentrations in mg/L
50
45
40
35
30
25
20
15
10
5
0
11/19/03
12/9/03
12/29/03
1/18/04
2/7/04
2/27/04
3/18/04
4/7/04
4/27/04
5/17/04
Date
Carbon Dioxide
Oxygen

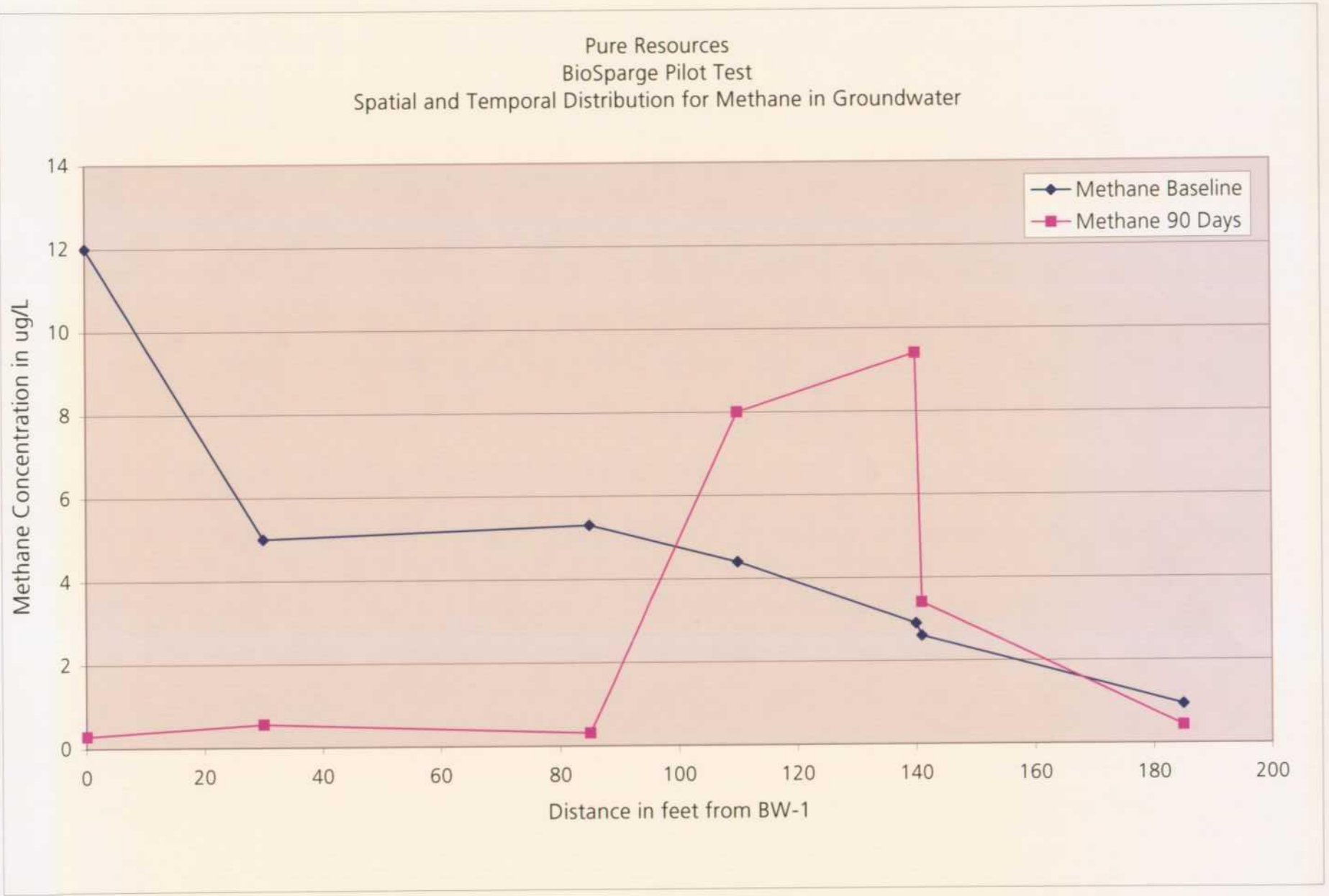

Pure Resources
BioSparge Pilot Test
MW-I
Concentrations in mg/L
1000
900
800
700
600
500
400
300
200
100
0
11/19/03
12/9/03
12/29/03
1/18/04
2/7/04
2/27/04
3/18/04
4/7/04
4/27/04
5/17/04
Date
Carbon Dioxide
Oxygen

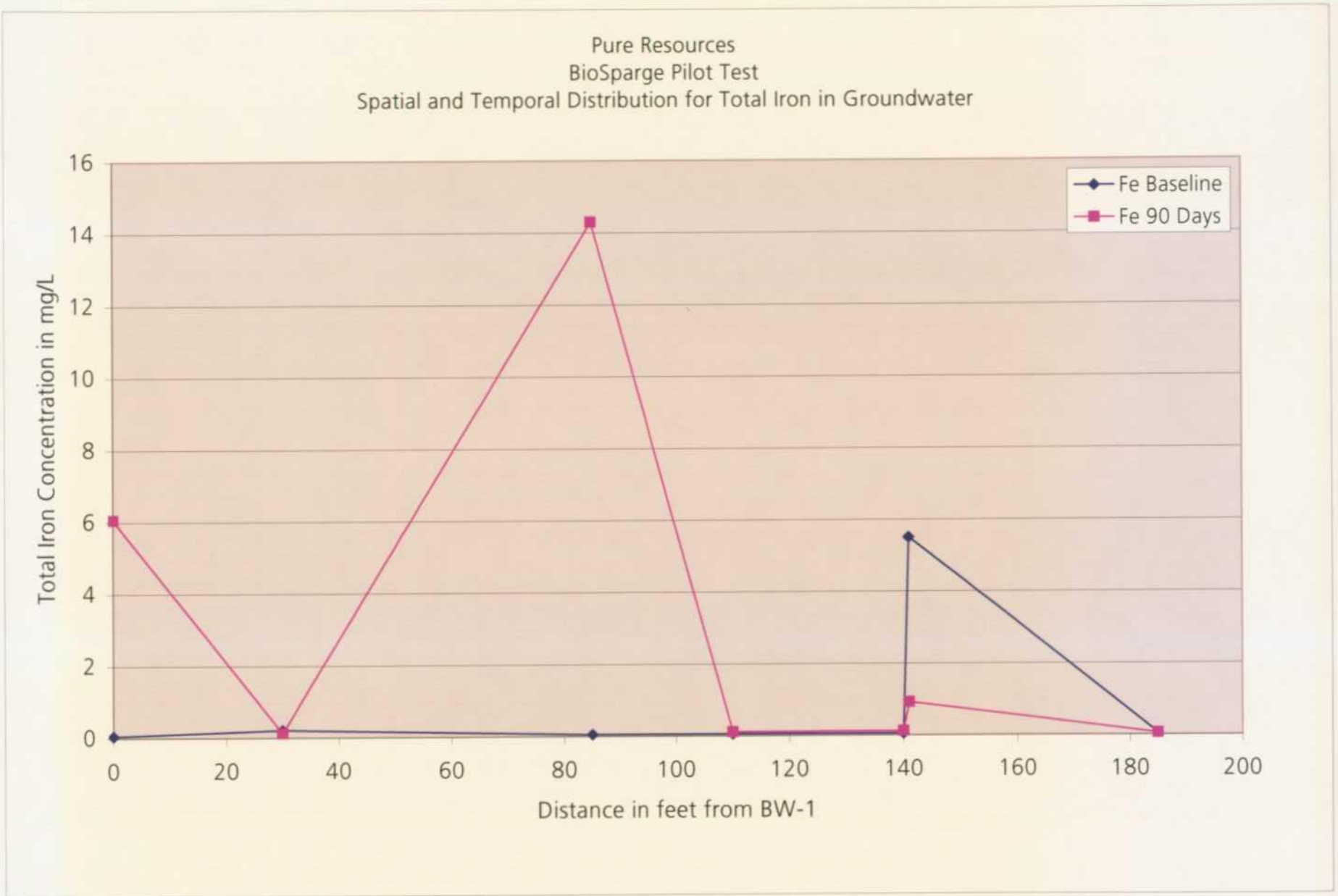

Pure Resources
BioSparge Pilot Test
MW-N
Concentrations in mg/L
30
25
20
15
10
5
0
11/19/03
12/9/03
12/29/03
1/18/04
2/7/04
2/27/04
3/18/04
4/7/04
4/27/04
5/17/04
Date
Carbon Dioxide
Oxygen

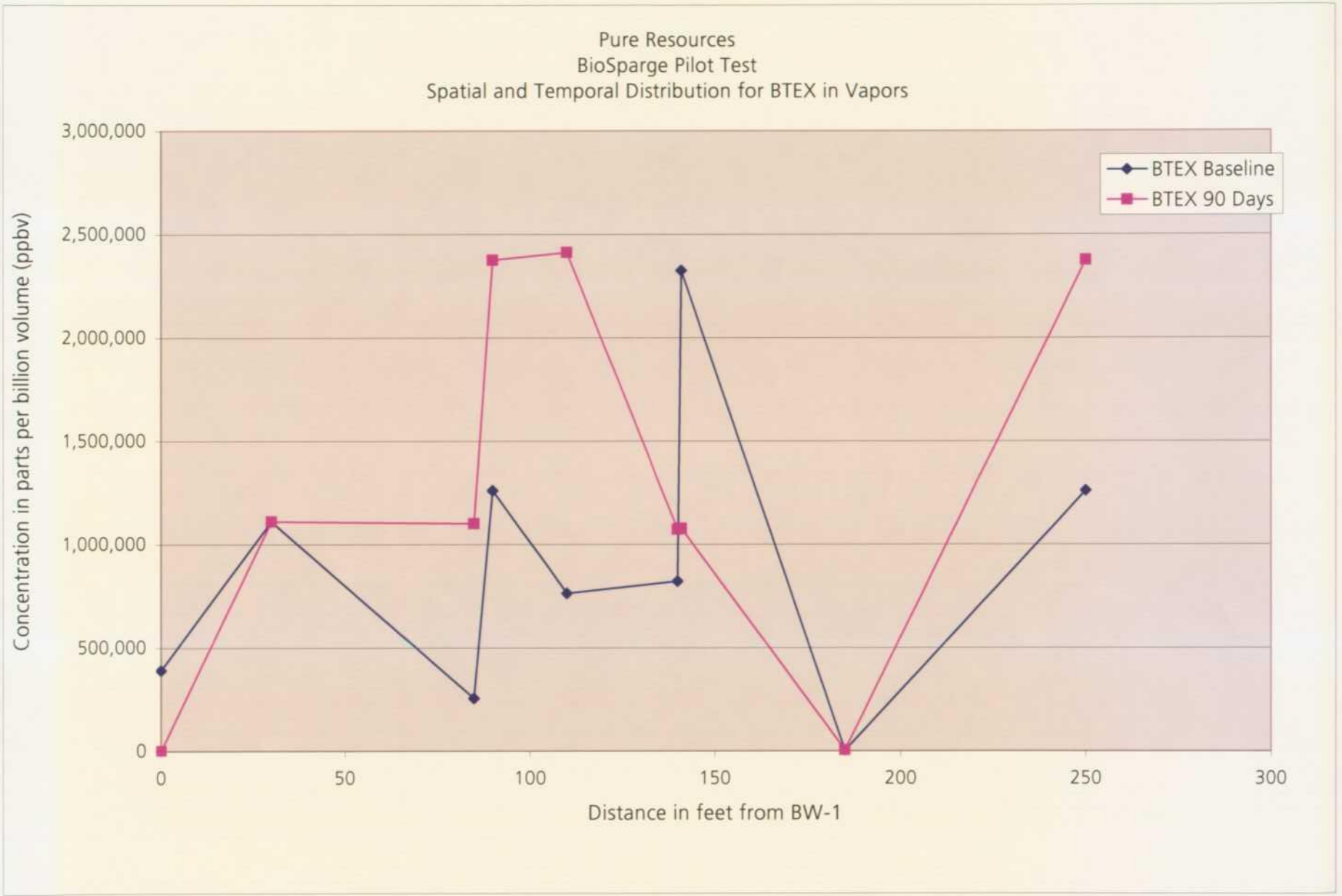

Pure Resources
BioSparge Pilot Test
Spatial and Temporal Distribution for BTEX in Groundwater
BTEX Concentration in mg/L
2.5000
2.0000
1.5000
1.0000
0.5000
0.0000
0
20
40
60
80
100
120
140
160
180
200
Distance in feet from BW-1
BTEX Baseline
BTEX 90 Days

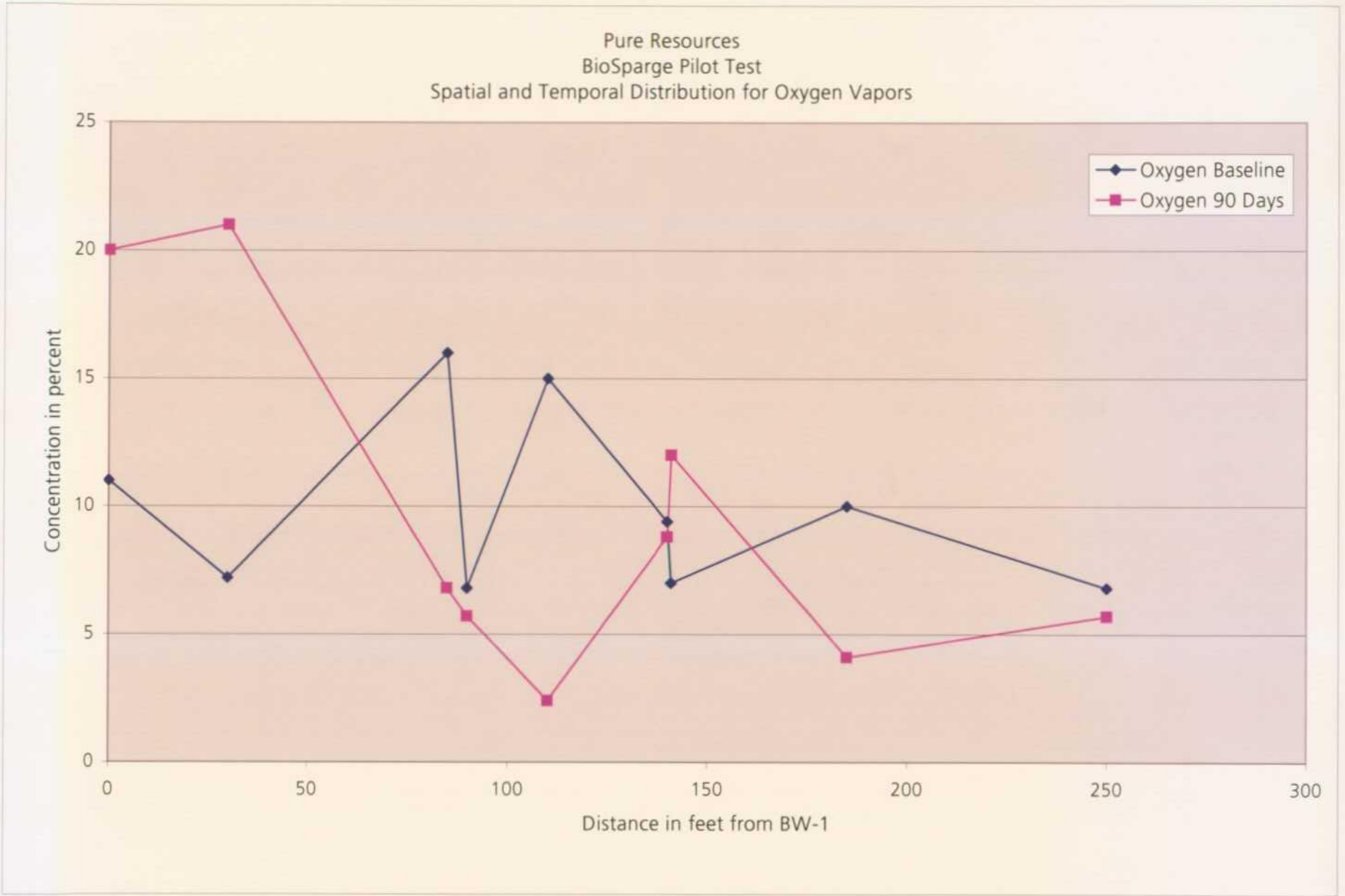

Pure Resources
BioSparge Pilot Test
Spatial and Temporal Distribution for Oxygen in Groundwater
Oxygen Concentration in mg/L
Distance in feet from BW-1
Oxygen Baseline
Oxygen 90 Days
0
1
2
3
4
5
6
7
8
9
0
20
40
60
80
100
120
140
160
180
200

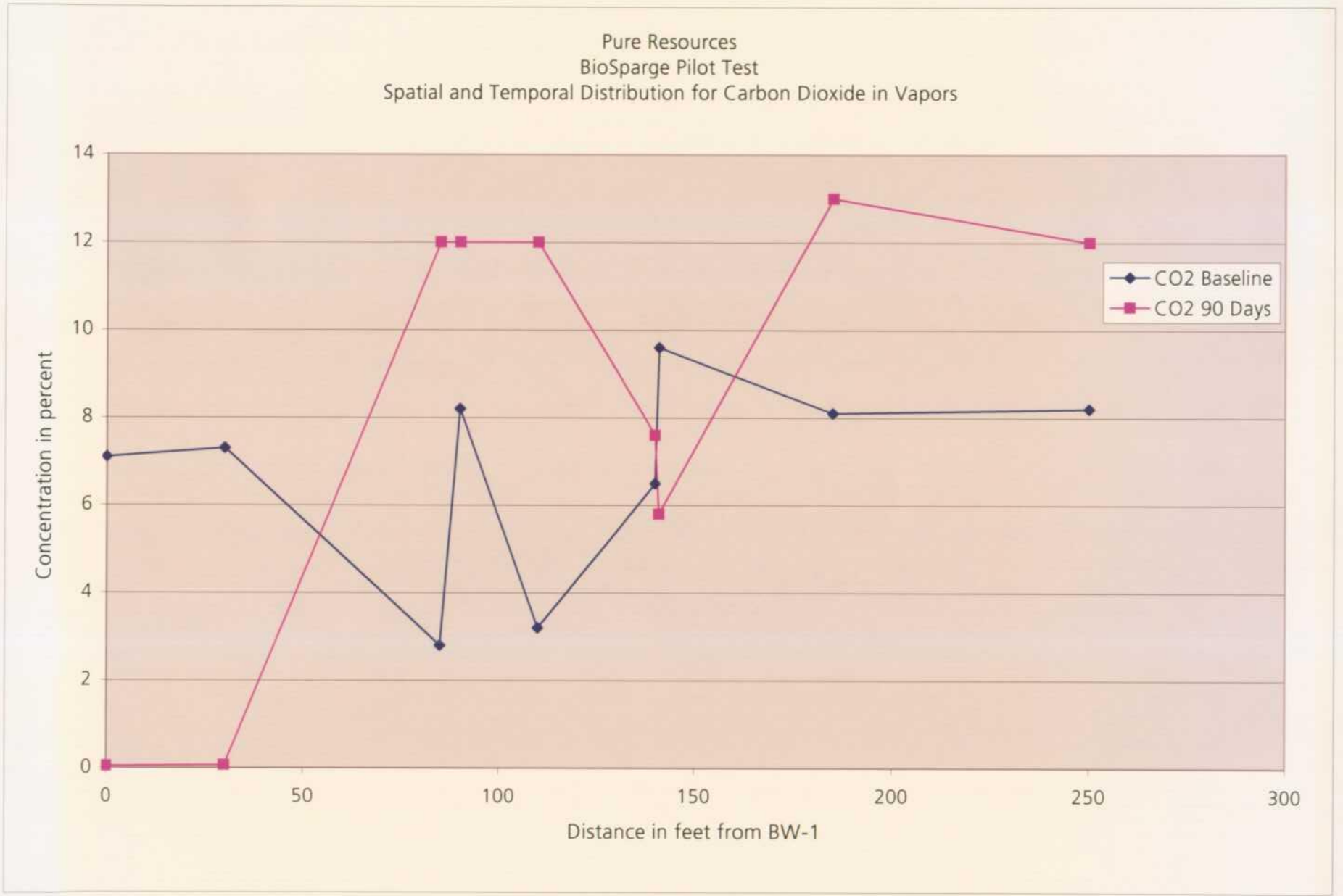

Pure Resources
BioSparge Pilot Test
Spatial and Temporal Distribution for Carbon Dioxide in Groundwater
Carbon Dioxide Concentration in mg/L
1200
1000
800
600
400
200
0
0
20
40
60
80
100
120
140
160
180
200
Distance in feet from BW-1
CO2 Baseline
CO2 90 Days


Pure Resources
BioSparge Pilot Test
Spatial and Temporal Distribution for Methane in Groundwater
Methane Baseline
Methane 90 Days
Methane Concentration in ug/L
0
2
4
6
8
10
12
14
0
20
40
60
80
100
120
140
160
180
200
Distance in feet from BW-1


Pure Resources
BioSparge Pilot Test
Spatial and Temporal Distribution for Total Iron in Groundwater
Total Iron Concentration in mg/L
16
14
12
10
8
6
4
2
0
0
20
40
60
80
100
120
140
160
180
200
Distance in feet from BW-1
Fe Baseline
Fe 90 Days


Pure Resources
BioSparge Pilot Test
Spatial and Temporal Distribution for BTEX in Vapors
Concentration in parts per billion volume (ppbv)
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
0
50
100
150
200
250
300
Distance in feet from BW-1
BTEX Baseline
BTEX 90 Days


Pure Resources
BioSparge Pilot Test
Spatial and Temporal Distribution for Oxygen Vapors
Oxygen Baseline
Oxygen 90 Days
Concentration in percent
Distance in feet from BW-1
0
5
10
15
20
25
0
50
100
150
200
250
300


Pure Resources
BioSparge Pilot Test
Spatial and Temporal Distribution for Carbon Dioxide in Vapors
Concentration in percent
Distance in feet from BW-1
CO2 Baseline
CO2 90 Days
0
2
4
6
8
10
12
14
0
50
100
150
200
250
300

Appendix A

Investigative Analytical Data

Summary Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: October 21, 2003

Work Order: 3100910

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
19066	AST West Effluent	soil	2003-10-08	09:45	2003-10-09

Sample - Field Code	BTEX Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (isomers) (mg/Kg)	TPH DRO DRO (mg/Kg)	TPH GRO GRO (mg/Kg)
19066 - AST West Effluent	<1.00	<1.00	<1.00	<1.00	<50.0	<100

Sample: 19066 - AST West Effluent

Param	Flag	Result	Units	RL
Surfactants		>2000ppm	MBAS mg/Kg	0.100

Summary Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: October 21, 2003

Work Order: 3100910

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
19061	WW-1	water	2003-10-08	10:20	2003-10-09
19062	WW-2	water	2003-10-08	10:40	2003-10-09
19063	WW-3	water	2003-10-08	08:40	2003-10-09
19064	WW-4	water	2003-10-08	09:00	2003-10-09
19065	AST West	water	2003-10-08	09:20	2003-10-09

	BTEX				TPH DRO	TPH GRO
Sample - Field Code	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (isomers) (mg/L)	DRO (mg/L)	GRO (mg/L)
19061 - WW-1	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100
19062 - WW-2	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100
19063 - WW-3	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100
19064 - WW-4	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100
19065 - AST West	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100

Sample: 19061 - WW-1

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		178	mg/L as CaCo3	4.00
Total Alkalinity		178	mg/L as CaCo3	4.00
Bromide		1.57	mg/L	0.200
Dissolved Calcium		119	mg/L	0.500
Dissolved Potassium		5.27	mg/L	0.500
Dissolved Magnesium		23.9	mg/L	0.500
Dissolved Sodium		145	mg/L	0.500
Specific Conductance		1510	μMHOS/cm	0.00
Chloride		312	mg/L	0.500
Fluoride		1.16	mg/L	0.200
Sulfate		60.2	mg/L	0.500
Nitrate-N		3.41	mg/L	0.200

continued ...

sample 19061 continued ...

Param	Flag	Result	Units	RL
pH	[1]	7.50	s.u.	0.00
Total Dissolved Solids		912.0	mg/L	10.00

Sample: 19062 - WW-2

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		162	mg/L as CaCo3	4.00
Total Alkalinity		162	mg/L as CaCo3	4.00
Bromide		2.12	mg/L	0.200
Dissolved Calcium		203	mg/L	0.500
Dissolved Potassium		5.07	mg/L	0.500
Dissolved Magnesium		35.5	mg/L	0.500
Dissolved Sodium		76.6	mg/L	0.500
Specific Conductance		2040	μMHOS/cm	0.00
Chloride		411	mg/L	0.500
Fluoride		1.10	mg/L	0.200
Sulfate		85.1	mg/L	0.500
Nitrate-N		22.5	mg/L	0.200
pH	[2]	7.50	s.u.	0.00
Total Dissolved Solids		1106	mg/L	10.00

Sample: 19063 - WW-3

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		182	mg/L as CaCo3	4.00
Total Alkalinity		182	mg/L as CaCo3	4.00
Bromide		<1.00	mg/L	0.200
Dissolved Calcium		80.2	mg/L	0.500
Dissolved Potassium		2.99	mg/L	0.500
Dissolved Magnesium		14.7	mg/L	0.500
Dissolved Sodium		43.3	mg/L	0.500
Specific Conductance		737	μMHOS/cm	0.00
Chloride		65.0	mg/L	0.500
Fluoride		1.19	mg/L	0.200
Sulfate		59.5	mg/L	0.500
Nitrate-N		2.95	mg/L	0.200
pH	[3]	7.70	s.u.	0.00
Total Dissolved Solids		453.0	mg/L	10.00

Sample: 19064 - WW-4

[1]received out of holding time
[2]received out of holding time
[3]received out of holding time

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		158	mg/L as CaCo3	4.00
Total Alkalinity		158	mg/L as CaCo3	4.00
Bromide		<1.00	mg/L	0.200
Dissolved Calcium		91.1	mg/L	0.500
Dissolved Potassium		3.15	mg/L	0.500
Dissolved Magnesium		15.5	mg/L	0.500
Dissolved Sodium		47.0	mg/L	0.500
Specific Conductance		841	μMHOS/cm	0.00
Chloride		89.9	mg/L	0.500
Fluoride		1.12	mg/L	0.200
Sulfate		68.9	mg/L	0.500
Nitrate-N		3.20	mg/L	0.200
pH	[4]	7.60	s.u.	0.00
Total Dissolved Solids		517.0	mg/L	10.00

Sample: 19065 - AST West

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		178	mg/L as CaCo3	4.00
Total Alkalinity		178	mg/L as CaCo3	4.00
Bromide		<1.00	mg/L	0.200
Dissolved Calcium		76.1	mg/L	0.500
Dissolved Potassium		3.57	mg/L	0.500
Dissolved Magnesium		12.1	mg/L	0.500
Dissolved Sodium		33.6	mg/L	0.500
Specific Conductance		626	μMHOS/cm	0.00
Chloride		30.9	mg/L	0.500
Fluoride		1.30	mg/L	0.200
Sulfate		60.0	mg/L	0.500
Nitrate-N		2.77	mg/L	0.200
pH	[5]	7.70	s.u.	0.00
Total Dissolved Solids		397.0	mg/L	10.00

[4]received out of holding time
[5]received out of holding time

ATEL

Aqua Tech Environmental Laboratories, Inc.

- CERTIFICATE OF ANALYSIS -

Client #: I2565

Trace Analysis

6701 Aberdeen

Suite 9

Lubbock, TX 79424-

Attn: Nell Green

Report Date: *31-Oct-03*

Phone: (806) 794-1296 **Ext:**

FAX: (806) 794-1298

Our Lab#: MEL03-12639 **Your Sample ID:** 19066

Date Logged In: 10/13/03 **Sample Source:** RCRA

Sample Type: Soil/Sludge **Client Project #:**

Project #: **Date Submitted to Lab:** 10/10/2003 **PO#:**

- COLLECTION INFORMATION -

Date/Time/By: 10/8/2003

EPA Method	Analyst	Prep Date	Analysis Date
8015 Alcohols	SH	10/22/2003	10/27/2003

This sample had low matrix spike recovery for several compounds. These low recoveries are due to sample matrix effect(s) confirmed by reextraction and reanalysis.

CAS Number	Parameter	Result	Typical Report Limit
107-18-6	Allyl alcohol	< 2.0 mg/kg	2
71-36-3	n-Butanol	< 2.0 mg/kg	2
64-17-5	Ethanol	< 2.0 mg/kg	2
141-78-6	Ethyl acetate	< 2.0 mg/kg	2
78-83-1	Isobutanol	< 2.0 mg/kg	2
67-63-0	Isopropanol	< 2.0 mg/kg	2
67-56-1	Methanol	< 2.0 mg/kg	2
108-22-5	Propanol	< 2.0 mg/kg	2
75-05-8	Acetonitrile	< 2.0 mg/kg	2

EPA Method	Analyst	Prep Date	Analysis Date
160.3	ALC		10/24/1903

CAS Number	Parameter	Result	Typical Report Limit
	Solids, Percent	78.6 %	

6878 S. STATE ROUTE 100 • P.O. BOX 76 • MELMORE, OH 44845-9999
PHONE 419-397-2659 • 1-800-858-8869 • FAX 419-397-2229

ATEL

Aqua Tech Environmental Laboratories, Inc.

- CERTIFICATE OF ANALYSIS -

Total number of pages 2

End of Report

Report Approved By: Wade T. DeLong

Wade T. DeLong

This report shall not be reproduced, except in its entirety, without the written approval of the laboratory. The results presented on this Certificate of Analysis only reflect those parameters that were requested by the client on the chain of custody or other documentation received with the sample(s). The results relate only to the individual samples tested. Certifications: AZ0117, OH4054, NC39701.

6878 S. STATE ROUTE 100 • P.O. BOX 76 • MELMORE, OH 44845-9999
PHONE 419-397-2659 • 1-800-858-8869 • FAX 419-397-2229

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
155 McCutcheon, Suite H El Paso, Texas 79932 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: October 21, 2003

Work Order: 3100910

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
19066	AST West Effluent	soil	2003-10-08	09:45	2003-10-09

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 19066 - AST West Effluent

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	5076	Date Analyzed:	2003-10-14	Analyzed By:	MT
Prep Batch:	4533	Date Prepared:	2003-10-14	Prepared By:	MT

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene	[1]	<1.00		mg/Kg	1000	0.00100
Toluene		<1.00		mg/Kg	1000	0.00100
Ethylbenzene		<1.00		mg/Kg	1000	0.00100
Xylene (isomers)		<1.00		mg/Kg	1000	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[2]	1.71	mg/Kg	1000	0.00100	171	70 - 130
4-Bromofluorobenzene (4-BFB)	[3]	0.698	mg/Kg	1000	0.00100	70	70 - 130

Sample: 19066 - AST West Effluent

Analysis:	Surfactants	Analytical Method:	SM 5540C	Prep Method:	N/A
QC Batch:	5172	Date Analyzed:	2003-10-18	Analyzed By:	JSW
Prep Batch:	4625	Date Prepared:	2003-10-16	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Surfactants		.>2000ppm		MBAS mg/Kg	1000	0.100

Sample: 19066 - AST West Effluent

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5038	Date Analyzed:	2003-10-13	Analyzed By:	BP
Prep Batch:	4496	Date Prepared:	2003-10-13	Prepared By:	DS

Parameter	Flag	Result	RL	Units	Dilution	RL
DRO		<50.0		mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		86.6	mg/Kg	1	150	58	45 - 152

Sample: 19066 - AST West Effluent

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	5077	Date Analyzed:	2003-10-14	Analyzed By:	MT

[1] Sample diluted due to surfactants.
[2] High surrogate recovery due to peak interference.
[3] Changed spike amount from 0.1 to 0.001 due to dilution.

Prep Batch: 4533 Date Prepared: 2003-10-14 Prepared By: MT

Parameter	Flag	RL Result	Units	Dilution	RL
GRO	[4]	<100	mg/Kg	1000	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[5]	2.82	mg/Kg	1000	0.000100	2820	70 - 130
4-Bromofluorobenzene (4-BFB)	[6]	0.955	mg/Kg	1000	0.000100	955	70 - 130

Method Blank (1) QC Batch: 5038

Parameter	Flag	Result	Units	RL
DRO		<50.0	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		89.0	mg/Kg	1	150	59	45 - 152

Method Blank (1) QC Batch: 5076

Parameter	Flag	Result	Units	RL
Benzene		<0.0100	mg/Kg	0.001
Toluene		<0.0100	mg/Kg	0.001
Ethylbenzene		<0.0100	mg/Kg	0.001
Xylene (isomers)		<0.0100	mg/Kg	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.807	mg/Kg	10	0.100	81	70 - 130
4-Bromofluorobenzene (4-BFB)		0.810	mg/Kg	10	0.100	81	70 - 130

Method Blank (1) QC Batch: 5077

Parameter	Flag	Result	Units	RL
GRO		<1.00	mg/Kg	0.1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.994	mg/Kg	10	0.100	99	70 - 130
4-Bromofluorobenzene (4-BFB)		1.02	mg/Kg	10	0.100	102	70 - 130

[4]Elevated reporting limits due to surfactants.
[5]High surrogate recovery due to peak interference.
[6]High surrogate recovery due to peak interference.

Method Blank (1) QC Batch: 5172

Parameter	Flag	Result	Units	RL
Surfactants		<0.100	MBAS mg/Kg	0.1

Laboratory Control Spike (LCS-1) QC Batch: 5038

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
DRO	250	253	mg/Kg	1	250	<21.1	100	1	68 - 126	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Triacontane	91.8	98.0	mg/Kg	1	150	61	65	33 - 144

Laboratory Control Spike (LCS-1) QC Batch: 5076

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.997	0.969	mg/Kg	10	0.100	<0.000690	100	3	60.8 - 132	17
Toluene	1.00	0.975	mg/Kg	10	0.100	<0.00100	100	3	81 - 122	19
Ethylbenzene	0.991	0.968	mg/Kg	10	0.100	<0.00235	99	2	54.5 - 134	21
Xylene (isomers)	2.93	2.87	mg/Kg	10	0.300	<0.00251	98	2	77 - 119	23

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.919	0.900	mg/Kg	10	0.100	92	90	76.3 - 132
4-Bromofluorobenzene (4-BFB)	0.903	0.928	mg/Kg	10	0.100	90	93	63.3 - 141

Laboratory Control Spike (LCS-1) QC Batch: 5077

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
GRO	9.84	9.70	mg/Kg	10	1.00	<0.236	98	1	72 - 129	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	[7]	0.754	0.691	mg/Kg	10	0.100	75	69	72.7 - 119
4-Bromofluorobenzene (4-BFB)		1.10	1.08	mg/Kg	10	0.100	110	108	76.4 - 113

Matrix Spike (MS-1) QC Batch: 5038

[7]Low surrogate recovery due to prep. ICV, CCV show the method to be in control.

Param		MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
DRO	[8]	349	376	mg/Kg	1	250	<21.1	140	7	65 - 114	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Triacontane	88.1	96.1	mg/Kg	1	150	59	64	33 - 144

Standard (ICV-1) QC Batch: 5038

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	255	102	75 - 125	2003-10-13

Standard (CCV-1) QC Batch: 5038

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	215	86	75 - 125	2003-10-13

Standard (ICV-1) QC Batch: 5076

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0972	97	85 - 115	2003-10-14
Toluene		mg/L	0.100	0.0987	99	85 - 115	2003-10-14
Ethylbenzene		mg/L	0.100	0.0974	97	85 - 115	2003-10-14
Xylene (isomers)		mg/L	0.300	0.289	96	85 - 115	2003-10-14

Standard (CCV-1) QC Batch: 5076

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.100	100	85 - 115	2003-10-14
Toluene		mg/L	0.100	0.101	101	85 - 115	2003-10-14
Ethylbenzene		mg/L	0.100	0.0995	100	85 - 115	2003-10-14
Xylene (isomers)		mg/L	0.300	0.294	98	85 - 115	2003-10-14

Standard (ICV-1) QC Batch: 5077

[8]MS and MSD out of range due to peak interference. LCS and LCSD show the process within control.
[9]MS and MSD out of range due to peak interference. LCS and LCSD show the process within control.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	1.05	105	85 - 115	2003-10-14

Standard (CCV-1) QC Batch: 5077

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	1.11	111	85 - 115	2003-10-14

Standard (ICV-1) QC Batch: 5172

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Surfactants		MBAS mg/Kg	1.00	0.887	89	85 - 115	2003-10-18

Standard (CCV-1) QC Batch: 5172

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Surfactants		MBAS mg/Kg	1.00	0.920	92	85 - 115	2003-10-18

3100910

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD Page 1 of 1

Project Number/Name MT000803.0001

Project Location Pure Resources - Lovington Paddock

Laboratory Trace

Project Manager Frank Kieffer

Sampler(s)/Affiliation _____

Sample ID/Location	Matrix	Date Sampled	Time	(2) 40 mL BTEX HCL	(2) 40 mL TPH GRO HCl	(2) 40 mL TPH DRO HCl	(1) 1000 mL General Water Chemistry w/ Bromide Neat	(2) 40 mL Alcohols HCl	(1) 500 mL Surfactants	Remarks	Total
WW-1	L	10/8/03	10:20	X	X	X	X			19061	7
WW-2	L	10/8/03	10:40	X	X	X	X			62	7
WW-3	L	10/8/03	8:40	X	X	X	X			63	7
WW-4	L	10/8/03	9:00	X	X	X	X			64	7
AST WEST	L	10/8/03	9:20	X	X	X	X			65	7
AST WEST Effluent	L	N/A									
~~AST WEST~~ ATB-1	S	10/8/03	9:45	X	X	X		X	X	19066	2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 37 HS

						Seal Intact?
Relinquished by: Tom Luck	Organization: Pure Resources	Date 10/8/03	Time 3:40 PM			
Received by: Helen Shelton	Organization: Trace Analysis	Date 10/08/03	Time 3:40 PM			Yes No N/A
Relinquished by: Helen Shelton	Organization: Trace Analysis	Date 10/08/03	Time 1730			Seal Intact?
Received by: Vicki Dewey	Organization: Trace Analysis	Date 10/9/03	Time 9:59			Yes No N/A

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier Lone Star Overnight ☐ Lab Courier ☐ Other _____

SPECIFY 3a P524164 MA

SPECIFY

AG 05-12/01

TRACEANALYSIS, INC.

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Analytical and Quality Control Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: October 21, 2003

Work Order: 3100910

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
19061	WW-1	water	2003-10-08	10:20	2003-10-09
19062	WW-2	water	2003-10-08	10:40	2003-10-09
19063	WW-3	water	2003-10-08	08:40	2003-10-09
19064	WW-4	water	2003-10-08	09:00	2003-10-09
19065	AST West	water	2003-10-08	09:20	2003-10-09

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 26 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 19061 - WW-1

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	4993	Date Analyzed:	2003-10-09	Analyzed By:	RS
Prep Batch:	4458	Date Prepared:	2003-10-09	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		178	mg/L as CaCo3	1	4.00
Total Alkalinity		178	mg/L as CaCo3	1	4.00

Sample: 19061 - WW-1

Analysis:	Bromide (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Bromide		1.57	mg/L	5	0.200

Sample: 19061 - WW-1

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	4986	Date Analyzed:	2003-10-09	Analyzed By:	MT
Prep Batch:	4456	Date Prepared:	2003-10-09	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0711	mg/L	1	0.100	71	70 - 130
4-Bromofluorobenzene (4-BFB)	[1]	0.0558	mg/L	1	0.100	56	70 - 130

Sample: 19061 - WW-1

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5177	Date Analyzed:	2003-10-17	Analyzed By:	BC
Prep Batch:	4494	Date Prepared:	2003-10-13	Prepared By:	TP

[1]Low surrogate recovery due to matrix interference. ICV, CCV show the method to be in control.

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Calcium		119		mg/L	1	0.500
Dissolved Potassium		5.27		mg/L	1	0.500
Dissolved Magnesium		23.9		mg/L	1	0.500
Dissolved Sodium		145		mg/L	1	0.500

Sample: 19061 - WW-1

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A
QC Batch:	4970	Date Analyzed:	2003-10-09	Analyzed By:	JSW
Prep Batch:	4443	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Specific Conductance		1510		µMHOS/cm	1	0.00

Sample: 19061 - WW-1

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		312		mg/L	10	0.500
Fluoride		1.16		mg/L	5	0.200
Sulfate		60.2		mg/L	5	0.500

Sample: 19061 - WW-1

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrate-N		3.41		mg/L	5	0.200

Sample: 19061 - WW-1

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	4990	Date Analyzed:	2003-10-09	Analyzed By:	RS
Prep Batch:	4461	Date Prepared:	2003-10-09	Prepared By:	RS

continued ...

sample 19061 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
pH	[2]	7.50	s.u.	1	0.00

Sample: 19061 - WW-1

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	4983	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4454	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		912.0	mg/L	2	10.00

Sample: 19061 - WW-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5020	Date Analyzed:	2003-10-12	Analyzed By:	BP
Prep Batch:	4479	Date Prepared:	2003-10-09	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<5.00	mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		7.09	mg/L	0.1	150	47	44 - 123

Sample: 19061 - WW-1

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	4987	Date Analyzed:	2003-10-09	Analyzed By:	MT
Prep Batch:	4456	Date Prepared:	2003-10-09	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<0.100	mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0781	mg/L	1	0.100	78	70 - 130
4-Bromofluorobenzene (4-BFB)	[3]	0.0652	mg/L	1	0.100	65	70 - 130

[2]received out of holding time
[3]Low surrogate recovery due to matrix interference. ICV, CCV show the method to be in control.

Sample: 19062 - WW-2

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	4992	Date Analyzed:	2003-10-09	Analyzed By:	RS
Prep Batch:	4459	Date Prepared:	2003-10-09	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		162	mg/L as CaCo3	1	4.00
Total Alkalinity		162	mg/L as CaCo3	1	4.00

Sample: 19062 - WW-2

Analysis:	Bromide (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Bromide		2.12	mg/L	5	0.200

Sample: 19062 - WW-2

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	4986	Date Analyzed:	2003-10-09	Analyzed By:	MT
Prep Batch:	4456	Date Prepared:	2003-10-09	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0705	mg/L	1	0.100	70	70 - 130
4-Bromofluorobenzene (4-BFB)	[4]	0.0539	mg/L	1	0.100	54	70 - 130

Sample: 19062 - WW-2

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5177	Date Analyzed:	2003-10-17	Analyzed By:	BC
Prep Batch:	4494	Date Prepared:	2003-10-13	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Calcium		203	mg/L	1	0.500

continued ...

[4]Low surrogate recovery due to matrix interference. ICV, CCV show the method to be in control.

sample 19062 continued ...

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Potassium		5.07		mg/L	1	0.500
Dissolved Magnesium		35.5		mg/L	1	0.500
Dissolved Sodium		76.6		mg/L	1	0.500

Sample: 19062 - WW-2

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A
QC Batch:	4970	Date Analyzed:	2003-10-09	Analyzed By:	JSW
Prep Batch:	4443	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Specific Conductance		2040		μMHOS/cm	1	0.00

Sample: 19062 - WW-2

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		411		mg/L	10	0.500
Fluoride		1.10		mg/L	5	0.200
Sulfate		85.1		mg/L	5	0.500

Sample: 19062 - WW-2

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrate-N		22.5		mg/L	5	0.200

Sample: 19062 - WW-2

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	4990	Date Analyzed:	2003-10-09	Analyzed By:	RS
Prep Batch:	4461	Date Prepared:	2003-10-09	Prepared By:	RS

continued ...

sample 19062 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
pH	[5]	7.50	s.u.	1	0.00

Sample: 19062 - WW-2

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	4983	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4454	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		1106	mg/L	2	10.00

Sample: 19062 - WW-2

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5020	Date Analyzed:	2003-10-12	Analyzed By:	BP
Prep Batch:	4479	Date Prepared:	2003-10-09	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<5.00	mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		7.23	mg/L	0.1	150	48	44 - 123

Sample: 19062 - WW-2

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	4987	Date Analyzed:	2003-10-09	Analyzed By:	MT
Prep Batch:	4456	Date Prepared:	2003-10-09	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<0.100	mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0784	mg/L	1	0.100	78	70 - 130
4-Bromofluorobenzene (4-BFB)	[6]	0.0643	mg/L	1	0.100	64	70 - 130

[5] received out of holding time
[6] Low surrogate recovery due to matrix interference. ICV, CCV show the method to be in control.

Sample: 19063 - WW-3

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	4992	Date Analyzed:	2003-10-09	Analyzed By:	RS
Prep Batch:	4459	Date Prepared:	2003-10-09	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		182	mg/L as CaCo3	1	4.00
Total Alkalinity		182	mg/L as CaCo3	1	4.00

Sample: 19063 - WW-3

Analysis:	Bromide (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Bromide		<1.00	mg/L	5	0.200

Sample: 19063 - WW-3

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	4986	Date Analyzed:	2003-10-09	Analyzed By:	MT
Prep Batch:	4456	Date Prepared:	2003-10-09	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0699	mg/L	1	0.100	70	70 - 130
4-Bromofluorobenzene (4-BFB)	[7]	0.0532	mg/L	1	0.100	53	70 - 130

Sample: 19063 - WW-3

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5177	Date Analyzed:	2003-10-17	Analyzed By:	BC
Prep Batch:	4494	Date Prepared:	2003-10-13	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Calcium		80.2	mg/L	1	0.500

continued ...

[7] Low surrogate recovery due to matrix interference. ICV, CCV show the method to be in control.

sample 19063 continued ...

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Potassium		2.99		mg/L	1	0.500
Dissolved Magnesium		14.7		mg/L	1	0.500
Dissolved Sodium		43.3		mg/L	1	0.500

Sample: 19063 - WW-3

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A
QC Batch:	4970	Date Analyzed:	2003-10-09	Analyzed By:	JSW
Prep Batch:	4443	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Specific Conductance		737		μMHOS/cm	1	0.00

Sample: 19063 - WW-3

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		65.0		mg/L	5	0.500
Fluoride		1.19		mg/L	5	0.200
Sulfate		59.5		mg/L	5	0.500

Sample: 19063 - WW-3

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrate-N		2.95		mg/L	5	0.200

Sample: 19063 - WW-3

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	4990	Date Analyzed:	2003-10-09	Analyzed By:	RS
Prep Batch:	4461	Date Prepared:	2003-10-09	Prepared By:	RS

continued ...

sample 19063 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
pH	[8]	7.70	s.u.	1	0.00

Sample: 19063 - WW-3

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	4983	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4454	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		453.0	mg/L	1	10.00

Sample: 19063 - WW-3

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5020	Date Analyzed:	2003-10-12	Analyzed By:	BP
Prep Batch:	4479	Date Prepared:	2003-10-09	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<5.00	mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		7.30	mg/L	0.1	150	49	44 - 123

Sample: 19063 - WW-3

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	4987	Date Analyzed:	2003-10-09	Analyzed By:	MT
Prep Batch:	4456	Date Prepared:	2003-10-09	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<0.100	mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0789	mg/L	1	0.100	79	70 - 130
4-Bromofluorobenzene (4-BFB)	[9]	0.0628	mg/L	1	0.100	63	70 - 130

[8] received out of holding time
[9] Low surrogate recovery due to matrix interference. ICV, CCV show the method to be in control.

Sample: 19064 - WW-4

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	4992	Date Analyzed:	2003-10-09	Analyzed By:	RS
Prep Batch:	4459	Date Prepared:	2003-10-09	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		158	mg/L as CaCo3	1	4.00
Total Alkalinity		158	mg/L as CaCo3	1	4.00

Sample: 19064 - WW-4

Analysis:	Bromide (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Bromide		<1.00	mg/L	5	0.200

Sample: 19064 - WW-4

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	4986	Date Analyzed:	2003-10-09	Analyzed By:	MT
Prep Batch:	4456	Date Prepared:	2003-10-09	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0708	mg/L	1	0.100	71	70 - 130
4-Bromofluorobenzene (4-BFB)	[10]	0.0525	mg/L	1	0.100	52	70 - 130

Sample: 19064 - WW-4

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5177	Date Analyzed:	2003-10-17	Analyzed By:	BC
Prep Batch:	4494	Date Prepared:	2003-10-13	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Calcium		91.1	mg/L	1	0.500

continued ...

[10]Low surrogate recovery due to matrix interference. ICV, CCV show the method to be in control.

sample 19064 continued ...

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Potassium		3.15		mg/L	1	0.500
Dissolved Magnesium		15.5		mg/L	1	0.500
Dissolved Sodium		47.0		mg/L	1	0.500

Sample: 19064 - WW-4

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A
QC Batch:	4970	Date Analyzed:	2003-10-09	Analyzed By:	JSW
Prep Batch:	4443	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Specific Conductance		841		µMHOS/cm	1	0.00

Sample: 19064 - WW-4

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		89.9		mg/L	5	0.500
Fluoride		1.12		mg/L	5	0.200
Sulfate		68.9		mg/L	5	0.500

Sample: 19064 - WW-4

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrate-N		3.20		mg/L	5	0.200

Sample: 19064 - WW-4

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	4990	Date Analyzed:	2003-10-09	Analyzed By:	RS
Prep Batch:	4461	Date Prepared:	2003-10-09	Prepared By:	RS

continued ...

sample 19064 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
pH	[11]	7.60	s.u.	1	0.00

Sample: 19064 - WW-4

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	4983	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4454	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		517.0	mg/L	1	10.00

Sample: 19064 - WW-4

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5020	Date Analyzed:	2003-10-12	Analyzed By:	BP
Prep Batch:	4479	Date Prepared:	2003-10-09	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<5.00	mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		7.29	mg/L	0.1	150	49	44 - 123

Sample: 19064 - WW-4

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	4987	Date Analyzed:	2003-10-09	Analyzed By:	MT
Prep Batch:	4456	Date Prepared:	2003-10-09	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<0.100	mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0792	mg/L	1	0.100	79	70 - 130
4-Bromofluorobenzene (4-BFB)	[12]	0.0623	mg/L	1	0.100	62	70 - 130

[11] received out of holding time
[12] Low surrogate recovery due to matrix interference. ICV, CCV show the method to be in control.

Sample: 19065 - AST West

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	4992	Date Analyzed:	2003-10-09	Analyzed By:	RS
Prep Batch:	4459	Date Prepared:	2003-10-09	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		178	mg/L as CaCo3	1	4.00
Total Alkalinity		178	mg/L as CaCo3	1	4.00

Sample: 19065 - AST West

Analysis:	Bromide (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Bromide		<1.00	mg/L	5	0.200

Sample: 19065 - AST West

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	4986	Date Analyzed:	2003-10-09	Analyzed By:	MT
Prep Batch:	4456	Date Prepared:	2003-10-09	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0720	mg/L	1	0.100	72	70 - 130
4-Bromofluorobenzene (4-BFB)	[13]	0.0553	mg/L	1	0.100	55	70 - 130

Sample: 19065 - AST West

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5177	Date Analyzed:	2003-10-17	Analyzed By:	BC
Prep Batch:	4494	Date Prepared:	2003-10-13	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Calcium		76.1	mg/L	1	0.500

continued ...

[13]Low surrogate recovery due to matrix interference. ICV, CCV show the method to be in control.

sample 19065 continued ...

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Potassium		3.57		mg/L	1	0.500
Dissolved Magnesium		12.1		mg/L	1	0.500
Dissolved Sodium		33.6		mg/L	1	0.500

Sample: 19065 - AST West

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A
QC Batch:	4970	Date Analyzed:	2003-10-09	Analyzed By:	JSW
Prep Batch:	4443	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Specific Conductance		626		μMHOS/cm	1	0.00

Sample: 19065 - AST West

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		30.9		mg/L	5	0.500
Fluoride		1.30		mg/L	5	0.200
Sulfate		60.0		mg/L	5	0.500

Sample: 19065 - AST West

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	4980	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4452	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrate-N		2.77		mg/L	5	0.200

Sample: 19065 - AST West

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	4990	Date Analyzed:	2003-10-09	Analyzed By:	RS
Prep Batch:	4461	Date Prepared:	2003-10-09	Prepared By:	RS

continued ...

sample 19065 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
pH	[14]	7.70	s.u.	1	0.00

Sample: 19065 - AST West

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	4983	Date Analyzed:	2003-10-10	Analyzed By:	JSW
Prep Batch:	4454	Date Prepared:	2003-10-09	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		397.0	mg/L	1	10.00

Sample: 19065 - AST West

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5020	Date Analyzed:	2003-10-12	Analyzed By:	BP
Prep Batch:	4479	Date Prepared:	2003-10-09	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<5.00	mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		7.34	mg/L	0.1	150	49	44 - 123

Sample: 19065 - AST West

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	4987	Date Analyzed:	2003-10-09	Analyzed By:	MT
Prep Batch:	4456	Date Prepared:	2003-10-09	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<0.100	mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0808	mg/L	1	0.100	81	70 - 130
4-Bromofluorobenzene (4-BFB)	[15]	0.0656	mg/L	1	0.100	66	70 - 130

[14] received out of holding time
[15] Low surrogate recovery due to matrix interference. ICV, CCV show the method to be in control.

Method Blank (1) QC Batch: 4970

Parameter	Flag	Result	Units	RL
Specific Conductance		2.40	μMHOS/cm	

Method Blank (1) QC Batch: 4980

Parameter	Flag	Result	Units	RL
Bromide		<0.200	mg/L	0.2

Method Blank (1) QC Batch: 4980

Parameter	Flag	Result	Units	RL
Nitrate-N		<0.200	mg/L	0.2

Method Blank (1) QC Batch: 4980

Parameter	Flag	Result	Units	RL
Chloride		<0.500	mg/L	0.5
Fluoride		<0.200	mg/L	0.2
Sulfate		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 4983

Parameter	Flag	Result	Units	RL
Total Dissolved Solids		<10.00	mg/L	10

Method Blank (1) QC Batch: 4986

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene (isomers)		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0719	mg/L	1	0.100	72	70 - 130
4-Bromofluorobenzene (4-BFB)	[16]	0.0585	mg/L	1	0.100	58	70 - 130

[16]Low surrogate recovery due to prep. ICV, CCV show the method to be in control.

Method Blank (1) QC Batch: 4987

Parameter	Flag	Result	Units	RL
GRO		<0.100	mg/L	0.1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0807	mg/L	1	0.100	81	70 - 130
4-Bromofluorobenzene (4-BFB)	[17]	0.0686	mg/L	1	0.100	69	70 - 130

Method Blank (1) QC Batch: 4992

Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 4993

Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 5020

Parameter	Flag	Result	Units	RL
DRO		<5.00	mg/L	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		7.94	mg/L	0.1	150	53	44 - 123

Method Blank (1) QC Batch: 5177

Parameter	Flag	Result	Units	RL
Dissolved Calcium		<0.500	mg/L	0.5
Dissolved Potassium		<0.500	mg/L	0.5
Dissolved Magnesium		<0.500	mg/L	0.5
Dissolved Sodium		<0.500	mg/L	0.5

[17]Low surrogate recovery due to prep. ICV, CCV show the method to be in control.

Duplicate (1) QC Batch: 4970

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Conductance	906	906	µMHOS/cm	1	0	3.37

Duplicate (1) QC Batch: 4983

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	936.0	912.0	mg/L	2	2	14.2

Duplicate (1) QC Batch: 4990

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH [18]	7.90	7.90	s.u.	1	0	0

Duplicate (1) QC Batch: 4992

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	324	328	mg/L as CaCo3	1	1	20
Total Alkalinity	324	328	mg/L as CaCo3	1	1	5.16

Duplicate (1) QC Batch: 4993

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	212	218	mg/L as CaCo3	1	3	20
Total Alkalinity	212	218	mg/L as CaCo3	1	3	5.16

Laboratory Control Spike (LCS-1) QC Batch: 4980

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Bromide	2.60	2.57	mg/L	1	2.50	<0.0800	104	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 4980

[18] received out of holding time

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrate-N	2.47	2.48	mg/L	1	2.50	<0.126	99	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 4980

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	11.4	11.2	mg/L	1	12.5	<1.49	91	2	90 - 110	20
Fluoride	2.52	2.51	mg/L	1	2.50	<0.0153	101	0	90 - 110	20
Sulfate	12.3	12.2	mg/L	1	12.5	<0.171	98	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 4986

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0926	0.0920	mg/L	1	0.100	<0.000650	93	1	65.9 - 129	20
Toluene	0.0913	0.0910	mg/L	1	0.100	<0.00101	91	0	74.1 - 122	20
Ethylbenzene	0.0911	0.0909	mg/L	1	0.100	<0.000840	91	0	68 - 125	20
Xylene (isomers)	0.276	0.275	mg/L	1	0.300	<0.000737	92	0	67 - 122	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0720	0.0862	mg/L	1	0.100	72	86	52.9 - 135
4-Bromofluorobenzene (4-BFB)	0.0830	0.0902	mg/L	1	0.100	83	90	45.5 - 147

Laboratory Control Spike (LCS-1) QC Batch: 4987

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
GRO	0.902	0.905	mg/L	1	1.00	<0.0288	90	0	77.6 - 126	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0998	0.0968	mg/L	1	0.100	100	97	70 - 130
4-Bromofluorobenzene (4-BFB)	0.0938	0.0895	mg/L	1	0.100	94	90	70 - 130

Laboratory Control Spike (LCS-1) QC Batch: 5020

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
DRO	23.5	22.1	mg/L	0.1	250	<0.230	94	6	86 - 120	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Triacontane	8.16	8.31	mg/L	0.1	150	54	55	44 - 123

Laboratory Control Spike (LCS-1) QC Batch: 5177

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Calcium	98.6	97.8	mg/L	1	100	<0.183	99	1	85 - 115	20
Dissolved Potassium	99.3	101	mg/L	1	100	<0.135	99	2	85 - 115	20
Dissolved Magnesium	97.0	95.3	mg/L	1	100	<0.183	97	2	85 - 115	20
Dissolved Sodium	107	104	mg/L	1	100	<0.105	107	3	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 4980

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Bromide	131	131	mg/L	50	2.50	<4.00	105	0	68.9 - 134	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 4980

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrate-N	129	131	mg/L	50	2.50	<6.30	103	2	65.8 - 123	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 4980

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	817	813	mg/L	50	12.5	271	87	0	56.4 - 130	20
Fluoride	125	125	mg/L	50	2.50	5.44	96	0	65.1 - 121	20
Sulfate	939	933	mg/L	50	12.5	322	99	1	69.9 - 114	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5177

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Calcium	197	188	mg/L	1	100	102	95	5	75 - 125	20
Dissolved Potassium	107	105	mg/L	1	100	10.6	96	2	75 - 125	20
Dissolved Magnesium	130	118	mg/L	1	100	38.3	92	10	75 - 125	20
Dissolved Sodium	296	286	mg/L	1	100	203	93	3	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1) QC Batch: 4970

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		µMHOS/cm	1410	1420	100	90 - 110	2003-10-09

Standard (CCV-1) QC Batch: 4970

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		µMHOS/cm	1410	1420	100	90 - 110	2003-10-09

Standard (ICV-1) QC Batch: 4980

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.61	104	90 - 110	2003-10-10

Standard (ICV-1) QC Batch: 4980

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate-N		mg/L	2.50	2.51	100	90 - 110	2003-10-10

Standard (ICV-1) QC Batch: 4980

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	11.2	90	90 - 110	2003-10-10
Fluoride		mg/L	2.50	2.56	102	90 - 110	2003-10-10
Sulfate		mg/L	12.5	12.3	98	90 - 110	2003-10-10

Standard (CCV-1) QC Batch: 4980

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.60	104	90 - 110	2003-10-10

Standard (CCV-1) QC Batch: 4980

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate-N		mg/L	2.50	2.48	99	90 - 110	2003-10-10

Standard (CCV-1) QC Batch: 4980

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	11.2	90	90 - 110	2003-10-10
Fluoride		mg/L	2.50	2.52	101	90 - 110	2003-10-10
Sulfate		mg/L	12.5	12.3	98	90 - 110	2003-10-10

Standard (ICV-1) QC Batch: 4983

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	987.0	99	90 - 110	2003-10-10

Standard (CCV-1) QC Batch: 4983

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	1000	100	90 - 110	2003-10-10

Standard (ICV-1) QC Batch: 4986

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0960	96	85 - 115	2003-10-09
Toluene		mg/L	0.100	0.0954	95	85 - 115	2003-10-09
Ethylbenzene		mg/L	0.100	0.0953	95	85 - 115	2003-10-09
Xylene (isomers)		mg/L	0.300	0.288	96	85 - 115	2003-10-09

Standard (CCV-1) QC Batch: 4986

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0942	94	85 - 115	2003-10-09
Toluene		mg/L	0.100	0.0936	94	85 - 115	2003-10-09
Ethylbenzene		mg/L	0.100	0.0932	93	85 - 115	2003-10-09
Xylene (isomers)		mg/L	0.300	0.282	94	85 - 115	2003-10-09

Standard (ICV-1) QC Batch: 4987

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	0.924	92	85 - 115	2003-10-09

Standard (CCV-1) QC Batch: 4987

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	0.866	87	85 - 115	2003-10-09

Standard (ICV-1) QC Batch: 4990

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7.00	7.00	100	98 - 102	2003-10-09

Standard (CCV-1) QC Batch: 4990

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7.00	7.00	100	98 - 102	2003-10-09

Standard (ICV-1) QC Batch: 4992

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-10-09
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-10-09
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-10-09
Total Alkalinity		mg/L as CaCo3	250	244	98	90 - 110	2003-10-09

Standard (CCV-1) QC Batch: 4992

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-10-09
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-10-09
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-10-09
Total Alkalinity		mg/L as CaCo3	250	240	96	90 - 110	2003-10-09

Standard (ICV-1) QC Batch: 4993

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-10-09
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-10-09
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-10-09
Total Alkalinity		mg/L as CaCo3	250	242	97	90 - 110	2003-10-09

Standard (CCV-1) QC Batch: 4993

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-10-09
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-10-09
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-10-09
Total Alkalinity		mg/L as CaCo3	250	244	98	90 - 110	2003-10-09

Standard (ICV-1) QC Batch: 5020

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/L	250	224	90	75 - 125	2003-10-12

Standard (CCV-1) QC Batch: 5020

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/L	250	214	86	75 - 125	2003-10-12

Standard (ICV-1) QC Batch: 5177

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25.0	26.4	106	90 - 110	2003-10-17
Dissolved Potassium		mg/L	25.0	27.1	108	90 - 110	2003-10-17
Dissolved Magnesium		mg/L	25.0	25.3	101	90 - 110	2003-10-17
Dissolved Sodium		mg/L	25.0	26.3	105	90 - 110	2003-10-17

Standard (CCV-1) QC Batch: 5177

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25.0	23.2	93	90 - 110	2003-10-17
Dissolved Potassium		mg/L	25.0	26.7	107	90 - 110	2003-10-17
Dissolved Magnesium		mg/L	25.0	22.9	92	90 - 110	2003-10-17
Dissolved Sodium		mg/L	25.0	25.0	100	90 - 110	2003-10-17

Page Number: 26 of 26
Lovington,NM

Work Order: 3100910
Pure Resources

Report Date: October 21, 2003
MT000803.0001

ARCADIS

3100910

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD Page 1 of 1

Project Number/Name MT000803.0001

Project Location Pure Resources - Lovington Paddock

Laboratory Trace

Project Manager Frank Kieffer

Sampler(s)/Affiliation _____

Sample ID/Location	Matrix	Date Sampled	Time	(2) 40 mL BTEX HCL	(2) 40 mL TPH GRO HCl	(2) 40 mL TPH DRO HCl	(1) 1000 mL General Water Chemistry w/ Bromide Neat	(2) 40 mL Alcohols HCl	(1) 500 mL Surfactants	Remarks	Total
				ANALYSIS / METHOD / SIZE							
WW-1	L	10/8/03	10:20	X	X	X	X			19061	7
WW-2	L	10/8/03	10:40	X	X	X	X			62	7
WW-3	L	10/8/03	8:40	X	X	X	X			63	7
WW-4	L	10/8/03	9:00	X	X	X	X			64	7
AST WEST	L	10/8/03	9:20	X	X	X	X			65	7
AST WEST Effluent	L	N/A									
~~AST WEST~~ ATB-1	S	10/8/03	9:45	X	X	X		X	X	19066	2

Total No. of Bottles/ Containers 37 175

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by:		Organization: PURE RESOURCES	Date 10/8/03	Time 3:40 P	Seal Intact?
Received by: Helen Shelton		Organization: Trace Analysis	Date 10/08/03	Time 3:40 PM	Yes No N/A
Relinquished by: Helen Shelton		Organization: Trace Analysis	Date 10/08/03	Time 1730	Seal Intact?
Received by: Vicki Jones		Organization: Trace Analysis	Date 10/9/03	Time 9:59	Yes No N/A

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier Lone Star Overnight ☐ Lab Courier ☐ Other _____

SPECIFY 3c P524166 SPECIFY

AG 05-12/01

19061-66

ARCADIS

Laboratory Task Order No./P.O. No. 3100910

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name MT000803.0001

Project Location Pure Resources - Lovington Paddock

Laboratory Trace

Project Manager Frank Kieffer

Sampler(s)/Affiliation

Sample ID/Location	Matrix	Date Sampled	Time	(2) 40 mL BTEX HCL	(2) 40 mL TPH GRO HCl	(2) 40 mL TPH DRO HCl	(1) 1000 mL General Water Chemistry w/ Bromide Neat	(2) 40 mL Alcohols HCl	(1) 500 mL Surfactants	Remarks	Total
WW-1	L	10/8/03	10:20	X	X	X	X			19061	7
WW-2	L	10/8/03	10:40	X	X	X	X			62	7
WW-3	L	10/8/03	8:40	X	X	X	X			63	7
WW-4	L	10/8/03	9:00	X	X	X	X			64	7
AST WEST	L	10/8/03	9:20	X	X	X	X			65	7
AST WEST Effluent	L	N/A									
~~AST WEST~~ ATB-1	S	10/8/03	9:45	X	X	X		X	X	19066	2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers 37 HS

Relinquished by: Tom Luhn	Organization: Pure Resources	Date 10/8/03	Time 3:40 P	Seal Intact?	
Received by: Helen Shelton	Organization: Trace Analysis	Date 10/08/03	Time 3:40 PM	Yes No N/A	
Relinquished by: Helen Shelton	Organization: Trace Analysis	Date 10/08/03	Time 1730	Seal Intact?	
Received by: Vicki Jones	Organization: Trace Analysis	Date 10/9/03	Time 9:59	Yes No N/A	

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier Lone Star Overnight ☐ Lab Courier ☐ Other 2800

SPECIFY SPECIFY

AG 05-12/01

Summary Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: November 17, 2003

Work Order: 3110617

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
20831	BW-1 56'-57'	soil	2003-11-03	00:00	2003-11-06

	BTEX				TPH DRO	TPH GRO
Sample - Field Code	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (isomers) (mg/Kg)	DRO (mg/Kg)	GRO (mg/Kg)
20831 - BW-1 56'-57'	<0.0100	0.144	0.960	3.89	1160	157

Sample: 20831 - BW-1 56'-57'

Param	Flag	Result	Units	RL
FOC		0.910	%	0.00

Summary Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: November 21, 2003

Work Order: 3110617

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
20832	Trip Blank	water	2003-11-05	00:00	2003-11-06
20833	BW-1	water	2003-11-05	14:50	2003-11-06
20834	MW-D2	water	2003-11-05	09:45	2003-11-06

	BTEX				TPH DRO	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene (isomers)	DRO	GRO
Sample - Field Code	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
20832 - Trip Blank	<0.00100	<0.00100	<0.00100	<0.00100		
20833 - BW-1	0.989	0.0139	0.00260	0.0277	<5.00	0.397
20834 - MW-D2	<0.00500	<0.00500	<0.00500	0.00570	<5.00	<0.100

Sample: 20833 - BW-1

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		320	mg/L as CaCo3	4.00
Total Alkalinity		320	mg/L as CaCo3	4.00
Bromide		<1.00	mg/L	0.200
Dissolved Calcium		139	mg/L	0.500
Dissolved Potassium		3.41	mg/L	0.500
Dissolved Magnesium		21.5	mg/L	0.500
Dissolved Sodium		49.8	mg/L	0.500
Specific Conductance		988	µMHOS/cm	0.00
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		8.54	mg/L	0.0500
Hardness (by ICP)		436	mg eq CaCO3/L	0.00
Chloride		95.1	mg/L	0.500
Fluoride		1.19	mg/L	0.200
Sulfate		56.4	mg/L	0.500
Nitrite-N		<0.0100	mg/L	0.0100
Nitrate-N		1.93	mg/L	0.200
Naphthalene		0.00587	mg/L	0.200

continued ...

sample 20833 continued ...

Param	Flag	Result	Units	RL
Acenaphthylene		<0.000200	mg/L	0.200
Acenaphthene		<0.000200	mg/L	0.200
Fluorene		<0.000200	mg/L	0.200
Phenanthrene		0.000370	mg/L	0.200
Anthracene		<0.000200	mg/L	0.200
Fluoranthene		<0.000200	mg/L	0.200
Pyrene		<0.000200	mg/L	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.200
Chrysene		<0.000200	mg/L	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.200
pH		7.40	s.u.	0.00
Total Dissolved Solids		620.0	mg/L	10.00
Total Organic Carbon		4.32	mg/L	1.00

Sample: 20834 - MW-D2

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		248	mg/L as CaCo3	4.00
Total Alkalinity		248	mg/L as CaCo3	4.00
Bromide		<1.00	mg/L	0.200
Dissolved Calcium		150	mg/L	0.500
Dissolved Potassium		5.16	mg/L	0.500
Dissolved Magnesium		23.4	mg/L	0.500
Dissolved Sodium		123	mg/L	0.500
Specific Conductance		1530	µMHOS/cm	0.00
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		3.48	mg/L	0.0500
Hardness (by ICP)		471	mg eq CaCO3/L	0.00
Chloride		274	mg/L	0.500
Fluoride		<1.0	mg/L	0.200
Sulfate		89.1	mg/L	0.500
Nitrite-N		0.257	mg/L	0.0100
Nitrate-N		2.28	mg/L	0.200
Naphthalene		<0.000200	mg/L	0.200
Acenaphthylene		<0.000200	mg/L	0.200
Acenaphthene		<0.000200	mg/L	0.200
Fluorene		<0.000200	mg/L	0.200
Phenanthrene		<0.000200	mg/L	0.200
Anthracene		<0.000200	mg/L	0.200
Fluoranthene		<0.000200	mg/L	0.200
Pyrene		<0.000200	mg/L	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.200
Chrysene		<0.000200	mg/L	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.200

continued ...

sample 20834 continued ...

Param	Flag	Result	Units	RL
Benzo(a)pyrene		<0.000200 ✓	mg/L	0.200
Indeno(1,2,3-cd)pyrene		<0.000200 ✓	mg/L	0.200
Dibenzo(a,h)anthracene		<0.000200 ✓	mg/L	0.200
Benzo(g,h,i)perylene		<0.000200 ✓	mg/L	0.200
pH		7.50 ✓	s.u.	0.00
Total Dissolved Solids		1062 ✓	mg/L	10.00
Total Organic Carbon		3.33 ✓	mg/L	1.00

Cation-Anion Balance Sheet

DATE: 11/17/2003

Sample #	Calcium ppm	Magnesium ppm	Sodium ppm	Potassium ppm	Alkalinity ppm	Sulfate ppm	Chloride ppm	Nitrate ppm	Fluoride ppm	Bromide ppm	TDS ppm	EC µMHOs/cm
20833	139	21.5	49.8	3.41	320	56.4	95.1	1.93	1.19	0	620	988
20834	150	23.4	123	5.16	248	89.1	274	2.28	0	0	1062	1530

Sample #	Calcium in meq/L	Magnesium in meq/L	Sodium in meq/L	Potassium in meq/L	Alkalinity in meq/L	Sulfate in meq/L	Chloride in meq/L	Nitrate in meq/L	Fluoride in meq/L	Bromide in meq/L	**Cations In meq/L**	**Anions In meq/L**	**Percentage Error**
20833	6.94	1.77	2.17	0.09	6.40	1.17	2.68	0.1377827	0.0626416	0	10.96	10.46	4.682595567
20834	7.49	1.93	5.35	0.13	4.96	1.86	7.73	0.1627692	0	0	14.89	14.71	1.254762005

	EC/Cation	EC/Anion				
20833	1095.88628	1045.74433	range	889.2	to	1086.8
20834	1489.30788	1470.73712	range	1377	to	1683

TDS/EC	TDS/Cat	TDS/Anion	
0.63	0.57	0.59	needs to be 0.55-0.77
0.69	0.71	0.72	needs to be 0.55-0.77

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
155 McCutcheon, Suite H El Paso, Texas 79932 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: November 17, 2003

Work Order: 3110617

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
20831	BW-1 56'-57'	soil	2003-11-03	00:00	2003-11-06

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 20831 - BW-1 56'-57'

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	5578	Date Analyzed:	2003-11-06	Analyzed By:	MT
Prep Batch:	4988	Date Prepared:	2003-11-06	Prepared By:	MT

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		<0.0100		mg/Kg	10	0.00100
Toluene		0.144		mg/Kg	10	0.00100
Ethylbenzene		0.960		mg/Kg	10	0.00100
Xylene (isomers)		3.89		mg/Kg	10	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.926	mg/Kg	10	0.100	93	36.3 - 128
4-Bromofluorobenzene (4-BFB)	[1]	2.13	mg/Kg	10	0.100	213	17.5 - 150

Sample: 20831 - BW-1 56'-57'

Analysis:	FOC	Analytical Method:	SM D2974-87	Prep Method:	N/A
QC Batch:	5663	Date Analyzed:	2003-11-12	Analyzed By:	JSW
Prep Batch:	5062	Date Prepared:	2003-11-10	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
FOC		0.910		%	1	0.00

Sample: 20831 - BW-1 56'-57'

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5609	Date Analyzed:	2003-11-08	Analyzed By:	BP
Prep Batch:	5012	Date Prepared:	2003-11-07	Prepared By:	DS

Parameter	Flag	Result	RL	Units	Dilution	RL
DRO		1160		mg/Kg	1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		148	mg/Kg	1	150	99	45 - 152

Sample: 20831 - BW-1 56'-57'

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch:	5579	Date Analyzed:	2003-11-06	Analyzed By:	MT
Prep Batch:	4988	Date Prepared:	2003-11-06	Prepared By:	MT

[1] High surrogate recovery due to peak interference.

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		157	mg/Kg	10	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[2]	1.52	mg/Kg	10	0.100	152	73 - 120
4-Bromofluorobenzene (4-BFB)	[3]	9.51	mg/Kg	10	0.100	951	78 - 120

Method Blank (1) QC Batch: 5578

Parameter	Flag	Result	Units	RL
Benzene		<0.0100	mg/Kg	0.001
Toluene		<0.0100	mg/Kg	0.001
Ethylbenzene		<0.0100	mg/Kg	0.001
Xylene (isomers)		<0.0100	mg/Kg	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.817	mg/Kg	10	0.100	82	66.7 - 119
4-Bromofluorobenzene (4-BFB)		0.875	mg/Kg	10	0.100	88	67.1 - 123

Method Blank (1) QC Batch: 5579

Parameter	Flag	Result	Units	RL
GRO		1.08	mg/Kg	0.1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.13	mg/Kg	10	0.100	113	73 - 120
4-Bromofluorobenzene (4-BFB)		0.822	mg/Kg	10	0.100	82	78 - 120

Method Blank (1) QC Batch: 5609

Parameter	Flag	Result	Units	RL
DRO		<50.0	mg/Kg	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		150	mg/Kg	1	150	100	45 - 152

Duplicate (1) QC Batch: 5663

[2]High surrogate recovery due to peak interference.
[3]High surrogate recovery due to peak interference.

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
TOC	1.12	0.910	%	1	21	24

Laboratory Control Spike (LCS-1) QC Batch: 5578

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.970	0.981	mg/Kg	10	0.100	<0.00131	97	1	76 - 111	35
Toluene	0.928	0.967	mg/Kg	10	0.100	<0.00365	93	4	75.8 - 113	36
Ethylbenzene	0.925	0.965	mg/Kg	10	0.100	<0.00492	92	4	76.6 - 111	40
Xylene (isomers)	2.81	2.91	mg/Kg	10	0.300	<0.00314	94	3	77.2 - 111	39

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.11	0.940	mg/Kg	10	0.100	111	94	66.7 - 119
4-Bromofluorobenzene (4-BFB)	0.886	0.987	mg/Kg	10	0.100	89	99	67.1 - 123

Laboratory Control Spike (LCS-1) QC Batch: 5579

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
GRO	10.0	10.4	mg/Kg	10	1.00	<0.381	100	4	65.9 - 126	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.19	1.30	mg/Kg	10	0.100	119	130	44.7 - 153
4-Bromofluorobenzene (4-BFB)	1.06	1.09	mg/Kg	10	0.100	106	109	39.6 - 145

Laboratory Control Spike (LCS-1) QC Batch: 5609

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
DRO	222	207	mg/Kg	1	250	<21.1	89	7	68 - 126	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Triacontane	143	147	mg/Kg	1	150	95	98	33 - 144

Matrix Spike (MS-1) QC Batch: 5578

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.885	0.917	mg/Kg	10	0.100	<0.00131	88	4	31.6 - 129	22

continued ...

matrix spikes continued ...

Param		MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Toluene	[4][5]	1.40	1.40	mg/Kg	10	0.100	<0.00365	140	0	31.7 - 134	20
Ethylbenzene	[6][7]	2.12	2.12	mg/Kg	10	0.100	<0.00492	212	0	31.2 - 134	15
Xylene (isomers)	[8][9]	7.75	7.90	mg/Kg	10	0.300	<0.00314	258	2	29.8 - 137	19

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)		1.09	1.11	mg/Kg	10	0.1	109	111	36.3 - 128
4-Bromofluorobenzene (4-BFB)	[10][11]	3.03	3.00	mg/Kg	10	0.1	303	300	17.5 - 150

Matrix Spike (MS-1) QC Batch: 5579

Param		MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
GRO	[12]	168	175	mg/Kg	10	1.00	157.446	106	4	27.8 - 126	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)		0.810	0.785	mg/Kg	10	0.1	81	78	0 - 216
4-Bromofluorobenzene (4-BFB)	[13][14]	10.9	11.2	mg/Kg	10	0.1	1090	1120	7.7 - 174

Matrix Spike (MS-1) QC Batch: 5609

Param		MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
DRO	[15]	253	297	mg/Kg	1	250	<21.1	101	16	65 - 114	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Triacontane	135	168	mg/Kg	1	150	90	112	33 - 144

Standard (ICV-1) QC Batch: 5578

[4]Toluene outside normal limits in MS/MSD. LCS/LCSD show the method to be in control.
[5]Toluene outside normal limits in MS/MSD. LCS/LCSD show the method to be in control.
[6]Ethylbenzene outside normal limits in MS/MSD. LCS/LCSD show the method to be in control.
[7]Ethylbenzene outside normal limits in MS/MSD. LCS/LCSD show the method to be in control.
[8]Xylene outside normal limits in MS/MSD. LCS/LCSD show the method to be in control.
[9]Xylene outside normal limits in MS/MSD. LCS/LCSD show the method to be in control.
[10]BFB outside normal limits in MS/MSD. LCS/LCSD show the method to be in control.
[11]BFB outside normal limits in MS/MSD. LCS/LCSD show the method to be in control.
[12]GRO recovery outside normal limits. ICV, CCV show the method to be in control.
[13]High surrogate recovery due to peak interference.
[14]High surrogate recovery due to peak interference.
[15]MS recovery within recovery range and RPD for MS and MSD within range.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.100	100	85 - 115	2003-11-06
Toluene		mg/L	0.100	0.100	100	85 - 115	2003-11-06
Ethylbenzene		mg/L	0.100	0.100	100	85 - 115	2003-11-06
Xylene (isomers)		mg/L	0.300	0.305	102	85 - 115	2003-11-06

Standard (CCV-1) QC Batch: 5578

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0997	100	85 - 115	2003-11-06
Toluene		mg/L	0.100	0.0976	98	85 - 115	2003-11-06
Ethylbenzene		mg/L	0.100	0.0970	97	85 - 115	2003-11-06
Xylene (isomers)		mg/L	0.300	0.294	98	85 - 115	2003-11-06

Standard (ICV-1) QC Batch: 5579

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	1.06	106	85 - 115	2003-11-06

Standard (CCV-1) QC Batch: 5579

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	1.05	105	85 - 115	2003-11-06

Standard (ICV-1) QC Batch: 5609

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	264	106	75 - 125	2003-11-08

Standard (CCV-1) QC Batch: 5609

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	213	85	75 - 125	2003-11-08

3110617

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page ____ of ____

Project Number/Name MT000803.0001

Project Location Pure-Lovington

Laboratory ~~Trace~~

Project Manager Frank Kieffer

Sampler(s)/Affiliation ARCADIS/

Sample ID/Location	Matrix	Date/Time Sampled	Time Lab ID	* ANALYSIS / METHOD / SIZE: General GW Chemistry Nitrate, Nitrite 1 liter plastic NEAT	BTEX 2 VOAs w/HCl	TPH DRO 2 VOAs w/HCl	TPH GRO 2 VOAs w/HCl	Total Fe 1 250 ml plastic w/HNO3	Dissolved Fe FIELD FILTERED 1 250 ml w/HNO3	TOC 2 VOAs w/HCl	PAH 1 amber liter NEAT	150:1 Internal BTEX, TPH GRO TPH DRO, Foc	Remarks	Total
BW-1 56'-57'	S	11-3-03	-									✓ 20831		1
Trip Blank	L	-			2							20832		2
BW-1	L	11-5-03	1450	1	2	2	2	1	1	2	1	20833		12
MW-D2	L	11-5-03	945	1	2	2	2	1	1	2	1	20834		12

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 27

Relinquished by: Kayla Morgan	Organization: ARCADIS	Date 11/5/03	Time 1615	Seal Intact?	
Received by: Vicki Chuney	Organization: TraceAnalysis	Date 11/6/03	Time 11:26	(Yes) No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks:

Please contact Frank Kieffer at 432-687-5400 with questions.

* See attached list for General GW Chemistry Tests.

Delivery Method: ☐ In Person ✓ ☐ Common Carrier _____ SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

TNM10 903-133 4602-0 3C

AG 05-12/01

Report Date: November 17, 2003
MT000803.0001

Work Order: 3110617
Pure Resources

Page Number: 7 of 7
Lovington,NM

TRACEANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: November 21, 2003

Work Order: 3110617

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
20832	Trip Blank	water	2003-11-05	00:00	2003-11-06
20833	BW-1	water	2003-11-05	14:50	2003-11-06
20834	MW-D2	water	2003-11-05	09:45	2003-11-06

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 27 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael T. Allen

Dr. Blair Leftwich, Director

Analytical Report

Sample: 20832 - Trip Blank

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	5572	Date Analyzed:	2003-11-06	Analyzed By:	BS
Prep Batch:	4980	Date Prepared:	2003-11-06	Prepared By:	BS

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		<0.00100		mg/L	1	0.00100
Toluene		<0.00100		mg/L	1	0.00100
Ethylbenzene		<0.00100		mg/L	1	0.00100
Xylene (isomers)		<0.00100		mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0913	mg/L	1	0.100	91	65.5 - 119
4-Bromofluorobenzene (4-BFB)		0.0998	mg/L	1	0.100	100	68.6 - 120

Sample: 20833 - BW-1

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	5844	Date Analyzed:	2003-11-18	Analyzed By:	RS
Prep Batch:	5071	Date Prepared:	2003-11-11	Prepared By:	RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		320		mg/L as CaCo3	1	4.00
Total Alkalinity		320		mg/L as CaCo3	1	4.00

Sample: 20833 - BW-1

Analysis:	Bromide (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5575	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4983	Date Prepared:	2003-11-06	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Bromide		<1.00		mg/L	5	0.200

Sample: 20833 - BW-1

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	5572	Date Analyzed:	2003-11-06	Analyzed By:	BS
Prep Batch:	4980	Date Prepared:	2003-11-06	Prepared By:	BS

continued ...

sample 20833 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		0.989	mg/L	1	0.00100
Toluene		0.0139	mg/L	1	0.00100
Ethylbenzene		0.00260	mg/L	1	0.00100
Xylene (isomers)		0.0277	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[1]	0.161	mg/L	1	0.100	161	65.5 - 119
4-Bromofluorobenzene (4-BFB)		0.112	mg/L	1	0.100	112	68.6 - 120

Sample: 20833 - BW-1

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5729	Date Analyzed:	2003-11-13	Analyzed By:	BC
Prep Batch:	4992	Date Prepared:	2003-11-07	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Calcium		139	mg/L	1	0.500
Dissolved Potassium		3.41	mg/L	1	0.500
Dissolved Magnesium		21.5	mg/L	1	0.500
Dissolved Sodium		49.8	mg/L	1	0.500

Sample: 20833 - BW-1

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A
QC Batch:	5588	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4995	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Specific Conductance		988	μMHOS/cm	1	0.00

Sample: 20833 - BW-1

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5653	Date Analyzed:	2003-11-11	Analyzed By:	RR
Prep Batch:	5019	Date Prepared:	2003-11-10	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

[1] *High surrogate recovery due to peak interference.*

Sample: 20833 - BW-1

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	5645	Date Analyzed:	2003-11-11	Analyzed By:	RR
Prep Batch:	5020	Date Prepared:	2003-11-10	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Iron		8.54		mg/L	1	0.0500

Sample: 20833 - BW-1

Analysis:	Hardness	Analytical Method:	SM 2340B	Prep Method:	N/A
QC Batch:	5737	Date Analyzed:	2003-11-14	Analyzed By:	BC
Prep Batch:	4992	Date Prepared:	2003-11-07	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Hardness (by ICP)		436		mg eq CaCO3/L	1	0.00

Sample: 20833 - BW-1

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5575	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4983	Date Prepared:	2003-11-06	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		95.1 ✓		mg/L	5	0.500
Fluoride		1.19		mg/L	5	0.200
Sulfate		56.4		mg/L	5	0.500

Sample: 20833 - BW-1

Analysis:	NO2 (Spec)	Analytical Method:	SM 4500-NO2 B	Prep Method:	N/A
QC Batch:	5577	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	5219	Date Prepared:	2003-11-19	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrite-N		<0.0100		mg/L	1	0.0100

Sample: 20833 - BW-1

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5575	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4983	Date Prepared:	2003-11-06	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate-N		1.93	mg/L	5	0.200

Sample: 20833 - BW-1

Analysis:	PAH	Analytical Method:	S 8270C	Prep Method:	S 3510C
QC Batch:	5714	Date Analyzed:	2003-11-13	Analyzed By:	RC
Prep Batch:	4981	Date Prepared:	2003-11-07	Prepared By:	JH

Parameter	Flag	RL Result	Units	Dilution	RL
Naphthalene		0.00587	mg/L	0.001	0.200
Acenaphthylene		<0.000200	mg/L	0.001	0.200
Acenaphthene		<0.000200	mg/L	0.001	0.200
Fluorene		<0.000200	mg/L	0.001	0.200
Phenanthrene		0.000370	mg/L	0.001	0.200
Anthracene		<0.000200	mg/L	0.001	0.200
Fluoranthene		<0.000200	mg/L	0.001	0.200
Pyrene		<0.000200	mg/L	0.001	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.001	0.200
Chrysene		<0.000200	mg/L	0.001	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.001	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.001	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.001	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.001	0.200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0564	mg/L	0.001	80.0	70	21 - 145
2-Fluorobiphenyl		0.0628	mg/L	0.001	80.0	78	25 - 145
Terphenyl-d14		0.0601	mg/L	0.001	80.0	75	26 - 127

Sample: 20833 - BW-1

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	5601	Date Analyzed:	2003-11-06	Analyzed By:	RS
Prep Batch:	5006	Date Prepared:	2003-11-06	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
pH		7.40	s.u.	1	0.00

Sample: 20833 - BW-1

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	5589	Date Analyzed:	2003-11-10	Analyzed By:	JSW
Prep Batch:	4997	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		620.0	mg/L	1	10.00

Sample: 20833 - BW-1

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	5676	Date Analyzed:	2003-11-12	Analyzed By:	RC
Prep Batch:	5078	Date Prepared:	2003-11-12	Prepared By:	RC

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		4.32	mg/L	1	1.00

Sample: 20833 - BW-1

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5587	Date Analyzed:	2003-11-07	Analyzed By:	BP
Prep Batch:	4996	Date Prepared:	2003-11-06	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<5.00	mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		11.8	mg/L	0.1	150	79	44 - 123

Sample: 20833 - BW-1

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	5573	Date Analyzed:	2003-11-06	Analyzed By:	BS
Prep Batch:	4980	Date Prepared:	2003-11-06	Prepared By:	BS

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		0.397	mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[2]	0.157	mg/L	1	0.100	157	70 - 130
4-Bromofluorobenzene (4-BFB)		0.116	mg/L	1	0.100	116	70 - 130

Sample: 20834 - MW-D2

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	5679	Date Analyzed:	2003-11-11	Analyzed By:	RS
Prep Batch:	5071	Date Prepared:	2003-11-11	Prepared By:	RS

[2]High surrogate recovery due to prep. ICV/CCV show the method to be in control.

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		248	mg/L as CaCo3	1	4.00
Total Alkalinity		248	mg/L as CaCo3	1	4.00

Sample: 20834 - MW-D2

Analysis:	Bromide (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5575	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4983	Date Prepared:	2003-11-06	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Bromide		<1.00	mg/L	5	0.200

Sample: 20834 - MW-D2

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	5599	Date Analyzed:	2003-11-07	Analyzed By:	BS
Prep Batch:	5004	Date Prepared:	2003-11-07	Prepared By:	BS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00500	mg/L	5	0.00100
Toluene		<0.00500	mg/L	5	0.00100
Ethylbenzene		<0.00500	mg/L	5	0.00100
Xylene (isomers)		0.00570	mg/L	5	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.474	mg/L	5	0.100	95	70 - 130
4-Bromofluorobenzene (4-BFB)		0.494	mg/L	5	0.100	99	70 - 130

Sample: 20834 - MW-D2

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5729	Date Analyzed:	2003-11-13	Analyzed By:	BC
Prep Batch:	4992	Date Prepared:	2003-11-07	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Calcium		150	mg/L	1	0.500
Dissolved Potassium		5.16	mg/L	1	0.500
Dissolved Magnesium		23.4	mg/L	1	0.500
Dissolved Sodium		123	mg/L	1	0.500

Sample: 20834 - MW-D2

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A
QC Batch:	5588	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4995	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Specific Conductance		1530		µMHOS/cm	1	0.00

Sample: 20834 - MW-D2

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5653	Date Analyzed:	2003-11-11	Analyzed By:	RR
Prep Batch:	5019	Date Prepared:	2003-11-10	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Iron		<0.0500		mg/L	1	0.0500

Sample: 20834 - MW-D2

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	5645	Date Analyzed:	2003-11-11	Analyzed By:	RR
Prep Batch:	5020	Date Prepared:	2003-11-10	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Iron		3.48		mg/L	1	0.0500

Sample: 20834 - MW-D2

Analysis:	Hardness	Analytical Method:	SM 2340B	Prep Method:	N/A
QC Batch:	5737	Date Analyzed:	2003-11-14	Analyzed By:	BC
Prep Batch:	4992	Date Prepared:	2003-11-07	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Hardness (by ICP)		471		mg eq CaCO3/L	1	0.00

Sample: 20834 - MW-D2

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5575	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4983	Date Prepared:	2003-11-06	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		274		mg/L	10	0.500
Fluoride		<1.0		mg/L	5	0.200
Sulfate		89.1		mg/L	5	0.500

Sample: 20834 - MW-D2

Analysis:	NO2 (Spec)	Analytical Method:	SM 4500-NO2 B	Prep Method:	N/A
QC Batch:	5577	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4985	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL Units	Dilution	RL
Nitrite-N		0.257	mg/L	2	0.0100

Sample: 20834 - MW-D2

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5575	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4983	Date Prepared:	2003-11-06	Prepared By:	JSW

Parameter	Flag	Result	RL Units	Dilution	RL
Nitrate-N		2.28	mg/L	5	0.200

Sample: 20834 - MW-D2

Analysis:	PAH	Analytical Method:	S 8270C	Prep Method:	S 3510C
QC Batch:	5714	Date Analyzed:	2003-11-13	Analyzed By:	RC
Prep Batch:	4981	Date Prepared:	2003-11-07	Prepared By:	JH

Parameter	Flag	Result	RL Units	Dilution	RL
Naphthalene		<0.000200	mg/L	0.001	0.200
Acenaphthylene		<0.000200	mg/L	0.001	0.200
Acenaphthene		<0.000200	mg/L	0.001	0.200
Fluorene		<0.000200	mg/L	0.001	0.200
Phenanthrene		<0.000200	mg/L	0.001	0.200
Anthracene		<0.000200	mg/L	0.001	0.200
Fluoranthene		<0.000200	mg/L	0.001	0.200
Pyrene		<0.000200	mg/L	0.001	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.001	0.200
Chrysene		<0.000200	mg/L	0.001	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.001	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.001	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.001	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.001	0.200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0386	mg/L	0.001	80.0	48	21 - 145
2-Fluorobiphenyl		0.0419	mg/L	0.001	80.0	52	25 - 145
Terphenyl-d14		0.0393	mg/L	0.001	80.0	49	26 - 127

Sample: 20834 - MW-D2

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	5601	Date Analyzed:	2003-11-06	Analyzed By:	RS
Prep Batch:	5006	Date Prepared:	2003-11-06	Prepared By:	RS

Parameter	Flag	Result	RL	Units	Dilution	RL
pH		7.50		s.u.	1	0.00

Sample: 20834 - MW-D2

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	5589	Date Analyzed:	2003-11-10	Analyzed By:	JSW
Prep Batch:	4997	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Dissolved Solids		1062		mg/L	2	10.00

Sample: 20834 - MW-D2

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	5676	Date Analyzed:	2003-11-12	Analyzed By:	RC
Prep Batch:	5078	Date Prepared:	2003-11-12	Prepared By:	RC

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Organic Carbon		3.33		mg/L	1	1.00

Sample: 20834 - MW-D2

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5587	Date Analyzed:	2003-11-07	Analyzed By:	BP
Prep Batch:	4996	Date Prepared:	2003-11-06	Prepared By:	DS

Parameter	Flag	Result	RL	Units	Dilution	RL
DRO		<5.00		mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		12.7	mg/L	0.1	150	85	44 - 123

Sample: 20834 - MW-D2

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	5573	Date Analyzed:	2003-11-06	Analyzed By:	BS
Prep Batch:	4980	Date Prepared:	2003-11-06	Prepared By:	BS

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<0.100	mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[3]	0.148	mg/L	1	0.100	148	70 - 130
4-Bromofluorobenzene (4-BFB)		0.130	mg/L	1	0.100	130	70 - 130

Method Blank (1) QC Batch: 5572

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene (isomers)		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0915	mg/L	1	0.100	92	70 - 130
4-Bromofluorobenzene (4-BFB)		0.107	mg/L	1	0.100	107	70 - 130

Method Blank (1) QC Batch: 5573

Parameter	Flag	Result	Units	RL
GRO		0.128	mg/L	0.1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[4]	0.144	mg/L	1	0.100	144	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0996	mg/L	1	0.100	100	70 - 130

Method Blank (1) QC Batch: 5575

Parameter	Flag	Result	Units	RL
Bromide		<0.200	mg/L	0.2

Method Blank (1) QC Batch: 5575

Parameter	Flag	Result	Units	RL
Nitrate-N		<0.200	mg/L	0.2

[3]High surrogate recovery due to prep. ICV/CCV show the method to be in control.
[4]High surrogate recovery due to prep. ICV/CCV show the method to be in control.

Method Blank (1) QC Batch: 5575

Parameter	Flag	Result	Units	RL
Chloride		<0.500	mg/L	0.5
Fluoride		<0.200	mg/L	0.2
Sulfate		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 5577

Parameter	Flag	Result	Units	RL
Nitrite-N		<0.0100	mg/L	0.01

Method Blank (1) QC Batch: 5587

Parameter	Flag	Result	Units	RL
DRO		<5.00	mg/L	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		14.0	mg/L	0.1	150	93	44 - 123

Method Blank (1) QC Batch: 5588

Parameter	Flag	Result	Units	RL
Specific Conductance		3.22	μMHOS/cm	

Method Blank (1) QC Batch: 5589

Parameter	Flag	Result	Units	RL
Total Dissolved Solids		<10.00	mg/L	10

Method Blank (1) QC Batch: 5599

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene (isomers)		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0936	mg/L	1	0.100	94	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0955	mg/L	1	0.100	96	70 - 130

Method Blank (1) QC Batch: 5645

Parameter	Flag	Result	Units	RL
Total Iron		<0.0500	mg/L	0.05

Method Blank (1) QC Batch: 5653

Parameter	Flag	Result	Units	RL
Dissolved Iron		<0.0500	mg/L	0.05

Method Blank (1) QC Batch: 5676

Parameter	Flag	Result	Units	RL
Total Organic Carbon		<1.00	mg/L	1

Method Blank (1) QC Batch: 5679

Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 5714

Parameter	Flag	Result	Units	RL
Naphthalene		<0.000200	mg/L	0.2
Acenaphthylene		<0.000200	mg/L	0.2
Acenaphthene		<0.000200	mg/L	0.2
Fluorene		<0.000200	mg/L	0.2
Phenanthrene		<0.000200	mg/L	0.2
Anthracene		<0.000200	mg/L	0.2
Fluoranthene		<0.000200	mg/L	0.2
Pyrene		<0.000200	mg/L	0.2
Benzo(a)anthracene		<0.000200	mg/L	0.2
Chrysene		<0.000200	mg/L	0.2

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method blank continued ...

Parameter	Flag	Result	Units	RL
Benzo(b)fluoranthene		<0.000200	mg/L	0.2
Benzo(k)fluoranthene		<0.000200	mg/L	0.2
Benzo(a)pyrene		<0.000200	mg/L	0.2
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.2
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.2
Benzo(g,h,i)perylene		<0.000200	mg/L	0.2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0387	mg/L	0.001	80.0	48	21 - 145
2-Fluorobiphenyl		0.0408	mg/L	0.001	80.0	51	25 - 145
Terphenyl-d14		0.0407	mg/L	0.001	80.0	51	26 - 127

Method Blank (1) QC Batch: 5729

Parameter	Flag	Result	Units	RL
Dissolved Calcium		<0.500	mg/L	0.5
Dissolved Potassium		<0.500	mg/L	0.5
Dissolved Magnesium		<0.500	mg/L	0.5
Dissolved Sodium		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 5844

Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Duplicate (1) QC Batch: 5588

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Conductance	1540	1530	μMHOS/cm	1	1	3.37

Duplicate (1) QC Batch: 5589

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1008	1062	mg/L	1	5	14.2

Duplicate (1) QC Batch: 5601

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	7.50	7.50	s.u.	1	0	0

Duplicate (1) QC Batch: 5679

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	240	248	mg/L as CaCo3	1	3	20
Total Alkalinity	240	248	mg/L as CaCo3	1	3	5.16

Duplicate (1) QC Batch: 5844

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	164	162	mg/L as CaCo3	1	1	20
Total Alkalinity	164	162	mg/L as CaCo3	1	1	5.16

Laboratory Control Spike (LCS-1) QC Batch: 5572

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0995	0.0972	mg/L	1	0.100	<0.000410	100	2	79.7 - 110	20
Benzene	0.0995	0.0972	mg/L	1	0.100	<0.000410	100	2	79.7 - 110	20
Toluene	0.0987	0.0974	mg/L	1	0.100	<0.000760	99	1	81.7 - 108	20
Toluene	0.0987	0.0974	mg/L	1	0.100	<0.000760	99	1	81.7 - 108	20
Ethylbenzene	0.100	0.0989	mg/L	1	0.100	<0.00100	100	1	80.4 - 109	20
Ethylbenzene	0.100	0.0989	mg/L	1	0.100	<0.00100	100	1	80.4 - 109	20
Xylene (isomers)	0.301	0.301	mg/L	1	0.300	<0.00100	100	0	81 - 109	20
Xylene (isomers)	0.301	0.301	mg/L	1	0.300	<0.00100	100	0	81 - 109	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0938	0.0954	mg/L	1	0.100	94	95	65.5 - 119
Trifluorotoluene (TFT)	0.0938	0.0954	mg/L	1	0.100	94	95	65.5 - 119
4-Bromofluorobenzene (4-BFB)	0.101	0.104	mg/L	1	0.100	101	104	68.6 - 120
4-Bromofluorobenzene (4-BFB)	0.101	0.104	mg/L	1	0.100	101	104	68.6 - 120

Laboratory Control Spike (LCS-1) QC Batch: 5573

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
GRO	1.05	1.06	mg/L	1	1.00	<0.0261	105	1	70.7 - 128	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.135	0.124	mg/L	1	0.100	135	124	38.9 - 148
4-Bromofluorobenzene (4-BFB)	0.109	0.105	mg/L	1	0.100	109	105	46.1 - 116

Laboratory Control Spike (LCS-1) QC Batch: 5575

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Bromide	2.57	2.59	mg/L	1	2.50	<0.0800	103	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5575

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrate-N	2.50	2.49	mg/L	1	2.50	<0.126	100	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5575

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	12.0	12.0	mg/L	1	12.5	<1.49	96	0	90 - 110	20
Fluoride	2.46	2.48	mg/L	1	2.50	<0.0153	98	1	90 - 110	20
Sulfate	12.3	12.4	mg/L	1	12.5	<0.171	98	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5587

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
DRO	23.6	26.2	mg/L	0.1	250	0.45	93	10	86 - 120	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Triacontane	13.9	16.1	mg/L	0.1	150	93	107	44 - 123

Laboratory Control Spike (LCS-1) QC Batch: 5599

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0970	0.0959	mg/L	1	0.100	<0.000238	97	1	70 - 130	20
Toluene	0.0945	0.0941	mg/L	1	0.100	<0.000532	94	0	70 - 130	20

continued ...

control spikes continued ...

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Ethylbenzene	0.0917	0.0941	mg/L	1	0.100	<0.00160	92	2	70 - 130	20
Xylene (isomers)	0.279	0.285	mg/L	1	0.300	<0.00571	93	2	70 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0926	0.0975	mg/L	1	0.100	93	98	70 - 130
4-Bromofluorobenzene (4-BFB)	0.0957	0.0969	mg/L	1	0.100	96	97	70 - 130

Laboratory Control Spike (LCS-1) QC Batch: 5645

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Iron	0.510	0.505	mg/L	1	0.500	<0.00208	102	1	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5653

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Iron	0.503	0.502	mg/L	1	0.500	<0.00281	101	0	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5676

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	4.92	4.95	mg/L	1	5.00	<0.843	98	1	78 - 120	13

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5714

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Naphthalene	52.7	53.8	mg/L	1	80.0	<0.0445	66	2	21.4 - 134	20
Acenaphthylene	61.7	61.4	mg/L	1	80.0	<0.0383	77	0	42.1 - 135	20
Acenaphthene	58.9	58.6	mg/L	1	80.0	<0.0421	74	0	41 - 133	20
Fluorene	59.1	59.4	mg/L	1	80.0	<0.0655	74	0	49.3 - 133	20
Phenanthrene	62.1	63.4	mg/L	1	80.0	<0.0383	78	2	54.4 - 135	20
Anthracene	62.4	63.8	mg/L	1	80.0	<0.0468	78	2	42.2 - 130	20
Fluoranthene	60.8	61.9	mg/L	1	80.0	<0.0550	76	2	44.4 - 146	20
Pyrene	65.5	65.9	mg/L	1	80.0	<0.0904	82	1	52.8 - 137	20
Benzo(a)anthracene	60.2	60.9	mg/L	1	80.0	<0.0993	75	1	59 - 134	20
Chrysene	68.4	69.2	mg/L	1	80.0	<0.121	86	1	49.6 - 107	20
Benzo(b)fluoranthene	53.3	54.4	mg/L	1	80.0	<0.171	67	2	43.2 - 134	20

continued ...

control spikes continued ...

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzo(k)fluoranthene	63.8	66.4	mg/L	1	80.0	<0.0951	80	4	55.2 - 145	20
Benzo(a)pyrene	63.5	64.3	mg/L	1	80.0	<0.135	79	1	63.9 - 138	20
Indeno(1,2,3-cd)pyrene	67.6	68.5	mg/L	1	80.0	<0.176	84	1	64.6 - 145	20
Dibenzo(a,h)anthracene	70.2	70.4	mg/L	1	80.0	<0.184	88	0	48.6 - 142	20
Benzo(g,h,i)perylene	66.4	65.5	mg/L	1	80.0	<0.134	83	1	71.5 - 146	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Nitrobenzene-d5	51.7	52.3	mg/L	1	80.0	65	65	20 - 146
2-Fluorobiphenyl	58.6	58.1	mg/L	1	80.0	73	73	25.3 - 146
Terphenyl-d14	58.0	58.5	mg/L	1	80.0	72	73	26 - 127

Laboratory Control Spike (LCS-1) QC Batch: 5729

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Calcium	98.6	96.6	mg/L	1	100	<0.183	99	2	85 - 115	20
Dissolved Potassium	107	103	mg/L	1	100	<0.135	107	4	85 - 115	20
Dissolved Magnesium	100	97.9	mg/L	1	100	<0.183	100	2	85 - 115	20
Dissolved Sodium	108	108	mg/L	1	100	<0.105	108	0	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5575

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Bromide	130	130	mg/L	50	2.50	<4.00	104	0	68.9 - 134	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5575

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrate-N	133	133	mg/L	50	2.50	13.9	95	0	65.8 - 123	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5575

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	915	915	mg/L	50	12.5	327	94	0	56.4 - 130	20
Fluoride	123	127	mg/L	50	2.50	7.22	93	3	65.1 - 121	20
Sulfate	853	861	mg/L	50	12.5	247	97	1	69.9 - 114	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5577

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrite-N	0.0707	0.0712	mg/L	1	0.0800	<0.000820	88	1	68.7 - 117	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5645

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Iron	1.24	1.26	mg/L	1	0.500	0.77	94	2	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5653

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Iron	0.467	0.465	mg/L	1	0.500	<0.00281	93	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5676

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon [56]	7.11	7.51	mg/L	1	5.00	1.23	118	5	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5729

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Calcium	273	266	mg/L	1	100	171	102	2	75 - 125	20
Dissolved Potassium	112	109	mg/L	1	100	7.66	104	3	75 - 125	20
Dissolved Magnesium	165	165	mg/L	1	100	72.4	93	0	75 - 125	20
Dissolved Sodium	478	478	mg/L	1	100	365	113	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (CCV-1) QC Batch: 5572

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.100	100	85 - 115	2003-11-06
Toluene		mg/L	0.100	0.100	100	85 - 115	2003-11-06

continued ...

[5]Matrix spike recovery out of limits due to sample matrix.
[6]Matrix spike recovery out of limits due to sample matrix.

standard continued ...

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Ethylbenzene		mg/L	0.100	0.102	102	85 - 115	2003-11-06
Xylene (isomers)		mg/L	0.300	0.308	103	85 - 115	2003-11-06

Standard (CCV-2) QC Batch: 5572

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0994	99	85 - 115	2003-11-06
Toluene		mg/L	0.100	0.0990	99	85 - 115	2003-11-06
Ethylbenzene		mg/L	0.100	0.0998	100	85 - 115	2003-11-06
Xylene (isomers)		mg/L	0.300	0.302	101	85 - 115	2003-11-06

Standard (CCV-1) QC Batch: 5573

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	1.04	104	85 - 115	2003-11-06

Standard (CCV-2) QC Batch: 5573

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	1.06	106	85 - 115	2003-11-06

Standard (ICV-1) QC Batch: 5575

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.60	104	90 - 110	2003-11-07

Standard (ICV-1) QC Batch: 5575

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate-N		mg/L	2.50	2.50	100	90 - 110	2003-11-07

Standard (ICV-1) QC Batch: 5575

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	12.2	98	90 - 110	2003-11-07
Fluoride		mg/L	2.50	2.51	100	90 - 110	2003-11-07
Sulfate		mg/L	12.5	12.5	100	90 - 110	2003-11-07

Standard (CCV-1) QC Batch: 5575

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.55	102	90 - 110	2003-11-07

Standard (CCV-1) QC Batch: 5575

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate-N		mg/L	2.50	2.48	99	90 - 110	2003-11-07

Standard (CCV-1) QC Batch: 5575

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	12.1	97	90 - 110	2003-11-07
Fluoride		mg/L	2.50	2.48	99	90 - 110	2003-11-07
Sulfate		mg/L	12.5	12.4	99	90 - 110	2003-11-07

Standard (ICV-1) QC Batch: 5577

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrite-N		mg/L	0.0800	0.0807	101	85 - 115	2003-11-07

Standard (CCV-1) QC Batch: 5577

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrite-N		mg/L	0.0800	0.0803	100	85 - 115	2003-11-07

Standard (CCV-1) QC Batch: 5587

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/L	250	275	110	75 - 125	2003-11-07

Standard (CCV-2) QC Batch: 5587

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/L	250	291	116	75 - 125	2003-11-07

Standard (ICV-1) QC Batch: 5588

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		μMHOS/cm	1410	1410	100	90 - 110	2003-11-07

Standard (CCV-1) QC Batch: 5588

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		μMHOS/cm	1410	1410	100	90 - 110	2003-11-07

Standard (ICV-1) QC Batch: 5589

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	983.0	98	90 - 110	2003-11-10

Standard (CCV-1) QC Batch: 5589

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	996.0	100	90 - 110	2003-11-10

Standard (ICV-1) QC Batch: 5599

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0992	99	85 - 115	2003-11-07
Toluene		mg/L	0.100	0.0982	98	85 - 115	2003-11-07
Ethylbenzene		mg/L	0.100	0.0955	96	85 - 115	2003-11-07
Xylene (isomers)		mg/L	0.300	0.288	96	85 - 115	2003-11-07

Standard (CCV-1) QC Batch: 5599

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0953	95	85 - 115	2003-11-07
Toluene		mg/L	0.100	0.0923	92	85 - 115	2003-11-07
Ethylbenzene		mg/L	0.100	0.0904	90	85 - 115	2003-11-07
Xylene (isomers)		mg/L	0.300	0.271	90	85 - 115	2003-11-07

Standard (ICV-1) QC Batch: 5601

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7.00	7.10	101	98 - 102	2003-11-06

Standard (CCV-1) QC Batch: 5601

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7.00	7.10	101	98 - 102	2003-11-06

Standard (ICV-1) QC Batch: 5645

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Iron		mg/L	1.00	0.998	100	90 - 110	2003-11-11

Standard (CCV-1) QC Batch: 5645

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Iron		mg/L	1.00	1.02	102	90 - 110	2003-11-11

Standard (ICV-1) QC Batch: 5653

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Iron		mg/L	1.00	0.998	100	90 - 110	2003-11-11

Standard (CCV-1) QC Batch: 5653

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Iron		mg/L	1.00	1.05	105	90 - 110	2003-11-11

Standard (ICV-1) QC Batch: 5676

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	4.86	97	85 - 115	2003-11-12

Standard (CCV-1) QC Batch: 5676

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	5.38	108	85 - 115	2003-11-12

Standard (ICV-1) QC Batch: 5679

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-11
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-11
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-11-11
Total Alkalinity		mg/L as CaCo3	250	240	96	90 - 110	2003-11-11

Standard (CCV-1) QC Batch: 5679

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-11
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-11
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-11-11
Total Alkalinity		mg/L as CaCo3	250	238	95	90 - 110	2003-11-11

Standard (CCV-1) QC Batch: 5714

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Naphthalene		mg/L	60.0	55.3	92	80 - 120	2003-11-13
Acenaphthylene		mg/L	60.0	55.3	92	80 - 120	2003-11-13
Acenaphthene		mg/L	60.0	52.9	88	80 - 120	2003-11-13
Fluorene		mg/L	60.0	53.6	89	80 - 120	2003-11-13
Phenanthrene		mg/L	60.0	66.7	111	80 - 120	2003-11-13
Anthracene		mg/L	60.0	66.5	111	80 - 120	2003-11-13
Fluoranthene		mg/L	60.0	67.6	113	80 - 120	2003-11-13
Pyrene		mg/L	60.0	52.4	87	80 - 120	2003-11-13
Benzo(a)anthracene		mg/L	60.0	49.5	82	80 - 120	2003-11-13
Chrysene		mg/L	60.0	60.9	102	80 - 120	2003-11-13
Benzo(b)fluoranthene		mg/L	60.0	71.1	118	80 - 120	2003-11-13
Benzo(k)fluoranthene		mg/L	60.0	68.3	114	80 - 120	2003-11-13
Benzo(a)pyrene		mg/L	60.0	66.8	111	80 - 120	2003-11-13

continued ...

standard continued ...

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Indeno(1,2,3-cd)pyrene		mg/L	60.0	65.4	109	80 - 120	2003-11-13
Dibenzo(a,h)anthracene		mg/L	60.0	54.8	91	80 - 120	2003-11-13
Benzo(g,h,i)perylene		mg/L	60.0	65.4	109	80 - 120	2003-11-13

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limit
Nitrobenzene-d5		66.8	mg/L	1	60.0	111	80 - 120
2-Fluorobiphenyl		67.9	mg/L	1	60.0	113	80 - 120
Terphenyl-d14		60.8	mg/L	1	60.0	101	80 - 120

Standard (ICV-1) QC Batch: 5729

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25.0	25.1	100	90 - 110	2003-11-13
Dissolved Potassium		mg/L	25.0	26.4	106	90 - 110	2003-11-13
Dissolved Magnesium		mg/L	25.0	24.8	99	90 - 110	2003-11-13
Dissolved Sodium		mg/L	25.0	26.7	107	90 - 110	2003-11-13

Standard (CCV-1) QC Batch: 5729

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25.0	23.6	94	90 - 110	2003-11-13
Dissolved Potassium		mg/L	25.0	26.6	106	90 - 110	2003-11-13
Dissolved Magnesium		mg/L	25.0	23.6	94	90 - 110	2003-11-13
Dissolved Sodium		mg/L	25.0	26.7	107	90 - 110	2003-11-13

Standard (ICV-1) QC Batch: 5844

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-18
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-18
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-11-18
Total Alkalinity		mg/L as CaCo3	250	240	96	90 - 110	2003-11-18

Standard (CCV-1) QC Batch: 5844

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-18
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-18

continued ...

standard continued ...

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-11-18
Total Alkalinity		mg/L as CaCo3	250	244	98	90 - 110	2003-11-18

ARCADIS

3110617

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page ____ of ____

Project Number/Name: MT000803.0001
Project Location: Pure-Lovington
Laboratory: Trace
Project Manager: Frank Kieffer
Sampler(s)/Affiliation: ARCADIS/

Sample ID/Location	Matrix	Date/Time Sampled	Time Lab ID	General GW Chemistry* 1 liter plastic	BTEX 2 VOAs w/HCl	TPH DRO 2 VOAs w/HCl	TPH GRO 2 VOAs w/HCl	Total Fe 1 250 ml plastic w/HNO3	Dissolved Fe FIELD FILTERED 1 250 ml w/HNO3	TOC 2 VOAs w/HCl	PAH 1 amber liter NEAT	150:) Interval BTEX, TPH GRO TPH DRO, Foe Remarks	Total
BW-1 56'-57'	S	11-3-03	-									20831	1
TRIP BLANK	L	-			2							20832	2
BW-1	L	11-5-03	1450	1	2	2	2	1	1	2	1	20833	12
MW-D2	L	11-5-03	945	1	2	2	2	1	1	2	1	20834	12

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 27

					Seal Intact?
Relinquished by: Rozella Moya	Organization: ARCADIS	Date 11/5/03	Time 1615		
Received by: Vicki Ornelas	Organization: Trace Analysis	Date 11/6/03	Time 11:06		(Yes) No N/A
Relinquished by:	Organization:	Date / /	Time		Seal Intact?
Received by:	Organization:	Date / /	Time		Yes No N/A

Special Instructions/Remarks:

Please contact Frank Kieffer at 432-687-5400 with questions.

* See attached list for General GW Chemistry tests.

Delivery Method: ☐ In Person ☐ Common Carrier _____ SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

TNMTO 903-133 462-0 38

AG 05-12/01

20831-54

3110617

ARCADIS

Laboratory Task Order No./P.O. [redacted]

CHAIN-OF-CUSTODY RECORD

Page ___ of ___

Project Number/Name: MT000803.0001

Project Location: Pure-Lovington

Laboratory: Trace

Project Manager: Frank Kieffer

Sampler(s)/Affiliation: ARCADIS/

Sample ID/Location	Matrix	Date/Time Sampled	Time Lab ID	General GW Chemistry* Nitrate, Nitrite 1 liter plastic NEAT	BTEX Bromide 2 VOAs w/HCl	TPH DRO 2 VOAs w/HCl	TPH GRO 2 VOAs w/HCl	Total Fe 1 250 ml plastic w/HNO3	Dissolved Fe FIELD FILTERED 1 250 ml w/HNO3	TOC 2 VOAs w/HCl	PAH 1 amber liter NEAT	Remarks	Total
BW-1 56'-57'	S	11-3-03	-								1	20831	1
Trip Blank	L	-			2							20832	2
BW-1	L	11-5-03	1450	1	2	2	2	1	1	2	1	20833	12
MW-D2	L	11-5-03	945	1	2	2	2	1	1	2	1	20834	12

L30:1 Interval BTEX, TPH GRO TPH DRO, FOE

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 27

Relinquished by: Roger Morgan	Organization: ARCADIS	Date 11/5/03	Time 1615	Seal Intact?	
Received by: Vicki Ainsley	Organization: TraceAnalysis	Date 11/6/03	Time 11:26	(Yes) No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks:

Please contact Frank Kieffer at 432-687-5400 with questions.

* See attached list for General GW Chemistry tests.

PM F 11/7/03

Delivery Method: ☐ In Person ☐ Common Carrier ___ SPECIFY ☐ Lab Courier ☐ Other ___ SPECIFY

TAT 48 903-123 NM

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. [redacted]20831, 20832, 20833, 20834

CHAIN-OF-CUSTODY RECORD

Page [redacted] of ____

Project Number/Name: MT000803.0001

Project Location: Pure-Lovington

Laboratory: Trace

Project Manager: Frank Kieffer

Sampler(s)/Affiliation: ARCADIS/

Sample ID/Location	Matrix	Date/Time Sampled	Time Lab ID	General GW Chemistry* Nitrate, Nitrite 1 liter plastic NEAT	BTEX 2 VOAs w/HCl	TPH DRO 2 VOAs w/HCl	TPH GRO 2 VOAs w/HCl	Total Fe 1 250 ml plastic w/HNO3	Dissolved Fe FIELD FILTERED 1 250 ml w/HNO3	TOC 2 VOAs w/HCl	PAH 1 amber liter NEAT	1 500 ml Jar w/ NaOH BTEX, TPH DRO, TPH GRO	Remarks	Total
BW-1 5.5'	S ✓	11.3.03 ✓									TB	/ ✓		1
Trip Blank	L	✓			2									2
BW-1	L	11-5-03 ✓	1450	1	2	2	2	1	1	2	1			12
MW-D2	L	11-5-03 ✓	945	1	2	2	2	1	1	2	1			12

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 27

Relinquished by: Roger K Mann	Organization: ARCADIS	Date 11/5/03	Time 1615	Seal Intact?	
Received by:	Organization:	Date / /	Time	(Yes) No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks:

Please contact Frank Kieffer at 432-687-5400 with questions.

* See attached list for General GW Chemistry tests.

Delivery Method: ☐ In Person ☐ Common Carrier ____ (SPECIFY) ☐ Lab Courier ☐ Other ____ (SPECIFY)

AG 05 12/01

Summary Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: November 18, 2003

Work Order: 3110716

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
20966	MW-0	water	2003-11-06	15:40	2003-11-07

	BTEX				TPH DRO	TPH GRO
Sample - Field Code	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (isomers) (mg/L)	DRO (mg/L)	GRO (mg/L)
20966 - MW-0	<0.00100	<0.00100	<0.00100	0.00140	<5.00	<0.100

Sample: 20966 - MW-0

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		182	mg/L as CaCo3	4.00
Total Alkalinity		182	mg/L as CaCo3	4.00
Bromide		<1.00	mg/L	0.200
Dissolved Calcium		73.2	mg/L	0.500
Dissolved Potassium		2.93	mg/L	0.500
Dissolved Magnesium		12.9	mg/L	0.500
Dissolved Sodium		41.2	mg/L	0.500
Specific Conductance		660	μMHOS/cm	0.00
Dissolved Iron		0.895	mg/L	0.0500
Total Iron		1.84	mg/L	0.0500
Hardness (by ICP)		236	mg eq CaCO3/L	0.00
Chloride		60.9	mg/L	0.500
Fluoride		1.37	mg/L	0.200
Sulfate		38.1	mg/L	0.500
Nitrite-N		<0.0100	mg/L	0.0100
Nitrate-N		2.42	mg/L	0.200
Naphthalene		<0.000200	mg/L	0.200
Acenaphthylene		<0.000200	mg/L	0.200
Acenaphthene		<0.000200	mg/L	0.200
Fluorene		<0.000200	mg/L	0.200
Phenanthrene		<0.000200	mg/L	0.200

continued ...

sample 20966 continued ...

Param	Flag	Result	Units	RL
Anthracene		<0.000200	mg/L	0.200
Fluoranthene		<0.000200	mg/L	0.200
Pyrene		<0.000200	mg/L	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.200
Chrysene		<0.000200	mg/L	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.200
pH		7.50	s.u.	0.00
Total Dissolved Solids		417.0	mg/L	10.00
Total Organic Carbon		1.37	mg/L	1.00

Cation-Anion Balance Sheet

DATE: 11/18/2003

Sample #	Calcium ppm	Magnesium ppm	Sodium ppm	Potassium ppm	Alkalinity ppm	Sulfate ppm	Chloride ppm	Nitrate ppm	Fluoride ppm	Bromide ppm	TDS ppm	EC µMHOs/cm
20966	73.2	12.9	41.2	2.93	182	38.1	60.9	2.42	1.37	0	417	660

Sample #	Calcium in meq/L	Magnesium in meq/L	Sodium in meq/L	Potassium in meq/L	Alkalinity in meq/L	Sulfate in meq/L	Chloride in meq/L	Nitrate in meq/L	Fluoride in meq/L	Bromide in meq/L	**Cations in meq/L**	**Anions in meq/L**	**Percentage Error**
20966	3.65	1.06	1.79	0.07	3.64	0.79	1.72	0.1727638	0.0721168	0	6.58	6.40	2.855080824

	EC/Cation	EC/Anion
20966	658.13704	639.61116

range 594 to 726

TDS/EC	TDS/Cat	TDS/Anion
0.63	0.63	0.65

needs to be 0.55-0.77

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
155 McCutcheon, Suite H El Paso, Texas 79932 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: November 18, 2003

Work Order: 3110716

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
20966	MW-0	water	2003-11-06	15:40	2003-11-07

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Michael T. Allen
Dr. Blair Leftwich, Director

Analytical Report

Sample: 20966 - MW-0

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	5679	Date Analyzed:	2003-11-11	Analyzed By:	RS
Prep Batch:	5071	Date Prepared:	2003-11-11	Prepared By:	RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		182		mg/L as CaCo3	1	4.00
Total Alkalinity		182		mg/L as CaCo3	1	4.00

Sample: 20966 - MW-0

Analysis:	Bromide (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5598	Date Analyzed:	2003-11-10	Analyzed By:	JSW
Prep Batch:	5003	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Bromide		<1.00		mg/L	5	0.200

Sample: 20966 - MW-0

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	5596	Date Analyzed:	2003-11-07	Analyzed By:	BS
Prep Batch:	5002	Date Prepared:	2003-11-07	Prepared By:	BS

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		<0.00100		mg/L	1	0.00100
Toluene		<0.00100		mg/L	1	0.00100
Ethylbenzene		<0.00100		mg/L	1	0.00100
Xylene (isomers)		0.00140		mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0877	mg/L	1	0.100	88	65.5 - 119
4-Bromofluorobenzene (4-BFB)		0.0976	mg/L	1	0.100	98	68.6 - 120

Sample: 20966 - MW-0

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5729	Date Analyzed:	2003-11-13	Analyzed By:	BC
Prep Batch:	4992	Date Prepared:	2003-11-07	Prepared By:	TP

continued ...

sample 20966 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Calcium		73.2	mg/L	1	0.500
Dissolved Potassium		2.93	mg/L	1	0.500
Dissolved Magnesium		12.9	mg/L	1	0.500
Dissolved Sodium		41.2	mg/L	1	0.500

Sample: 20966 - MW-0

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A
QC Batch:	5588	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4995	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Specific Conductance		660	μMHOS/cm	1	0.00

Sample: 20966 - MW-0

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5653	Date Analyzed:	2003-11-11	Analyzed By:	RR
Prep Batch:	5019	Date Prepared:	2003-11-10	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		0.895	mg/L	1	0.0500

Sample: 20966 - MW-0

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	5645	Date Analyzed:	2003-11-11	Analyzed By:	RR
Prep Batch:	5020	Date Prepared:	2003-11-10	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Iron		1.84	mg/L	1	0.0500

Sample: 20966 - MW-0

Analysis:	Hardness	Analytical Method:	SM 2340B	Prep Method:	N/A
QC Batch:	5737	Date Analyzed:	2003-11-14	Analyzed By:	BC
Prep Batch:	4992	Date Prepared:	2003-11-07	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Hardness (by ICP)		236		mg eq CaCO3/L	1	0.00

Sample: 20966 - MW-0

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5598	Date Analyzed:	2003-11-10	Analyzed By:	JSW
Prep Batch:	5003	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		60.9		mg/L	5	0.500
Fluoride		1.37		mg/L	5	0.200
Sulfate		38.1		mg/L	5	0.500

Sample: 20966 - MW-0

Analysis:	NO2 (Spec)	Analytical Method:	SM 4500-NO2 B	Prep Method:	N/A
QC Batch:	5577	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4985	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrite-N		<0.0100		mg/L	1	0.0100

Sample: 20966 - MW-0

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5598	Date Analyzed:	2003-11-10	Analyzed By:	JSW
Prep Batch:	5003	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrate-N		2.42		mg/L	5	0.200

Sample: 20966 - MW-0

Analysis:	PAH	Analytical Method:	S 8270C	Prep Method:	S 3510C
QC Batch:	5714	Date Analyzed:	2003-11-13	Analyzed By:	RC
Prep Batch:	4981	Date Prepared:	2003-11-07	Prepared By:	JH

Parameter	Flag	Result	RL	Units	Dilution	RL
Naphthalene		<0.000200		mg/L	0.001	0.200
Acenaphthylene		<0.000200		mg/L	0.001	0.200
Acenaphthene		<0.000200		mg/L	0.001	0.200
Fluorene		<0.000200		mg/L	0.001	0.200
Phenanthrene		<0.000200		mg/L	0.001	0.200

continued ...

sample 20966 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL
Anthracene		<0.000200	mg/L	0.001	0.200
Fluoranthene		<0.000200	mg/L	0.001	0.200
Pyrene		<0.000200	mg/L	0.001	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.001	0.200
Chrysene		<0.000200	mg/L	0.001	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.001	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.001	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.001	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.001	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.001	0.200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0548	mg/L	0.001	80.0	68	21 - 145
2-Fluorobiphenyl		0.0640	mg/L	0.001	80.0	80	25 - 145
Terphenyl-d14		0.0444	mg/L	0.001	80.0	56	26 - 127

Sample: 20966 - MW-0

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	5602	Date Analyzed:	2003-11-07	Analyzed By:	RS
Prep Batch:	5007	Date Prepared:	2003-11-07	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
pH		7.50	s.u.	1	0.00

Sample: 20966 - MW-0

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	5589	Date Analyzed:	2003-11-10	Analyzed By:	JSW
Prep Batch:	4997	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		417.0	mg/L	1	10.00

Sample: 20966 - MW-0

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	5676	Date Analyzed:	2003-11-12	Analyzed By:	RC
Prep Batch:	5078	Date Prepared:	2003-11-12	Prepared By:	RC

continued ...

sample 20966 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		1.37	mg/L	1	1.00

Sample: 20966 - MW-0

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5611	Date Analyzed:	2003-11-09	Analyzed By:	BP
Prep Batch:	5014	Date Prepared:	2003-11-07	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<5.00	mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		11.7	mg/L	0.1	150	78	44 - 123

Sample: 20966 - MW-0

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	5597	Date Analyzed:	2003-11-07	Analyzed By:	BS
Prep Batch:	5002	Date Prepared:	2003-11-07	Prepared By:	BS

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<0.100	mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[1]	0.142	mg/L	1	0.100	142	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0936	mg/L	1	0.100	94	70 - 130

Method Blank (1) QC Batch: 5577

Parameter	Flag	Result	Units	RL
Nitrite-N		<0.0100	mg/L	0.01

Method Blank (1) QC Batch: 5588

[1] High surrogate recovery due to peak interference.

Parameter	Flag	Result	Units	RL
Specific Conductance		3.22	µMHOS/cm	

Method Blank (1) QC Batch: 5589

Parameter	Flag	Result	Units	RL
Total Dissolved Solids		<10.00	mg/L	10

Method Blank (1) QC Batch: 5596

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene (isomers)		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0912	mg/L	1	0.100	91	70 - 130
4-Bromofluorobenzene (4-BFB)		0.105	mg/L	1	0.100	105	70 - 130

Method Blank (1) QC Batch: 5597

Parameter	Flag	Result	Units	RL
GRO		0.128	mg/L	0.1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[2]	0.144	mg/L	1	0.100	144	70 - 130
4-Bromofluorobenzene (4-BFB)		0.128	mg/L	1	0.100	128	70 - 130

Method Blank (1) QC Batch: 5598

Parameter	Flag	Result	Units	RL
Bromide		<0.200	mg/L	0.2

Method Blank (1) QC Batch: 5598

[2]High surrogate recovery due to prep. ICV, CCV show the method to be in control.

Parameter	Flag	Result	Units	RL
Nitrate-N		<0.200	mg/L	0.2

Method Blank (1) QC Batch: 5598

Parameter	Flag	Result	Units	RL
Chloride		<0.500	mg/L	0.5
Fluoride		<0.200	mg/L	0.2
Sulfate		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 5611

Parameter	Flag	Result	Units	RL
DRO		<5.00	mg/L	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		16.4	mg/L	0.1	150	109	44 - 123

Method Blank (1) QC Batch: 5645

Parameter	Flag	Result	Units	RL
Total Iron		<0.0500	mg/L	0.05

Method Blank (1) QC Batch: 5653

Parameter	Flag	Result	Units	RL
Dissolved Iron		<0.0500	mg/L	0.05

Method Blank (1) QC Batch: 5676

Parameter	Flag	Result	Units	RL
Total Organic Carbon		<1.00	mg/L	1

Method Blank (1) QC Batch: 5679

Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1

continued ...

method blank continued ...

Parameter	Flag	Result	Units	RL
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 5714

Parameter	Flag	Result	Units	RL
Naphthalene		<0.000200	mg/L	0.2
Acenaphthylene		<0.000200	mg/L	0.2
Acenaphthene		<0.000200	mg/L	0.2
Fluorene		<0.000200	mg/L	0.2
Phenanthrene		<0.000200	mg/L	0.2
Anthracene		<0.000200	mg/L	0.2
Fluoranthene		<0.000200	mg/L	0.2
Pyrene		<0.000200	mg/L	0.2
Benzo(a)anthracene		<0.000200	mg/L	0.2
Chrysene		<0.000200	mg/L	0.2
Benzo(b)fluoranthene		<0.000200	mg/L	0.2
Benzo(k)fluoranthene		<0.000200	mg/L	0.2
Benzo(a)pyrene		<0.000200	mg/L	0.2
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.2
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.2
Benzo(g,h,i)perylene		<0.000200	mg/L	0.2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0387	mg/L	0.001	80.0	48	21 - 145
2-Fluorobiphenyl		0.0408	mg/L	0.001	80.0	51	25 - 145
Terphenyl-d14		0.0407	mg/L	0.001	80.0	51	26 - 127

Method Blank (1) QC Batch: 5729

Parameter	Flag	Result	Units	RL
Dissolved Calcium		<0.500	mg/L	0.5
Dissolved Potassium		<0.500	mg/L	0.5
Dissolved Magnesium		<0.500	mg/L	0.5
Dissolved Sodium		<0.500	mg/L	0.5

Duplicate (1) QC Batch: 5588

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Conductance	1540	1530	μMHOS/cm	1	1	3.37

Duplicate (1) QC Batch: 5589

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1008	1062	mg/L	1	5	14.2

Duplicate (1) QC Batch: 5602

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	7.70	7.70	s.u.	1	0	0

Duplicate (1) QC Batch: 5679

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	240	248	mg/L as CaCo3	1	3	20
Total Alkalinity	240	248	mg/L as CaCo3	1	3	5.16

Laboratory Control Spike (LCS-1) QC Batch: 5577

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrite-N [3]	0.0772	0.0781	mg/L	1	0.0800	<0.000820	96	1	96.7 - 106	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5596

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0987	0.100	mg/L	1	0.100	<0.000410	99	1	79.7 - 110	20
Toluene	0.0982	0.0998	mg/L	1	0.100	<0.000760	98	2	81.7 - 108	20
Ethylbenzene	0.0980	0.0994	mg/L	1	0.100	<0.00100	98	1	80.4 - 109	20
Xylene (isomers)	0.297	0.301	mg/L	1	0.300	<0.00100	99	1	81 - 109	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0965	0.0976	mg/L	1	0.100	96	98	65.5 - 119
4-Bromofluorobenzene (4-BFB)	0.102	0.103	mg/L	1	0.100	102	103	68.6 - 120

Laboratory Control Spike (LCS-1) QC Batch: 5597

[3] 96 % recovery is still within limits. ICV, CCV, anc Duplicate spike show method to be incontrol. Still within RPD limits.

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
DRO	1.01	1.01	mg/L	1	1.00	<0.0261	101	0	70.7 - 128	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0975	0.101	mg/L	1	0.100	98	101	38.9 - 148
4-Bromofluorobenzene (4-BFB)	0.104	0.106	mg/L	1	0.100	104	106	46.1 - 116

Laboratory Control Spike (LCS-1) QC Batch: 5598

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Bromide	2.57	2.60	mg/L	1	2.50	<0.0800	103	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5598

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrate-N	2.48	2.49	mg/L	1	2.50	<0.126	99	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5598

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	12.3	12.4	mg/L	1	12.5	<1.49	98	1	90 - 110	20
Fluoride	2.49	2.53	mg/L	1	2.50	<0.0153	100	2	90 - 110	20
Sulfate	12.5	12.6	mg/L	1	12.5	<0.171	100	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5611

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
DRO [4]	20.4	21.7	mg/L	0.1	250	<0.230	82	6	86 - 120	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Triacontane	14.1	17.3	mg/L	0.1	150	94	115	44 - 123

Laboratory Control Spike (LCS-1) QC Batch: 5645

[4]LCS recovery out of control chart range but within method limits.

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Iron	0.510	0.505	mg/L	1	0.500	<0.00208	102	1	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5653

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Iron	0.503	0.502	mg/L	1	0.500	<0.00281	101	0	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5676

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	4.92	4.95	mg/L	1	5.00	<0.843	98	1	78 - 120	13

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5714

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Naphthalene	52.7	53.8	mg/L	1	80.0	<0.0445	66	2	21.4 - 134	20
Acenaphthylene	61.7	61.4	mg/L	1	80.0	<0.0383	77	0	42.1 - 135	20
Acenaphthene	58.9	58.6	mg/L	1	80.0	<0.0421	74	0	41 - 133	20
Fluorene	59.1	59.4	mg/L	1	80.0	<0.0655	74	0	49.3 - 133	20
Phenanthrene	62.1	63.4	mg/L	1	80.0	<0.0383	78	2	54.4 - 135	20
Anthracene	62.4	63.8	mg/L	1	80.0	<0.0468	78	2	42.2 - 130	20
Fluoranthene	60.8	61.9	mg/L	1	80.0	<0.0550	76	2	44.4 - 146	20
Pyrene	65.5	65.9	mg/L	1	80.0	<0.0904	82	1	52.8 - 137	20
Benzo(a)anthracene	60.2	60.9	mg/L	1	80.0	<0.0993	75	1	59 - 134	20
Chrysene	68.4	69.2	mg/L	1	80.0	<0.121	86	1	49.6 - 107	20
Benzo(b)fluoranthene	53.3	54.4	mg/L	1	80.0	<0.171	67	2	43.2 - 134	20
Benzo(k)fluoranthene	63.8	66.4	mg/L	1	80.0	<0.0951	80	4	55.2 - 145	20
Benzo(a)pyrene	63.5	64.3	mg/L	1	80.0	<0.135	79	1	63.9 - 138	20
Indeno(1,2,3-cd)pyrene	67.6	68.5	mg/L	1	80.0	<0.176	84	1	64.6 - 145	20
Dibenzo(a,h)anthracene	70.2	70.4	mg/L	1	80.0	<0.184	88	0	48.6 - 142	20
Benzo(g,h,i)perylene	66.4	65.5	mg/L	1	80.0	<0.134	83	1	71.5 - 146	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Nitrobenzene-d5	51.7	52.3	mg/L	1	80.0	65	65	20 - 146
2-Fluorobiphenyl	58.6	58.1	mg/L	1	80.0	73	73	25.3 - 146
Terphenyl-d14	58.0	58.5	mg/L	1	80.0	72	73	26 - 127

Laboratory Control Spike (LCS-1) QC Batch: 5729

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Calcium	98.6	96.6	mg/L	1	100	<0.183	99	2	85 - 115	20
Dissolved Potassium	107	103	mg/L	1	100	<0.135	107	4	85 - 115	20
Dissolved Magnesium	100	97.9	mg/L	1	100	<0.183	100	2	85 - 115	20
Dissolved Sodium	108	108	mg/L	1	100	<0.105	108	0	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5577

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrite-N	0.0707	0.0712	mg/L	1	0.0800	<0.000820	88	1	68.7 - 117	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5598

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Bromide	130	135	mg/L	50	2.50	<4.00	104	4	68.9 - 134	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5598

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrate-N	135	137	mg/L	50	2.50	15.7	95	1	65.8 - 123	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5598

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	706	708	mg/L	50	12.5	124	93	0	56.4 - 130	20
Fluoride	132	134	mg/L	50	2.50	9.67	98	2	65.1 - 121	20
Sulfate	1930	1950	mg/L	50	12.5	1320	98	1	69.9 - 114	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5645

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Iron	1.24	1.26	mg/L	1	0.500	0.77	94	2	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5653

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Iron	0.467	0.465	mg/L	1	0.500	<0.00281	93	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5676

Param		MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	[6]	7.11	7.51	mg/L	1	5.00	1.23	118	5	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5729

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Calcium	273	266	mg/L	1	100	171	102	2	75 - 125	20
Dissolved Potassium	112	109	mg/L	1	100	7.66	104	3	75 - 125	20
Dissolved Magnesium	165	165	mg/L	1	100	72.4	93	0	75 - 125	20
Dissolved Sodium	478	478	mg/L	1	100	365	113	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1) QC Batch: 5577

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrite-N		mg/L	0.0800	0.0807	101	85 - 115	2003-11-07

Standard (CCV-1) QC Batch: 5577

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrite-N		mg/L	0.0800	0.0803	100	85 - 115	2003-11-07

Standard (ICV-1) QC Batch: 5588

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		µMHOS/cm	1410	1410	100	90 - 110	2003-11-07

Standard (CCV-1) QC Batch: 5588

[5]Matrix spike recovery out of limits due to sample matrix.
[6]Matrix spike recovery out of limits due to sample matrix.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		µMHOS/cm	1410	1410	100	90 - 110	2003-11-07

Standard (ICV-1) QC Batch: 5589

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	983.0	98	90 - 110	2003-11-10

Standard (CCV-1) QC Batch: 5589

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	996.0	100	90 - 110	2003-11-10

Standard (ICV-1) QC Batch: 5596

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.101	101	85 - 115	2003-11-07
Toluene		mg/L	0.100	0.101	101	85 - 115	2003-11-07
Ethylbenzene		mg/L	0.100	0.100	100	85 - 115	2003-11-07
Xylene (isomers)		mg/L	0.300	0.303	101	85 - 115	2003-11-07

Standard (CCV-1) QC Batch: 5596

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0979	98	85 - 115	2003-11-07
Toluene		mg/L	0.100	0.0941	94	85 - 115	2003-11-07
Ethylbenzene		mg/L	0.100	0.0966	97	85 - 115	2003-11-07
Xylene (isomers)		mg/L	0.300	0.286	95	85 - 115	2003-11-07

Standard (ICV-1) QC Batch: 5597

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	0.988	99	85 - 115	2003-11-07

Standard (CCV-1) QC Batch: 5597

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	0.949	95	85 - 115	2003-11-07

Standard (ICV-1) QC Batch: 5598

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.59	104	90 - 110	2003-11-10

Standard (ICV-1) QC Batch: 5598

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate-N		mg/L	2.50	2.49	100	90 - 110	2003-11-10

Standard (ICV-1) QC Batch: 5598

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	12.1	97	90 - 110	2003-11-10
Fluoride		mg/L	2.50	2.54	102	90 - 110	2003-11-10
Sulfate		mg/L	12.5	12.5	100	90 - 110	2003-11-10

Standard (CCV-1) QC Batch: 5598

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.59	104	90 - 110	2003-11-10

Standard (CCV-1) QC Batch: 5598

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate-N		mg/L	2.50	2.47	99	90 - 110	2003-11-10

Standard (CCV-1) QC Batch: 5598

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	12.3	98	90 - 110	2003-11-10
Fluoride		mg/L	2.50	2.52	101	90 - 110	2003-11-10
Sulfate		mg/L	12.5	12.6	101	90 - 110	2003-11-10

Standard (ICV-1) QC Batch: 5602

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7.00	7.00	100	98 - 102	2003-11-07

Standard (CCV-1) QC Batch: 5602

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7.00	7.00	100	98 - 102	2003-11-07

Standard (ICV-1) QC Batch: 5611

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/L	250	305	122	75 - 125	2003-11-09

Standard (CCV-1) QC Batch: 5611

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/L	250	312	125	75 - 125	2003-11-09

Standard (ICV-1) QC Batch: 5645

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Iron		mg/L	1.00	0.998	100	90 - 110	2003-11-11

Standard (CCV-1) QC Batch: 5645

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Iron		mg/L	1.00	1.02	102	90 - 110	2003-11-11

Standard (ICV-1) QC Batch: 5653

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Iron		mg/L	1.00	0.998	100	90 - 110	2003-11-11

Standard (CCV-1) QC Batch: 5653

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Iron		mg/L	1.00	1.05	105	90 - 110	2003-11-11

Standard (ICV-1) QC Batch: 5676

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	4.86	97	85 - 115	2003-11-12

Standard (CCV-1) QC Batch: 5676

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	5.38	108	85 - 115	2003-11-12

Standard (ICV-1) QC Batch: 5679

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-11
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-11
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-11-11
Total Alkalinity		mg/L as CaCo3	250	240	96	90 - 110	2003-11-11

Standard (CCV-1) QC Batch: 5679

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-11
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-11
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-11-11
Total Alkalinity		mg/L as CaCo3	250	238	95	90 - 110	2003-11-11

Standard (CCV-1) QC Batch: 5714

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Naphthalene		mg/L	60.0	55.3	92	80 - 120	2003-11-13
Acenaphthylene		mg/L	60.0	55.3	92	80 - 120	2003-11-13
Acenaphthene		mg/L	60.0	52.9	88	80 - 120	2003-11-13
Fluorene		mg/L	60.0	53.6	89	80 - 120	2003-11-13
Phenanthrene		mg/L	60.0	66.7	111	80 - 120	2003-11-13
Anthracene		mg/L	60.0	66.5	111	80 - 120	2003-11-13
Fluoranthene		mg/L	60.0	67.6	113	80 - 120	2003-11-13

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Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Pyrene		mg/L	60.0	52.4	87	80 - 120	2003-11-13
Benzo(a)anthracene		mg/L	60.0	49.5	82	80 - 120	2003-11-13
Chrysene		mg/L	60.0	60.9	102	80 - 120	2003-11-13
Benzo(b)fluoranthene		mg/L	60.0	71.1	118	80 - 120	2003-11-13
Benzo(k)fluoranthene		mg/L	60.0	68.3	114	80 - 120	2003-11-13
Benzo(a)pyrene		mg/L	60.0	66.8	111	80 - 120	2003-11-13
Indeno(1,2,3-cd)pyrene		mg/L	60.0	65.4	109	80 - 120	2003-11-13
Dibenzo(a,h)anthracene		mg/L	60.0	54.8	91	80 - 120	2003-11-13
Benzo(g,h,i)perylene		mg/L	60.0	65.4	109	80 - 120	2003-11-13

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limit
Nitrobenzene-d5		66.8	mg/L	1	60.0	111	80 - 120
2-Fluorobiphenyl		67.9	mg/L	1	60.0	113	80 - 120
Terphenyl-d14		60.8	mg/L	1	60.0	101	80 - 120

Standard (ICV-1) QC Batch: 5729

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25.0	25.1	100	90 - 110	2003-11-13
Dissolved Potassium		mg/L	25.0	26.4	106	90 - 110	2003-11-13
Dissolved Magnesium		mg/L	25.0	24.8	99	90 - 110	2003-11-13
Dissolved Sodium		mg/L	25.0	26.7	107	90 - 110	2003-11-13

Standard (CCV-1) QC Batch: 5729

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25.0	23.6	94	90 - 110	2003-11-13
Dissolved Potassium		mg/L	25.0	26.6	106	90 - 110	2003-11-13
Dissolved Magnesium		mg/L	25.0	23.6	94	90 - 110	2003-11-13
Dissolved Sodium		mg/L	25.0	26.7	107	90 - 110	2003-11-13

ARCADIS

3110716

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page ____ of ____

Project Number/Name: MT000803.0001
Project Location: Pure-Lovington
Laboratory: Trace
Project Manager: Frank Kieffer
Sampler(s)/Affiliation: ARCADIS/

Sample ID/Location	Matrix	Date/Time Sampled	Time Labo ID	General GW Chemistry * Nitrate, Nitrite 1 liter plastic NEAT	BTEX 2 VOAs w/HCl	TPH DRO 2 VOAs w/HCl	TPH GRO 2 VOAs w/HCl	Total Fe 1 250 ml plastic w/HNO3	Dissolved Fe FIELD FILTERED 1 250 ml w/HNO3	TOC 2 vOAs w/HCl	PAH 1 amber liter NEAT	Remarks	Total
MW-0	L	11-6-03	1540	1	2	2	2	1	1	2	1	209616	12
~~FB~~ Trip	L				2								2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers

Relinquished by: Roger B. Morgan	Organization: ARCADIS	Date 11/6/03	Time 1700	Seal Intact?	
Received by: Mitch Rivers	Organization: Trace Analysis	Date 11/7/03	Time 11:17	(Yes) No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks:
Please contact Frank Kieffer at 432-687-5400 with questions.
* See attached list for General GW Chemistry tests.

Delivery Method: ☐ In Person ☐ Common Carrier _____ ☐ Lab Courier ☐ Other _____
SPECIFY
MT 3c TNMTO 903/533-4703 SPECIFY

AG 05-12/01

Summary Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: November 18, 2003

Work Order: 3110717

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
20967	MW-Q	water	2003-11-06	13:45	2003-11-07
20968	MW-P	water	2003-11-06	14:45	2003-11-07
20969	Trip Blank	water	2003-11-06	00:00	2003-11-07

	BTEX				TPH DRO	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene (isomers)	DRO	GRO
Sample - Field Code	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
20967 - MW-Q	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100
20968 - MW-P	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100
20969 - Trip Blank	<0.00100	<0.00100	<0.00100	<0.00100		

Sample: 20967 - MW-Q

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		180	mg/L as CaCo3	4.00
Total Alkalinity		180	mg/L as CaCo3	4.00
Bromide		<1.00	mg/L	0.200
Dissolved Calcium		66.0	mg/L	0.500
Dissolved Potassium		2.80	mg/L	0.500
Dissolved Magnesium		11.4	mg/L	0.500
Dissolved Sodium		29.6	mg/L	0.500
Specific Conductance		561	μMHOS/cm	0.00
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		3.04	mg/L	0.0500
Hardness (by ICP)		212	mg eq CaCO3/L	0.00
Chloride		35.5	mg/L	0.500
Fluoride		1.47	mg/L	0.200
Sulfate		34.9	mg/L	0.500
Nitrite-N		<0.0100	mg/L	0.0100
Nitrate-N		4.05	mg/L	0.200
Naphthalene		<0.000200	mg/L	0.200

continued ...

sample 20967 continued ...

Param	Flag	Result	Units	RL
Acenaphthylene		<0.000200	mg/L	0.200
Acenaphthene		<0.000200	mg/L	0.200
Fluorene		<0.000200	mg/L	0.200
Phenanthrene		<0.000200	mg/L	0.200
Anthracene		<0.000200	mg/L	0.200
Fluoranthene		<0.000200	mg/L	0.200
Pyrene		<0.000200	mg/L	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.200
Chrysene		<0.000200	mg/L	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.200
Benzo(a)pyrene		<0.000200	mg/L	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.200
pH		7.80	s.u.	0.00
Total Dissolved Solids		391.0	mg/L	10.00
Total Organic Carbon		<1.00	mg/L	1.00

Sample: 20968 - MW-P

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		176	mg/L as CaCo3	4.00
Total Alkalinity		176	mg/L as CaCo3	4.00
Bromide		<1.00	mg/L	0.200
Dissolved Calcium		71.0	mg/L	0.500
Dissolved Potassium		2.87	mg/L	0.500
Dissolved Magnesium		12.2	mg/L	0.500
Dissolved Sodium		35.2	mg/L	0.500
Specific Conductance		608	μMHOS/cm	0.00
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		0.770	mg/L	0.0500
Hardness (by ICP)		228	mg eq CaCO3/L	0.00
Chloride		54.6	mg/L	0.500
Fluoride		1.41	mg/L	0.200
Sulfate		36.0	mg/L	0.500
Nitrite-N		<0.0100	mg/L	0.0100
Nitrate-N		2.39	mg/L	0.200
Naphthalene		<0.000200	mg/L	0.200
Acenaphthylene		<0.000200	mg/L	0.200
Acenaphthene		<0.000200	mg/L	0.200
Fluorene		<0.000200	mg/L	0.200
Phenanthrene		<0.000200	mg/L	0.200
Anthracene		<0.000200	mg/L	0.200
Fluoranthene		<0.000200	mg/L	0.200
Pyrene		<0.000200	mg/L	0.200
Benzo(a)anthracene		<0.000200	mg/L	0.200
Chrysene		<0.000200	mg/L	0.200
Benzo(b)fluoranthene		<0.000200	mg/L	0.200
Benzo(k)fluoranthene		<0.000200	mg/L	0.200

continued ...

sample 20968 continued ...

Param	Flag	Result	Units	RL
Benzo(a)pyrene		<0.000200	mg/L	0.200
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.200
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.200
Benzo(g,h,i)perylene		<0.000200	mg/L	0.200
pH		7.70	s.u.	0.00
Total Dissolved Solids		385.0	mg/L	10.00
Total Organic Carbon		1.30	mg/L	1.00

Cation-Anion Balance Sheet

DATE: 11/18/2003

Sample #	Calcium ppm	Magnesium ppm	Sodium ppm	Potassium ppm	Alkalinity ppm	Sulfate ppm	Chloride ppm	Nitrate ppm	Fluoride ppm	Bromide ppm	TDS ppm	EC µMHOs/cm
20967	66	11.4	29.6	2.8	180	34.9	35.5	4.05	1.47	0	391	561
20968	71	12.2	35.2	2.87	176	36	54.6	2.39	1.41	0	385	608

Sample #	Calcium in meq/L	Magnesium in meq/L	Sodium in meq/L	Potassium in meq/L	Alkalinity in meq/L	Sulfate in meq/L	Chloride in meq/L	Nitrate in meq/L	Fluoride in meq/L	Bromide in meq/L	**Cations In meq/L**	**Anions in meq/L**	**Percentage Error**
20967	3.29	0.94	1.29	0.07	3.60	0.73	1.00	0.2891295	0.0773808	0	5.59	5.69	1.840503622
20968	3.54	1.00	1.53	0.07	3.52	0.75	1.54	0.1706221	0.0742224	0	6.15	6.05	1.58645651

	EC/Cation	EC/Anion
20967	559.073	569.45833
20968	615.14526	605.46305

range	504.9	to	617.1	
range	547.2	to	668.8	

TDS/EC	TDS/Cat	TDS/Anion	
0.70	0.70	0.69	needs to be 0.55-0.77
0.63	0.63	0.64	needs to be 0.55-0.77

TRACEANALYSIS, INC.

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Analytical and Quality Control Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: November 18, 2003

Work Order: 3110717

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
20967	MW-Q	water	2003-11-06	13:45	2003-11-07
20968	MW-P	water	2003-11-06	14:45	2003-11-07
20969	Trip Blank	water	2003-11-06	00:00	2003-11-07

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 26 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael T. Allen
Dr. Blair Leftwich, Director

Analytical Report

Sample: 20967 - MW-Q

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	5679	Date Analyzed:	2003-11-11	Analyzed By:	RS
Prep Batch:	5071	Date Prepared:	2003-11-11	Prepared By:	RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		180		mg/L as CaCo3	1	4.00
Total Alkalinity		180		mg/L as CaCo3	1	4.00

Sample: 20967 - MW-Q

Analysis:	Bromide (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5598	Date Analyzed:	2003-11-10	Analyzed By:	JSW
Prep Batch:	5003	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Bromide		<1.00		mg/L	5	0.200

Sample: 20967 - MW-Q

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	5596	Date Analyzed:	2003-11-07	Analyzed By:	BS
Prep Batch:	5002	Date Prepared:	2003-11-07	Prepared By:	BS

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		<0.00100		mg/L	1	0.00100
Toluene		<0.00100		mg/L	1	0.00100
Ethylbenzene		<0.00100		mg/L	1	0.00100
Xylene (isomers)		<0.00100		mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0903	mg/L	1	0.100	90	65.5 - 119
4-Bromofluorobenzene (4-BFB)		0.102	mg/L	1	0.100	102	68.6 - 120

Sample: 20967 - MW-Q

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5729	Date Analyzed:	2003-11-13	Analyzed By:	BC
Prep Batch:	4992	Date Prepared:	2003-11-07	Prepared By:	TP

continued ...

sample 20967 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Calcium		66.0	mg/L	1	0.500
Dissolved Potassium		2.80	mg/L	1	0.500
Dissolved Magnesium		11.4	mg/L	1	0.500
Dissolved Sodium		29.6	mg/L	1	0.500

Sample: 20967 - MW-Q

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A
QC Batch:	5588	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4995	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Specific Conductance		561	μMHOS/cm	1	0.00

Sample: 20967 - MW-Q

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5653	Date Analyzed:	2003-11-11	Analyzed By:	RR
Prep Batch:	5019	Date Prepared:	2003-11-10	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 20967 - MW-Q

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	5645	Date Analyzed:	2003-11-11	Analyzed By:	RR
Prep Batch:	5020	Date Prepared:	2003-11-10	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Iron		3.04	mg/L	1	0.0500

Sample: 20967 - MW-Q

Analysis:	Hardness	Analytical Method:	SM 2340B	Prep Method:	N/A
QC Batch:	5737	Date Analyzed:	2003-11-14	Analyzed By:	BC
Prep Batch:	4992	Date Prepared:	2003-11-07	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Hardness (by ICP)		212		mg eq CaCO3/L	1	0.00

Sample: 20967 - MW-Q

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5598	Date Analyzed:	2003-11-10	Analyzed By:	JSW
Prep Batch:	5003	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		35.5		mg/L	5	0.500
Fluoride		1.47		mg/L	5	0.200
Sulfate		34.9		mg/L	5	0.500

Sample: 20967 - MW-Q

Analysis:	NO2 (Spec)	Analytical Method:	SM 4500-NO2 B	Prep Method:	N/A
QC Batch:	5577	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4985	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrite-N		<0.0100		mg/L	1	0.0100

Sample: 20967 - MW-Q

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5598	Date Analyzed:	2003-11-10	Analyzed By:	JSW
Prep Batch:	5003	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrate-N		4.05		mg/L	5	0.200

Sample: 20967 - MW-Q

Analysis:	PAH	Analytical Method:	S 8270C	Prep Method:	S 3510C
QC Batch:	5714	Date Analyzed:	2003-11-13	Analyzed By:	RC
Prep Batch:	4981	Date Prepared:	2003-11-07	Prepared By:	JH

Parameter	Flag	Result	RL	Units	Dilution	RL
Naphthalene		<0.000200		mg/L	0.001	0.200
Acenaphthylene		<0.000200		mg/L	0.001	0.200
Acenaphthene		<0.000200		mg/L	0.001	0.200
Fluorene		<0.000200		mg/L	0.001	0.200
Phenanthrene		<0.000200		mg/L	0.001	0.200

continued ...

sample 20967 continued ...

Parameter	Flag	Result	RL Result	Units	Dilution	RL
Anthracene			<0.000200	mg/L	0.001	0.200
Fluoranthene			<0.000200	mg/L	0.001	0.200
Pyrene			<0.000200	mg/L	0.001	0.200
Benzo(a)anthracene			<0.000200	mg/L	0.001	0.200
Chrysene			<0.000200	mg/L	0.001	0.200
Benzo(b)fluoranthene			<0.000200	mg/L	0.001	0.200
Benzo(k)fluoranthene			<0.000200	mg/L	0.001	0.200
Benzo(a)pyrene			<0.000200	mg/L	0.001	0.200
Indeno(1,2,3-cd)pyrene			<0.000200	mg/L	0.001	0.200
Dibenzo(a,h)anthracene			<0.000200	mg/L	0.001	0.200
Benzo(g,h,i)perylene			<0.000200	mg/L	0.001	0.200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0560	mg/L	0.001	80.0	70	21 - 145
2-Fluorobiphenyl		0.0656	mg/L	0.001	80.0	82	25 - 145
Terphenyl-d14		0.0480	mg/L	0.001	80.0	60	26 - 127

Sample: 20967 - MW-Q

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	5602	Date Analyzed:	2003-11-07	Analyzed By:	RS
Prep Batch:	5007	Date Prepared:	2003-11-07	Prepared By:	RS

Parameter	Flag	Result	RL Result	Units	Dilution	RL
pH		7.80		s.u.	1	0.00

Sample: 20967 - MW-Q

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	5589	Date Analyzed:	2003-11-10	Analyzed By:	JSW
Prep Batch:	4997	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL Result	Units	Dilution	RL
Total Dissolved Solids		391.0		mg/L	1	10.00

Sample: 20967 - MW-Q

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	5676	Date Analyzed:	2003-11-12	Analyzed By:	RC
Prep Batch:	5078	Date Prepared:	2003-11-12	Prepared By:	RC

continued ...

sample 20967 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		<1.00	mg/L	1	1.00

Sample: 20967 - MW-Q

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5611	Date Analyzed:	2003-11-09	Analyzed By:	BP
Prep Batch:	5014	Date Prepared:	2003-11-07	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<5.00	mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		9.56	mg/L	0.1	150	64	44 - 123

Sample: 20967 - MW-Q

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	5597	Date Analyzed:	2003-11-07	Analyzed By:	BS
Prep Batch:	5002	Date Prepared:	2003-11-07	Prepared By:	BS

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<0.100	mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[1]	0.145	mg/L	1	0.100	145	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0974	mg/L	1	0.100	97	70 - 130

Sample: 20968 - MW-P

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	5679	Date Analyzed:	2003-11-11	Analyzed By:	RS
Prep Batch:	5071	Date Prepared:	2003-11-11	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		176	mg/L as CaCo3	1	4.00

continued ...

[1] High surrogate recovery due to peak interference.

sample 20968 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL
Total Alkalinity		176	mg/L as CaCo3	1	4.00

Sample: 20968 - MW-P

Analysis:	Bromide (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5598	Date Analyzed:	2003-11-10	Analyzed By:	JSW
Prep Batch:	5003	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Bromide		<1.00	mg/L	5	0.200

Sample: 20968 - MW-P

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	5596	Date Analyzed:	2003-11-07	Analyzed By:	BS
Prep Batch:	5002	Date Prepared:	2003-11-07	Prepared By:	BS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0884	mg/L	1	0.100	88	65.5 - 119
4-Bromofluorobenzene (4-BFB)		0.0976	mg/L	1	0.100	98	68.6 - 120

Sample: 20968 - MW-P

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	5729	Date Analyzed:	2003-11-13	Analyzed By:	BC
Prep Batch:	4992	Date Prepared:	2003-11-07	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Calcium		71.0	mg/L	1	0.500
Dissolved Potassium		2.87	mg/L	1	0.500
Dissolved Magnesium		12.2	mg/L	1	0.500
Dissolved Sodium		35.2	mg/L	1	0.500

Sample: 20968 - MW-P

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A

QC Batch: 5588 | Date Analyzed: 2003-11-07 | Analyzed By: JSW
Prep Batch: 4995 | Date Prepared: 2003-11-07 | Prepared By: JSW

Parameter	Flag	Result	RL Units	Dilution	RL
Specific Conductance		608	µMHOS/cm	1	0.00

Sample: 20968 - MW-P

Analysis: Fe, Dissolved | Analytical Method: S 6010B | Prep Method: S 3005A
QC Batch: 5653 | Date Analyzed: 2003-11-11 | Analyzed By: RR
Prep Batch: 5019 | Date Prepared: 2003-11-10 | Prepared By: TP

Parameter	Flag	Result	RL Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 20968 - MW-P

Analysis: Fe, Total | Analytical Method: S 6010B | Prep Method: S 3010A
QC Batch: 5645 | Date Analyzed: 2003-11-11 | Analyzed By: RR
Prep Batch: 5020 | Date Prepared: 2003-11-10 | Prepared By: TP

Parameter	Flag	Result	RL Units	Dilution	RL
Total Iron		0.770	mg/L	1	0.0500

Sample: 20968 - MW-P

Analysis: Hardness | Analytical Method: SM 2340B | Prep Method: N/A
QC Batch: 5737 | Date Analyzed: 2003-11-14 | Analyzed By: BC
Prep Batch: 4992 | Date Prepared: 2003-11-07 | Prepared By: TP

Parameter	Flag	Result	RL Units	Dilution	RL
Hardness (by ICP)		228	mg eq CaCO3/L	1	0.00

Sample: 20968 - MW-P

Analysis: Ion Chromatography | Analytical Method: E 300.0 | Prep Method: N/A
QC Batch: 5598 | Date Analyzed: 2003-11-10 | Analyzed By: JSW
Prep Batch: 5003 | Date Prepared: 2003-11-07 | Prepared By: JSW

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		54.6	mg/L	5	0.500
Fluoride		1.41	mg/L	5	0.200
Sulfate		36.0	mg/L	5	0.500

Sample: 20968 - MW-P

Analysis:	NO2 (Spec)	Analytical Method:	SM 4500-NO2 B	Prep Method:	N/A
QC Batch:	5577	Date Analyzed:	2003-11-07	Analyzed By:	JSW
Prep Batch:	4985	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrite-N		<0.0100		mg/L	1	0.0100

Sample: 20968 - MW-P

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5598	Date Analyzed:	2003-11-10	Analyzed By:	JSW
Prep Batch:	5003	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrate-N		2.39		mg/L	5	0.200

Sample: 20968 - MW-P

Analysis:	PAH	Analytical Method:	S 8270C	Prep Method:	S 3510C
QC Batch:	5714	Date Analyzed:	2003-11-13	Analyzed By:	RC
Prep Batch:	4981	Date Prepared:	2003-11-07	Prepared By:	JH

Parameter	Flag	Result	RL	Units	Dilution	RL
Naphthalene		<0.000200		mg/L	0.001	0.200
Acenaphthylene		<0.000200		mg/L	0.001	0.200
Acenaphthene		<0.000200		mg/L	0.001	0.200
Fluorene		<0.000200		mg/L	0.001	0.200
Phenanthrene		<0.000200		mg/L	0.001	0.200
Anthracene		<0.000200		mg/L	0.001	0.200
Fluoranthene		<0.000200		mg/L	0.001	0.200
Pyrene		<0.000200		mg/L	0.001	0.200
Benzo(a)anthracene		<0.000200		mg/L	0.001	0.200
Chrysene		<0.000200		mg/L	0.001	0.200
Benzo(b)fluoranthene		<0.000200		mg/L	0.001	0.200
Benzo(k)fluoranthene		<0.000200		mg/L	0.001	0.200
Benzo(a)pyrene		<0.000200		mg/L	0.001	0.200
Indeno(1,2,3-cd)pyrene		<0.000200		mg/L	0.001	0.200
Dibenzo(a,h)anthracene		<0.000200		mg/L	0.001	0.200
Benzo(g,h,i)perylene		<0.000200		mg/L	0.001	0.200

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0550	mg/L	0.001	80.0	69	21 - 145
2-Fluorobiphenyl		0.0644	mg/L	0.001	80.0	80	25 - 145
Terphenyl-d14		0.0473	mg/L	0.001	80.0	59	26 - 127

Sample: 20968 - MW-P

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	5602	Date Analyzed:	2003-11-07	Analyzed By:	RS
Prep Batch:	5007	Date Prepared:	2003-11-07	Prepared By:	RS

Parameter	Flag	Result	RL Units	Dilution	RL
pH		7.70	s.u.	1	0.00

Sample: 20968 - MW-P

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	5589	Date Analyzed:	2003-11-10	Analyzed By:	JSW
Prep Batch:	4997	Date Prepared:	2003-11-07	Prepared By:	JSW

Parameter	Flag	Result	RL Units	Dilution	RL
Total Dissolved Solids		385.0	mg/L	1	10.00

Sample: 20968 - MW-P

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	5676	Date Analyzed:	2003-11-12	Analyzed By:	RC
Prep Batch:	5078	Date Prepared:	2003-11-12	Prepared By:	RC

Parameter	Flag	Result	RL Units	Dilution	RL
Total Organic Carbon		1.30	mg/L	1	1.00

Sample: 20968 - MW-P

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5611	Date Analyzed:	2003-11-09	Analyzed By:	BP
Prep Batch:	5014	Date Prepared:	2003-11-07	Prepared By:	DS

Parameter	Flag	Result	RL Units	Dilution	RL
DRO		<5.00	mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		10.2	mg/L	0.1	150	68	44 - 123

Sample: 20968 - MW-P

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	5597	Date Analyzed:	2003-11-07	Analyzed By:	BS
Prep Batch:	5002	Date Prepared:	2003-11-07	Prepared By:	BS

Parameter	Flag	Result	RL	Units	Dilution	RL
GRO		<0.100		mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[2]	0.143	mg/L	1	0.100	143	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0938	mg/L	1	0.100	94	70 - 130

Sample: 20969 - Trip Blank

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	5599	Date Analyzed:	2003-11-07	Analyzed By:	BS
Prep Batch:	5004	Date Prepared:	2003-11-07	Prepared By:	BS

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		<0.00100		mg/L	1	0.00100
Toluene		<0.00100		mg/L	1	0.00100
Ethylbenzene		<0.00100		mg/L	1	0.00100
Xylene (isomers)		<0.00100		mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0971	mg/L	1	0.100	97	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0977	mg/L	1	0.100	98	70 - 130

Method Blank (1) QC Batch: 5577

Parameter	Flag	Result	Units	RL
Nitrite-N		<0.0100	mg/L	0.01

Method Blank (1) QC Batch: 5588

Parameter	Flag	Result	Units	RL
Specific Conductance		3.22	μMHOS/cm	

Method Blank (1) QC Batch: 5589

Parameter	Flag	Result	Units	RL
Total Dissolved Solids		<10.00	mg/L	10

Method Blank (1) QC Batch: 5596

[2]High surrogate recovery due to peak interference.

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene (isomers)		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0912	mg/L	1	0.100	91	70 - 130
4-Bromofluorobenzene (4-BFB)		0.105	mg/L	1	0.100	105	70 - 130

Method Blank (1) QC Batch: 5597

Parameter	Flag	Result	Units	RL
GRO		0.128	mg/L	0.1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[3]	0.144	mg/L	1	0.100	144	70 - 130
4-Bromofluorobenzene (4-BFB)		0.128	mg/L	1	0.100	128	70 - 130

Method Blank (1) QC Batch: 5598

Parameter	Flag	Result	Units	RL
Bromide		<0.200	mg/L	0.2

Method Blank (1) QC Batch: 5598

Parameter	Flag	Result	Units	RL
Nitrate-N		<0.200	mg/L	0.2

Method Blank (1) QC Batch: 5598

Parameter	Flag	Result	Units	RL
Chloride		<0.500	mg/L	0.5
Fluoride		<0.200	mg/L	0.2
Sulfate		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 5599

[3]High surrogate recovery due to prep. ICV, CCV show the method to be in control.

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene (isomers)		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0936	mg/L	1	0.100	94	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0955	mg/L	1	0.100	96	70 - 130

Method Blank (1) QC Batch: 5611

Parameter	Flag	Result	Units	RL
DRO		<5.00	mg/L	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		16.4	mg/L	0.1	150	109	44 - 123

Method Blank (1) QC Batch: 5645

Parameter	Flag	Result	Units	RL
Total Iron		<0.0500	mg/L	0.05

Method Blank (1) QC Batch: 5653

Parameter	Flag	Result	Units	RL
Dissolved Iron		<0.0500	mg/L	0.05

Method Blank (1) QC Batch: 5676

Parameter	Flag	Result	Units	RL
Total Organic Carbon		<1.00	mg/L	1

Method Blank (1) QC Batch: 5679

Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4

continued ...

method blank continued ...

Parameter	Flag	Result	Units	RL
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 5714

Parameter	Flag	Result	Units	RL
Naphthalene		<0.000200	mg/L	0.2
Acenaphthylene		<0.000200	mg/L	0.2
Acenaphthene		<0.000200	mg/L	0.2
Fluorene		<0.000200	mg/L	0.2
Phenanthrene		<0.000200	mg/L	0.2
Anthracene		<0.000200	mg/L	0.2
Fluoranthene		<0.000200	mg/L	0.2
Pyrene		<0.000200	mg/L	0.2
Benzo(a)anthracene		<0.000200	mg/L	0.2
Chrysene		<0.000200	mg/L	0.2
Benzo(b)fluoranthene		<0.000200	mg/L	0.2
Benzo(k)fluoranthene		<0.000200	mg/L	0.2
Benzo(a)pyrene		<0.000200	mg/L	0.2
Indeno(1,2,3-cd)pyrene		<0.000200	mg/L	0.2
Dibenzo(a,h)anthracene		<0.000200	mg/L	0.2
Benzo(g,h,i)perylene		<0.000200	mg/L	0.2

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Nitrobenzene-d5		0.0387	mg/L	0.001	80.0	48	21 - 145
2-Fluorobiphenyl		0.0408	mg/L	0.001	80.0	51	25 - 145
Terphenyl-d14		0.0407	mg/L	0.001	80.0	51	26 - 127

Method Blank (1) QC Batch: 5729

Parameter	Flag	Result	Units	RL
Dissolved Calcium		<0.500	mg/L	0.5
Dissolved Potassium		<0.500	mg/L	0.5
Dissolved Magnesium		<0.500	mg/L	0.5
Dissolved Sodium		<0.500	mg/L	0.5

Duplicate (1) QC Batch: 5588

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Conductance	1540	1530	μMHOS/cm	1	1	3.37

Duplicate (1) QC Batch: 5589

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1008	1062	mg/L	1	5	14.2

Duplicate (1) QC Batch: 5602

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	7.70	7.70	s.u.	1	0	0

Duplicate (1) QC Batch: 5679

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	240	248	mg/L as CaCo3	1	3	20
Total Alkalinity	240	248	mg/L as CaCo3	1	3	5.16

Laboratory Control Spike (LCS-1) QC Batch: 5577

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrite-N [4]	0.0772	0.0781	mg/L	1	0.0800	<0.000820	96	1	96.7 - 106	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5596

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0987	0.100	mg/L	1	0.100	<0.000410	99	1	79.7 - 110	20
Toluene	0.0982	0.0998	mg/L	1	0.100	<0.000760	98	2	81.7 - 108	20
Ethylbenzene	0.0980	0.0994	mg/L	1	0.100	<0.00100	98	1	80.4 - 109	20
Xylene (isomers)	0.297	0.301	mg/L	1	0.300	<0.00100	99	1	81 - 109	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0965	0.0976	mg/L	1	0.100	96	98	65.5 - 119
4-Bromofluorobenzene (4-BFB)	0.102	0.103	mg/L	1	0.100	102	103	68.6 - 120

Laboratory Control Spike (LCS-1) QC Batch: 5597

continued ...

[4]96 % recovery is still within limits. ICV, CCV, anc Duplicate spike show method to be incontrol. Still within RPD limits.

control spikes continued ...

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
GRO	1.01	1.01	mg/L	1	1.00	<0.0261	101	0	70.7 - 128	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0975	0.101	mg/L	1	0.100	98	101	38.9 - 148
4-Bromofluorobenzene (4-BFB)	0.104	0.106	mg/L	1	0.100	104	106	46.1 - 116

Laboratory Control Spike (LCS-1) QC Batch: 5598

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Bromide	2.57	2.60	mg/L	1	2.50	<0.0800	103	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5598

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrate-N	2.48	2.49	mg/L	1	2.50	<0.126	99	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5598

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	12.3	12.4	mg/L	1	12.5	<1.49	98	1	90 - 110	20
Fluoride	2.49	2.53	mg/L	1	2.50	<0.0153	100	2	90 - 110	20
Sulfate	12.5	12.6	mg/L	1	12.5	<0.171	100	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5599

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0970	0.0959	mg/L	1	0.100	<0.000238	97	1	70 - 130	20
Toluene	0.0945	0.0941	mg/L	1	0.100	<0.000532	94	0	70 - 130	20
Ethylbenzene	0.0917	0.0941	mg/L	1	0.100	<0.00160	92	2	70 - 130	20
Xylene (isomers)	0.279	0.285	mg/L	1	0.300	<0.00571	93	2	70 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0926	0.0975	mg/L	1	0.100	93	98	70 - 130
4-Bromofluorobenzene (4-BFB)	0.0957	0.0969	mg/L	1	0.100	96	97	70 - 130

Laboratory Control Spike (LCS-1) QC Batch: 5611

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
DRO [5]	20.4	21.7	mg/L	0.1	250	<0.230	82	6	86 - 120	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Triacontane	14.1	17.3	mg/L	0.1	150	94	115	44 - 123

Laboratory Control Spike (LCS-1) QC Batch: 5645

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Iron	0.510	0.505	mg/L	1	0.500	<0.00208	102	1	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5653

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Iron	0.503	0.502	mg/L	1	0.500	<0.00281	101	0	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5676

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	4.92	4.95	mg/L	1	5.00	<0.843	98	1	78 - 120	13

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5714

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Naphthalene	52.7	53.8	mg/L	1	80.0	<0.0445	66	2	21.4 - 134	20
Acenaphthylene	61.7	61.4	mg/L	1	80.0	<0.0383	77	0	42.1 - 135	20
Acenaphthene	58.9	58.6	mg/L	1	80.0	<0.0421	74	0	41 - 133	20
Fluorene	59.1	59.4	mg/L	1	80.0	<0.0655	74	0	49.3 - 133	20

continued ...

[5]LCS recovery out of control chart range but within method limits.

control spikes continued ...

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Phenanthrene	62.1	63.4	mg/L	1	80.0	<0.0383	78	2	54.4 - 135	20
Anthracene	62.4	63.8	mg/L	1	80.0	<0.0468	78	2	42.2 - 130	20
Fluoranthene	60.8	61.9	mg/L	1	80.0	<0.0550	76	2	44.4 - 146	20
Pyrene	65.5	65.9	mg/L	1	80.0	<0.0904	82	1	52.8 - 137	20
Benzo(a)anthracene	60.2	60.9	mg/L	1	80.0	<0.0993	75	1	59 - 134	20
Chrysene	68.4	69.2	mg/L	1	80.0	<0.121	86	1	49.6 - 107	20
Benzo(b)fluoranthene	53.3	54.4	mg/L	1	80.0	<0.171	67	2	43.2 - 134	20
Benzo(k)fluoranthene	63.8	66.4	mg/L	1	80.0	<0.0951	80	4	55.2 - 145	20
Benzo(a)pyrene	63.5	64.3	mg/L	1	80.0	<0.135	79	1	63.9 - 138	20
Indeno(1,2,3-cd)pyrene	67.6	68.5	mg/L	1	80.0	<0.176	84	1	64.6 - 145	20
Dibenzo(a,h)anthracene	70.2	70.4	mg/L	1	80.0	<0.184	88	0	48.6 - 142	20
Benzo(g,h,i)perylene	66.4	65.5	mg/L	1	80.0	<0.134	83	1	71.5 - 146	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Nitrobenzene-d5	51.7	52.3	mg/L	1	80.0	65	65	20 - 146
2-Fluorobiphenyl	58.6	58.1	mg/L	1	80.0	73	73	25.3 - 146
Terphenyl-d14	58.0	58.5	mg/L	1	80.0	72	73	26 - 127

Laboratory Control Spike (LCS-1) QC Batch: 5729

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Calcium	98.6	96.6	mg/L	1	100	<0.183	99	2	85 - 115	20
Dissolved Potassium	107	103	mg/L	1	100	<0.135	107	4	85 - 115	20
Dissolved Magnesium	100	97.9	mg/L	1	100	<0.183	100	2	85 - 115	20
Dissolved Sodium	108	108	mg/L	1	100	<0.105	108	0	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5577

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrite-N	0.0707	0.0712	mg/L	1	0.0800	<0.000820	88	1	68.7 - 117	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5598

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Bromide	130	135	mg/L	50	2.50	<4.00	104	4	68.9 - 134	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5598

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
trate-N	135	137	mg/L	50	2.50	15.7	95	1	65.8 - 123	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5598

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	706	708	mg/L	50	12.5	124	93	0	56.4 - 130	20
Fluoride	132	134	mg/L	50	2.50	9.67	98	2	65.1 - 121	20
Sulfate	1930	1950	mg/L	50	12.5	1320	98	1	69.9 - 114	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5645

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Iron	1.24	1.26	mg/L	1	0.500	0.77	94	2	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5653

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Iron	0.467	0.465	mg/L	1	0.500	<0.00281	93	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5676

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon [67]	7.11	7.51	mg/L	1	5.00	1.23	118	5	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5729

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Calcium	273	266	mg/L	1	100	171	102	2	75 - 125	20
Dissolved Potassium	112	109	mg/L	1	100	7.66	104	3	75 - 125	20
Dissolved Magnesium	165	165	mg/L	1	100	72.4	93	0	75 - 125	20
Dissolved Sodium	478	478	mg/L	1	100	365	113	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

[6]Matrix spike recovery out of limits due to sample matrix.
[7]Matrix spike recovery out of limits due to sample matrix.

Standard (ICV-1) QC Batch: 5577

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrite-N		mg/L	0.0800	0.0807	101	85 - 115	2003-11-07

Standard (CCV-1) QC Batch: 5577

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrite-N		mg/L	0.0800	0.0803	100	85 - 115	2003-11-07

Standard (ICV-1) QC Batch: 5588

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		μMHOS/cm	1410	1410	100	90 - 110	2003-11-07

Standard (CCV-1) QC Batch: 5588

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		μMHOS/cm	1410	1410	100	90 - 110	2003-11-07

Standard (ICV-1) QC Batch: 5589

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	983.0	98	90 - 110	2003-11-10

Standard (CCV-1) QC Batch: 5589

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	996.0	100	90 - 110	2003-11-10

Standard (ICV-1) QC Batch: 5596

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.101	101	85 - 115	2003-11-07
Toluene		mg/L	0.100	0.101	101	85 - 115	2003-11-07
Ethylbenzene		mg/L	0.100	0.100	100	85 - 115	2003-11-07

continued ...

standard continued ...

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Xylene (isomers)		mg/L	0.300	0.303	101	85 - 115	2003-11-07

Standard (CCV-1) QC Batch: 5596

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0979	98	85 - 115	2003-11-07
Toluene		mg/L	0.100	0.0941	94	85 - 115	2003-11-07
Ethylbenzene		mg/L	0.100	0.0966	97	85 - 115	2003-11-07
Xylene (isomers)		mg/L	0.300	0.286	95	85 - 115	2003-11-07

Standard (ICV-1) QC Batch: 5597

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	0.988	99	85 - 115	2003-11-07

Standard (CCV-1) QC Batch: 5597

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	0.949	95	85 - 115	2003-11-07

Standard (ICV-1) QC Batch: 5598

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.59	104	90 - 110	2003-11-10

Standard (ICV-1) QC Batch: 5598

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate-N		mg/L	2.50	2.49	100	90 - 110	2003-11-10

Standard (ICV-1) QC Batch: 5598

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	12.1	97	90 - 110	2003-11-10

continued ...

standard continued ...

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Fluoride		mg/L	2.50	2.54	102	90 - 110	2003-11-10
Sulfate		mg/L	12.5	12.5	100	90 - 110	2003-11-10

Standard (CCV-1) QC Batch: 5598

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.59	104	90 - 110	2003-11-10

Standard (CCV-1) QC Batch: 5598

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate-N		mg/L	2.50	2.47	99	90 - 110	2003-11-10

Standard (CCV-1) QC Batch: 5598

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	12.3	98	90 - 110	2003-11-10
Fluoride		mg/L	2.50	2.52	101	90 - 110	2003-11-10
Sulfate		mg/L	12.5	12.6	101	90 - 110	2003-11-10

Standard (ICV-1) QC Batch: 5599

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0992	99	85 - 115	2003-11-07
Toluene		mg/L	0.100	0.0982	98	85 - 115	2003-11-07
Ethylbenzene		mg/L	0.100	0.0955	96	85 - 115	2003-11-07
Xylene (isomers)		mg/L	0.300	0.288	96	85 - 115	2003-11-07

Standard (CCV-1) QC Batch: 5599

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0953	95	85 - 115	2003-11-07
Toluene		mg/L	0.100	0.0923	92	85 - 115	2003-11-07
Ethylbenzene		mg/L	0.100	0.0904	90	85 - 115	2003-11-07
Xylene (isomers)		mg/L	0.300	0.271	90	85 - 115	2003-11-07

Standard (ICV-1) QC Batch: 5602

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7.00	7.00	100	98 - 102	2003-11-07

Standard (CCV-1) QC Batch: 5602

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7.00	7.00	100	98 - 102	2003-11-07

Standard (ICV-1) QC Batch: 5611

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/L	250	305	122	75 - 125	2003-11-09

Standard (CCV-1) QC Batch: 5611

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/L	250	312	125	75 - 125	2003-11-09

Standard (ICV-1) QC Batch: 5645

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Iron		mg/L	1.00	0.998	100	90 - 110	2003-11-11

Standard (CCV-1) QC Batch: 5645

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Iron		mg/L	1.00	1.02	102	90 - 110	2003-11-11

Standard (ICV-1) QC Batch: 5653

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Iron		mg/L	1.00	0.998	100	90 - 110	2003-11-11

Standard (CCV-1) QC Batch: 5653

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Iron		mg/L	1.00	1.05	105	90 - 110	2003-11-11

Standard (ICV-1) QC Batch: 5676

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	4.86	97	85 - 115	2003-11-12

Standard (CCV-1) QC Batch: 5676

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	5.38	108	85 - 115	2003-11-12

Standard (ICV-1) QC Batch: 5679

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-11
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-11
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-11-11
Total Alkalinity		mg/L as CaCo3	250	240	96	90 - 110	2003-11-11

Standard (CCV-1) QC Batch: 5679

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-11
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-11
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-11-11
Total Alkalinity		mg/L as CaCo3	250	238	95	90 - 110	2003-11-11

Standard (CCV-1) QC Batch: 5714

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Naphthalene		mg/L	60.0	55.3	92	80 - 120	2003-11-13
Acenaphthylene		mg/L	60.0	55.3	92	80 - 120	2003-11-13
Acenaphthene		mg/L	60.0	52.9	88	80 - 120	2003-11-13
Fluorene		mg/L	60.0	53.6	89	80 - 120	2003-11-13
Phenanthrene		mg/L	60.0	66.7	111	80 - 120	2003-11-13
Anthracene		mg/L	60.0	66.5	111	80 - 120	2003-11-13
Fluoranthene		mg/L	60.0	67.6	113	80 - 120	2003-11-13

continued ...

standard continued ...

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Pyrene		mg/L	60.0	52.4	87	80 - 120	2003-11-13
Benzo(a)anthracene		mg/L	60.0	49.5	82	80 - 120	2003-11-13
Chrysene		mg/L	60.0	60.9	102	80 - 120	2003-11-13
Benzo(b)fluoranthene		mg/L	60.0	71.1	118	80 - 120	2003-11-13
Benzo(k)fluoranthene		mg/L	60.0	68.3	114	80 - 120	2003-11-13
Benzo(a)pyrene		mg/L	60.0	66.8	111	80 - 120	2003-11-13
Indeno(1,2,3-cd)pyrene		mg/L	60.0	65.4	109	80 - 120	2003-11-13
Dibenzo(a,h)anthracene		mg/L	60.0	54.8	91	80 - 120	2003-11-13
Benzo(g,h,i)perylene		mg/L	60.0	65.4	109	80 - 120	2003-11-13

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limit
Nitrobenzene-d5		66.8	mg/L	1	60.0	111	80 - 120
2-Fluorobiphenyl		67.9	mg/L	1	60.0	113	80 - 120
Terphenyl-d14		60.8	mg/L	1	60.0	101	80 - 120

Standard (ICV-1) QC Batch: 5729

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25.0	25.1	100	90 - 110	2003-11-13
Dissolved Potassium		mg/L	25.0	26.4	106	90 - 110	2003-11-13
Dissolved Magnesium		mg/L	25.0	24.8	99	90 - 110	2003-11-13
Dissolved Sodium		mg/L	25.0	26.7	107	90 - 110	2003-11-13

Standard (CCV-1) QC Batch: 5729

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25.0	23.6	94	90 - 110	2003-11-13
Dissolved Potassium		mg/L	25.0	26.6	106	90 - 110	2003-11-13
Dissolved Magnesium		mg/L	25.0	23.6	94	90 - 110	2003-11-13
Dissolved Sodium		mg/L	25.0	26.7	107	90 - 110	2003-11-13

3110717

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page ____ of ____

Project Number/Name: MT000803.0001
Project Location: Pure-Lovington
Laboratory: Trace
Project Manager: Frank Kieffer
Sampler(s)/Affiliation: ARCADIS/

Sample ID/Location	Matrix	Date Sampled	Time Sampled	General GW Chemistry, Nitrate, Nitrite 1 liter plastic NEAT	BTEX 2 VOAs w/HCl	TPH DRO 2 VOAs w/HCl	TPH GRO 2 VOAs w/HCl	Total Fe 1 250 ml plastic w/HNO3	Dissolved Fe FIELD FILTERED 1 250 ml w/HNO3	TOC 2 vOAs w/HCl	PAH 1 amber liter NEAT	Remarks	Total
MW-Q	L	11-6-03	1345	1	2	2	2	1	1	2	1	20967	12
MW-P	L	11-6-03	1445	1	2	2	2	1	1	2	1	68	12
~~MW-O~~	~~L~~	~~11-6-03~~	~~1540~~	~~1~~	~~2~~	~~2~~	~~2~~	~~1~~	~~1~~	~~2~~	~~1~~	~~RM 69~~	
Trip Blank	—		—		2	~~RM~~						20969	2

Sample Matrix: (L = Liquid) S = Solid; A = Air

Total No. of Bottles/Containers: 26

Relinquished by: Kayla Moya	Organization: ARCADIS	Date 11/6/03	Time 1700	Seal Intact?	
Received by: Vicki Oakley	Organization: TraceAnalysis	Date 11/7/03	Time 11:23	(Yes) No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks:

Please contact Frank Kieffer at 432-687-5400 with questions.

* See attached list for General GW Chemistry tests.

Delivery Method: ☐ In Person ☐ Common Carrier Tarro 903 133 4708 ☐ Lab Courier ☐ Other

20741-01

3/10717

ARCADIS

Laboratory Task Order No./P.O. No.: _____

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name: MT000803.0001

Project Location: Pure-Lovington

Laboratory: Trace

Project Manager: Frank Kieffer

Sampler(s)/Affiliation: ARCADIS/

Sample ID/Location	Matrix	Date/Time Sampled	Time Lab ID	General GW Chemistry* Nitrate, Nitrite 1 liter plastic NEAT	BTEX 2 VOAs w/HCl	TPH DRO 2 VOAs w/HCl	TPH GRO 2 VOAs w/HCl	Total Fe 1 250 ml plastic w/HNO3	Dissolved Fe FIELD FILTERED 1 250 ml w/HNO3	TOC 2 vOAs w/HCl	PAH 1 amber liter NEAT	Remarks	Total
MW-Q	L	11-6-03	1345	1	2	2	2	1	1	2	1	20967	12
MW-P	L	11-6-03	1445	1	2	2	2	1	1	2	1	68	12
~~MW-O~~	~~L~~	~~11-6-03~~	~~1540~~	~~1~~	~~2~~	~~2~~	~~2~~	~~1~~	~~1~~	~~2~~	~~1~~	~~RM 69~~	
Trip Blank	—		—		2	RM						20969	2

Sample Matrix: (L = Liquid; S = Solid; A = Air)

Total No. of Bottles/Containers: 26

Relinquished by: Roger A. Moya	Organization: ARCADIS	Date 11/6/03	Time 1700	Seal Intact?	
Received by: Vicki Oehsley	Organization: TraceAnalysis	Date 11/7/03	Time 11:23	(Yes) No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks:

Please contact Frank Kieffer at 432-687-5400 with questions.

* See attached list for General GW Chemistry tests.

Delivery Method: ☐ In Person ☐ Common Carrier Federal 903 3334708 ☐ Lab Courier ☐ Other _____

SPECIFY

NA 4°C

SPECIFY

AG 05-12/01

29764

3110716

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page ___ of ___

Project Number/Name: MT000803.0001

Project Location: Pure-Lovington

Laboratory: Trace

Project Manager: Frank Kieffer

Sampler(s)/Affiliation: ARCADIS/

Sample ID/Location	Matrix	Date/Time Sampled	Time Lab ID	General GW Chemistry * 1 liter plastic NEAT	BTEX 2 VOAs w/HCl	TPH DRO 2 VOAs w/HCl	TPH GRO 2 VOAs w/HCl	Total Fe 1 250 ml plastic w/HNO3	Dissolved Fe FIELD FILTERED 1 250 ml w/HNO3	TOC 2 VOAs w/HCl	PAH 1 amber liter NEAT	Remarks	Total
MW-0	L	11-6-03	1540	1	2	2	2	1	1	2	1	209606	12
~~FB~~ Frop	L				2								2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 14

Relinquished by: Roger A. Morgan	Organization: ARCADIS	Date 11/6/03	Time 1700	Seal Intact?	
Received by: [signature]	Organization: Trace Analysis	Date 11/7/03	Time 11:17	(Yes) No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks:

Please contact Frank Kieffer at 432-687-5400 with questions.

* See attached list for General GW Chemistry tests.

Delivery Method: ☐ In Person ☐ Common Carrier ____ ☐ Lab Courier ☐ Other ____

SPECIFY

2nd TNMH0 903/533-4708

SPECIFY

AG 05-12/01

MICROSEEPS

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300

Midland, TX 79701

Order #: P0311155
Report Date: 12/01/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Laboratory Results

Total pages in data package: 7

Lab Sample #	Client Sample ID
P0311155-01	MW-O ✓
P0311155-02	BW-1 ✓
P0311155-03	MW-D2 ✓
P0311155-04	MW-Q ✓
P0311155-05	MW-P ✓

Microseeps test results meet all the requirements of the NELAC standards.

Approved By: Debbie Hall

The analytical results reported here are reliable and usable to the precision expressed in this report. As required by some regulating authorities, a full discussion of the uncertainty in our analytical results can be obtained at our web site or through customer service. Unless otherwise specified, all results are reported on a wet weight basis.

NOTES:

ARCADIS

Laboratory Task Order No./P.O. No.: PO311155

CHAIN-OF-CUSTODY RECORD

Page ___ of ___

Project Number/Name: MT000803.0001

Project Location: Pure - Lovington

Laboratory: Microseeps

Project Manager: Frank Kieffer

Sampler(s)/Affiliation: ARCADIS/

	Sample ID/Location	Matrix	Date/~~Time~~ Sampled	Time ~~Lab ID~~	ANALYSIS / METHOD / SIZE: Permanent Gases 2 VOAs						Remarks	Total
01	MW-D	L	11-6-03	1540	2							2
02	BW-1	L	11-5-03	1450	2							2
03	MW-D2	L	11-5-03	945	2							2
04	MW-Q	L	11-6-03	1345	2							2
05	MW-P	L	11-6-03	1445	2							2
	Temp Blank											1

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 11

Relinquished by: Roger A. Morgan	Organization: ARCADIS	Date 11/10/03	Time 1800	Seal Intact?	
Received by:	Organization: Microseeps	Date 11/11/03	Time 1206	Yes	No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes	No N/A

Special Instructions/Remarks:

Please contact Frank Kieffer at 432-687-5400 with questions.

Delivery Method: ☐ In Person ☑ Common Carrier FedEx (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

AG 05-12/01

Order #: P0311155
Report Date: 12/01/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0311155-01

Sample Description	Matrix	Sampled Date/Time	Received
MW-O	Water	06 Nov. 03 15:40	11 Nov. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	11	0.60	mg/L	AM20GAX	rw	11/26/03
Methane	2.3	0.015	ug/L	AM20GAX	rw	11/26/03
Nitrogen	16	0.40	mg/L	AM20GAX	rw	11/26/03
Oxygen	7.1	0.15	mg/L	AM20GAX	rw	11/26/03

NELAC certified analysis

Order #: P0311155
Report Date: 12/01/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0311155-02

Sample Description	Matrix	Sampled Date/Time	Received
BW-1	Water	05 Nov. 03 14:50	11 Nov. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	64	0.60	mg/L	AM20GAX	rw	11/26/03
Methane	12	0.015	ug/L	AM20GAX	rw	11/26/03
Nitrogen	15	0.40	mg/L	AM20GAX	rw	11/26/03
Oxygen	1.5	0.15	mg/L	AM20GAX	rw	11/26/03

ELAC certified analysis

Order #: P0311155
Report Date: 12/01/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0311155-03

Sample Description	Matrix	Sampled Date/Time	Received
MW-D2	Water	05 Nov. 03 9:45	11 Nov. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	37	0.60	mg/L	AM20GAX	rw	11/26/03
Methane	2.5	0.015	ug/L	AM20GAX	rw	11/26/03
Nitrogen	16	0.40	mg/L	AM20GAX	rw	11/26/03
Oxygen	4.3	0.15	mg/L	AM20GAX	rw	11/26/03

NELAC certified analysis

Order #: P0311155
Report Date: 12/01/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0311155-04

Sample Description	Matrix	Sampled Date/Time	Received
MW-Q	Water	06 Nov. 03 13:45	11 Nov. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	10	0.60	mg/L	AM20GAX	rw	11/26/03
Methane	3.1	0.015	ug/L	AM20GAX	rw	11/26/03
Nitrogen	15	0.40	mg/L	AM20GAX	rw	11/26/03
Oxygen	7.9	0.15	mg/L	AM20GAX	rw	11/26/03

NELAC certified analysis

Order #: P0311155
Report Date: 12/01/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0311155-05

Sample Description	Matrix	Sampled Date/Time	Received
MW-P	Water	06 Nov. 03 14:45	11 Nov. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	9.5	0.60	mg/L	AM20GAX	rw	11/26/03
Methane	2.6	0.015	ug/L	AM20GAX	rw	11/26/03
Nitrogen	13	0.40	mg/L	AM20GAX	rw	11/26/03
Oxygen	6.2	0.15	mg/L	AM20GAX	rw	11/26/03

NELAC certified analysis

Summary Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: December 1, 2003

Work Order: 3111802

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
21685	MW D-2 (90')	water	2003-11-14	14:00	2003-11-18
21686	MW D-2 (125')	water	2003-11-14	14:40	2003-11-18
21687	MW D-2 (175')	water	2003-11-14	15:10	2003-11-18
21688	MW D-2 (215')	water	2003-11-14	16:00	2003-11-18
21689	Trip Blank	water	2003-11-14	00:00	2003-11-18

	BTEX				TPH DRO	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene (isomers)	DRO	GRO
Sample - Field Code	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
21685 - MW D-2 (90')	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100
21686 - MW D-2 (125')	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100
21687 - MW D-2 (175')	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100
21688 - MW D-2 (215')	<0.00100	<0.00100	<0.00100	<0.00100	<5.00	<0.100
21689 - Trip Blank	<0.00100	<0.00100	<0.00100	<0.00100		

Sample: 21685 - MW D-2 (90')

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		268	mg/L as CaCo3	4.00
Total Alkalinity		268	mg/L as CaCo3	4.00
Bromide		<1.00	mg/L	0.200
Dissolved Calcium		157	mg/L	0.500
Dissolved Potassium		6.35	mg/L	0.500
Dissolved Magnesium		21.8	mg/L	0.500
Dissolved Sodium		127	mg/L	0.500
Specific Conductance		1670	μMHOS/cm	0.00
Hardness (by ICP)		482	mg eq CaCO3/L	0.00
Chloride		314	mg/L	0.500
Fluoride		<1.00	mg/L	0.200
Sulfate		90.5	mg/L	0.500
Nitrite-N		0.517	mg/L	0.0100

continued ...

sample 21685 continued ...

Param	Flag	Result	Units	RL
Nitrate-N		1.82	mg/L	0.200
pH	[1]	7.40	s.u.	0.00
Total Dissolved Solids		1030	mg/L	10.00

Sample: 21686 - MW D-2 (125')

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		240	mg/L as CaCo3	4.00
Total Alkalinity		240	mg/L as CaCo3	4.00
Bromide		<1.00	mg/L	0.200
Dissolved Calcium		142	mg/L	0.500
Dissolved Potassium		4.87	mg/L	0.500
Dissolved Magnesium		22.2	mg/L	0.500
Dissolved Sodium		108	mg/L	0.500
Specific Conductance		1470	μMHOS/cm	0.00
Hardness (by ICP)		446	mg eq CaCO3/L	0.00
Chloride		259	mg/L	0.500
Fluoride		<1.00	mg/L	0.200
Sulfate		84.7	mg/L	0.500
Nitrite-N		0.377	mg/L	0.0100
Nitrate-N		2.21	mg/L	0.200
pH	[2]	7.50	s.u.	0.00
Total Dissolved Solids		912.0	mg/L	10.00

Sample: 21687 - MW D-2 (175')

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		238	mg/L as CaCo3	4.00
Total Alkalinity		238	mg/L as CaCo3	4.00
Bromide		<1.00	mg/L	0.200
Dissolved Calcium		137	mg/L	0.500
Dissolved Potassium		4.85	mg/L	0.500
Dissolved Magnesium		22.5	mg/L	0.500
Dissolved Sodium		107	mg/L	0.500
Specific Conductance		1440	μMHOS/cm	0.00
Hardness (by ICP)		435	mg eq CaCO3/L	0.00
Chloride		248	mg/L	0.500
Fluoride		<1.00	mg/L	0.200
Sulfate		84.8	mg/L	0.500
Nitrite-N		0.340	mg/L	0.0100
Nitrate-N		2.25	mg/L	0.200
pH	[3]	7.40	s.u.	0.00
Total Dissolved Solids		874.0	mg/L	10.00

[1] received out of holding time
[2] received out of holding time
[3] received out of holding time

Sample: 21688 - MW D-2 (215')

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		232	mg/L as CaCo3	4.00
Total Alkalinity		232	mg/L as CaCo3	4.00
Bromide		<1.00	mg/L	0.200
Dissolved Calcium		141	mg/L	0.500
Dissolved Potassium		4.85	mg/L	0.500
Dissolved Magnesium		22.5	mg/L	0.500
Dissolved Sodium		105	mg/L	0.500
Specific Conductance		1440	μMHOS/cm	0.00
Hardness (by ICP)		445	mg eq CaCO3/L	0.00
Chloride		258	mg/L	0.500
Fluoride		<1.00	mg/L	0.200
Sulfate		85.2	mg/L	0.500
Nitrite-N		0.328	mg/L	0.0100
Nitrate-N		2.31	mg/L	0.200
pH	[4]	7.40	s.u.	0.00
Total Dissolved Solids		912.0	mg/L	10.00

[4]received out of holding time

Cation-Anion Balance Sheet

Sample #	Calcium ppm	Magnesium ppm	Sodium ppm	Potassium ppm	Alkalinity ppm	Sulfate ppm	Chloride ppm	Nitrate ppm	Fluoride ppm	TDS ppm	EC µMHOs/cm
21685	157	21.8	127	6.35	268.00	90.5	314	1.82	0	1030	1670
21686	142	22.2	108	4.87	240.00	84.7	259	2.21	0.377	912	1470
21687	137	22.5	107	4.85	238.00	84.8	248	2.25	0.34	874	1440
21688	141	22.5	105	4.85	232.00	85.2	258	2.31	0.328	912	1440

Sample #	Calcium in meq/L	Magnesium in meq/L	Sodium in meq/L	Potassium in meq/L	Alkalinity in meq/L	Sulfate in meq/L	Chloride in meq/L	Nitrate in meq/L	Fluoride in meq/L	**Total Cations in meq/L**	**Total Anions in meq/L**	**Percentage Error**
21685	7.8343	1.793922	5.5245	0.162433	5.36	1.88421	8.85794	0.1299298	0	15.315155	16.23	5.813028025
21686	7.0858	1.826838	4.698	0.1245746	4.80	1.763454	7.30639	0.1577719	0.01984528	13.7352126	14.05	2.247793589
21687	6.8363	1.851525	4.6545	0.124063	4.76	1.765536	6.99608	0.1606275	0.0178976	13.466388	13.70	1.720890432
21688	7.0359	1.851525	4.5675	0.124063	4.64	1.773864	7.27818	0.1649109	0.01726592	13.578988	13.87	2.150807375

	EC/Cation	EC/Anion				
21685	1531.5155	1623.20798	range	1503	to	1837
21686	1373.52126	1404.746118	range	1323	to	1617
21687	1346.6388	1370.01411	range	1296	to	1584
21688	1357.8988	1387.422082	range	1296	to	1584

TDS/EC	TDS/Cat	TDS/Anion	
0.616766467	0.672536452	0.634545919	needs to be 0.55-0.77
0.620408163	0.66398681	0.649227635	needs to be 0.55-0.77
0.606944444	0.649023331	0.637949634	needs to be 0.55-0.77
0.633333333	0.671625897	0.657334211	needs to be 0.55-0.77

TRACEANALYSIS, INC.

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155 McCutcheon, Suite H El Paso, Texas 79932 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: December 1, 2003

Work Order: 3111802

Project Location: Lovington,NM
Project Name: Pure Resources
Project Number: MT000803.0001

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
21685	MW D-2 (90')	water	2003-11-14	14:00	2003-11-18
21686	MW D-2 (125')	water	2003-11-14	14:40	2003-11-18
21687	MW D-2 (175')	water	2003-11-14	15:10	2003-11-18
21688	MW D-2 (215')	water	2003-11-14	16:00	2003-11-18
21689	Trip Blank	water	2003-11-14	00:00	2003-11-18

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 27 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 21685 - MW D-2 (90')

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	5844	Date Analyzed:	2003-11-18	Analyzed By:	RS
Prep Batch:	5231	Date Prepared:	2003-11-18	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		268	mg/L as CaCo3	1	4.00
Total Alkalinity		268	mg/L as CaCo3	1	4.00

Sample: 21685 - MW D-2 (90')

Analysis:	Bromide (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5883	Date Analyzed:	2003-11-21	Analyzed By:	JSW
Prep Batch:	5268	Date Prepared:	2003-11-20	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Bromide		<1.00	mg/L	5	0.200

Sample: 21685 - MW D-2 (90')

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	5810	Date Analyzed:	2003-11-18	Analyzed By:	MT
Prep Batch:	5201	Date Prepared:	2003-11-18	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0996	mg/L	1	0.100	100	65.5 - 119
4-Bromofluorobenzene (4-BFB)		0.101	mg/L	1	0.100	101	68.6 - 120

Sample: 21685 - MW D-2 (90')

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	6026	Date Analyzed:	2003-12-01	Analyzed By:	BC
Prep Batch:	5273	Date Prepared:	2003-11-21	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Calcium		157	mg/L	1	0.500
Dissolved Potassium		6.35	mg/L	1	0.500
Dissolved Magnesium		21.8	mg/L	1	0.500
Dissolved Sodium		127	mg/L	1	0.500

Sample: 21685 - MW D-2 (90')

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A
QC Batch:	5906	Date Analyzed:	2003-11-21	Analyzed By:	JSW
Prep Batch:	5288	Date Prepared:	2003-11-21	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Specific Conductance		1670	µMHOS/cm	1	0.00

Sample: 21685 - MW D-2 (90')

Analysis:	Hardness	Analytical Method:	S 6010B	Prep Method:	N/A
QC Batch:	6031	Date Analyzed:	2003-12-01	Analyzed By:	BC
Prep Batch:	5273	Date Prepared:	2003-11-21	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Hardness (by ICP)		482	mg eq CaCO3/L	1	0.00

Sample: 21685 - MW D-2 (90')

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5855	Date Analyzed:	2003-11-19	Analyzed By:	JSW
Prep Batch:	5242	Date Prepared:	2003-11-18	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		314	mg/L	10	0.500
Fluoride		<1.00	mg/L	5	0.200
Sulfate		90.5	mg/L	5	0.500

Sample: 21685 - MW D-2 (90')

Analysis:	NO2 (Spec)	Analytical Method:	SM 4500-NO2 B	Prep Method:	N/A
QC Batch:	5826	Date Analyzed:	2003-11-19	Analyzed By:	JSW
Prep Batch:	5219	Date Prepared:	2003-11-19	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrite-N		0.517	mg/L	5	0.0100

Sample: 21685 - MW D-2 (90')

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5883	Date Analyzed:	2003-11-21	Analyzed By:	JSW
Prep Batch:	5268	Date Prepared:	2003-11-20	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Nitrate-N		1.82	mg/L	5	0.200

Sample: 21685 - MW D-2 (90')

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	5841	Date Analyzed:	2003-11-18	Analyzed By:	RS
Prep Batch:	5234	Date Prepared:	2003-11-18	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
pH	[1]	7.40	s.u.	1	0.00

Sample: 21685 - MW D-2 (90')

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	5836	Date Analyzed:	2003-11-20	Analyzed By:	JSW
Prep Batch:	5228	Date Prepared:	2003-11-19	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		1030	mg/L	2	10.00

Sample: 21685 - MW D-2 (90')

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5806	Date Analyzed:	2003-11-18	Analyzed By:	DS
Prep Batch:	5188	Date Prepared:	2003-11-14	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<5.00	mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	[2]	12.0	mg/L	0.1	150	80	83 - 174

Sample: 21685 - MW D-2 (90')

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	5811	Date Analyzed:	2003-11-18	Analyzed By:	MT

[1] received out of holding time
[2] Surrogate recovery out of range due to matrix effects. QC show the process within control.

Prep Batch: 5201 Date Prepared: 2003-11-18 Prepared By: MT

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<0.100	mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0946	mg/L	1	0.100	95	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0924	mg/L	1	0.100	92	70 - 130

Sample: 21686 - MW D-2 (125')

Analysis: Alkalinity Analytical Method: SM 2320B Prep Method: N/A
QC Batch: 5844 Date Analyzed: 2003-11-18 Analyzed By: RS
Prep Batch: 5231 Date Prepared: 2003-11-18 Prepared By: RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		240	mg/L as CaCo3	1	4.00
Total Alkalinity		240	mg/L as CaCo3	1	4.00

Sample: 21686 - MW D-2 (125')

Analysis: Bromide (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 5883 Date Analyzed: 2003-11-21 Analyzed By: JSW
Prep Batch: 5268 Date Prepared: 2003-11-20 Prepared By: JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Bromide		<1.00	mg/L	5	0.200

Sample: 21686 - MW D-2 (125')

Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5030B
QC Batch: 5810 Date Analyzed: 2003-11-18 Analyzed By: MT
Prep Batch: 5201 Date Prepared: 2003-11-18 Prepared By: MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0988	mg/L	1	0.100	99	65.5 - 119

continued ...

sample continued ...

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)		0.0990	mg/L	1	0.100	99	68.6 - 120

Sample: 21686 - MW D-2 (125')

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	6026	Date Analyzed:	2003-12-01	Analyzed By:	BC
Prep Batch:	5273	Date Prepared:	2003-11-21	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Calcium		142	mg/L	1	0.500
Dissolved Potassium		4.87	mg/L	1	0.500
Dissolved Magnesium		22.2	mg/L	1	0.500
Dissolved Sodium		108	mg/L	1	0.500

Sample: 21686 - MW D-2 (125')

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A
QC Batch:	5906	Date Analyzed:	2003-11-21	Analyzed By:	JSW
Prep Batch:	5288	Date Prepared:	2003-11-21	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Specific Conductance		1470	μMHOS/cm	1	0.00

Sample: 21686 - MW D-2 (125')

Analysis:	Hardness	Analytical Method:	S 6010B	Prep Method:	N/A
QC Batch:	6031	Date Analyzed:	2003-12-01	Analyzed By:	BC
Prep Batch:	5273	Date Prepared:	2003-11-21	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Hardness (by ICP)		446	mg eq CaCO3/L	1	0.00

Sample: 21686 - MW D-2 (125')

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5855	Date Analyzed:	2003-11-19	Analyzed By:	JSW
Prep Batch:	5242	Date Prepared:	2003-11-18	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		259	mg/L	10	0.500
Fluoride		<1.00	mg/L	5	0.200
Sulfate		84.7	mg/L	5	0.500

Sample: 21686 - MW D-2 (125')

Analysis:	NO2 (Spec)	Analytical Method:	SM 4500-NO2 B	Prep Method:	N/A
QC Batch:	5826	Date Analyzed:	2003-11-19	Analyzed By:	JSW
Prep Batch:	5219	Date Prepared:	2003-11-19	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrite-N		0.377		mg/L	5	0.0100

Sample: 21686 - MW D-2 (125')

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5883	Date Analyzed:	2003-11-21	Analyzed By:	JSW
Prep Batch:	5268	Date Prepared:	2003-11-20	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrate-N		2.21		mg/L	5	0.200

Sample: 21686 - MW D-2 (125')

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	5841	Date Analyzed:	2003-11-18	Analyzed By:	RS
Prep Batch:	5234	Date Prepared:	2003-11-18	Prepared By:	RS

Parameter	Flag	Result	RL	Units	Dilution	RL
pH	[3]	7.50		s.u.	1	0.00

Sample: 21686 - MW D-2 (125')

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	5836	Date Analyzed:	2003-11-20	Analyzed By:	JSW
Prep Batch:	5228	Date Prepared:	2003-11-19	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Dissolved Solids		912.0		mg/L	2	10.00

Sample: 21686 - MW D-2 (125')

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5806	Date Analyzed:	2003-11-18	Analyzed By:	DS
Prep Batch:	5188	Date Prepared:	2003-11-14	Prepared By:	DS

[3]received out of holding time

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<5.00	mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	[4]	12.2	mg/L	0.1	150	81	83 - 174

Sample: 21686 - MW D-2 (125')

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	5811	Date Analyzed:	2003-11-18	Analyzed By:	MT
Prep Batch:	5201	Date Prepared:	2003-11-18	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<0.100	mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0941	mg/L	1	0.100	94	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0909	mg/L	1	0.100	91	70 - 130

Sample: 21687 - MW D-2 (175')

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	5952	Date Analyzed:	2003-11-20	Analyzed By:	RS
Prep Batch:	5340	Date Prepared:	2003-11-20	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		238	mg/L as CaCo3	1	4.00
Total Alkalinity		238	mg/L as CaCo3	1	4.00

Sample: 21687 - MW D-2 (175')

Analysis:	Bromide (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5883	Date Analyzed:	2003-11-21	Analyzed By:	JSW
Prep Batch:	5268	Date Prepared:	2003-11-20	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Bromide		<1.00	mg/L	5	0.200

Sample: 21687 - MW D-2 (175')

[4]Surrogate recovery out of range due to matrix effects. QC show the process within control.

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	5810	Date Analyzed:	2003-11-18	Analyzed By:	MT
Prep Batch:	5201	Date Prepared:	2003-11-18	Prepared By:	MT

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		<0.00100		mg/L	1	0.00100
Toluene		<0.00100		mg/L	1	0.00100
Ethylbenzene		<0.00100		mg/L	1	0.00100
Xylene (isomers)		<0.00100		mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.100	mg/L	1	0.100	100	65.5 - 119
4-Bromofluorobenzene (4-BFB)		0.0998	mg/L	1	0.100	100	68.6 - 120

Sample: 21687 - MW D-2 (175')

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	6026	Date Analyzed:	2003-12-01	Analyzed By:	BC
Prep Batch:	5273	Date Prepared:	2003-11-21	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Calcium		137		mg/L	1	0.500
Dissolved Potassium		4.85		mg/L	1	0.500
Dissolved Magnesium		22.5		mg/L	1	0.500
Dissolved Sodium		107		mg/L	1	0.500

Sample: 21687 - MW D-2 (175')

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A
QC Batch:	5906	Date Analyzed:	2003-11-21	Analyzed By:	JSW
Prep Batch:	5288	Date Prepared:	2003-11-21	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Specific Conductance		1440		μMHOS/cm	1	0.00

Sample: 21687 - MW D-2 (175')

Analysis:	Hardness	Analytical Method:	S 6010B	Prep Method:	N/A
QC Batch:	6031	Date Analyzed:	2003-12-01	Analyzed By:	BC
Prep Batch:	5273	Date Prepared:	2003-11-21	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Hardness (by ICP)		435		mg eq CaCO3/L	1	0.00

Sample: 21687 - MW D-2 (175')

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5855	Date Analyzed:	2003-11-19	Analyzed By:	JSW
Prep Batch:	5242	Date Prepared:	2003-11-18	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		248		mg/L	10	0.500
Fluoride		<1.00		mg/L	5	0.200
Sulfate		84.8		mg/L	5	0.500

Sample: 21687 - MW D-2 (175')

Analysis:	NO2 (Spec)	Analytical Method:	SM 4500-NO2 B	Prep Method:	N/A
QC Batch:	5826	Date Analyzed:	2003-11-19	Analyzed By:	JSW
Prep Batch:	5219	Date Prepared:	2003-11-19	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrite-N		0.340		mg/L	5	0.0100

Sample: 21687 - MW D-2 (175')

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5883	Date Analyzed:	2003-11-21	Analyzed By:	JSW
Prep Batch:	5268	Date Prepared:	2003-11-20	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrate-N		2.25		mg/L	5	0.200

Sample: 21687 - MW D-2 (175')

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	5841	Date Analyzed:	2003-11-18	Analyzed By:	RS
Prep Batch:	5234	Date Prepared:	2003-11-18	Prepared By:	RS

Parameter	Flag	Result	RL	Units	Dilution	RL
pH	[5]	7.40		s.u.	1	0.00

Sample: 21687 - MW D-2 (175')

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	5836	Date Analyzed:	2003-11-20	Analyzed By:	JSW
Prep Batch:	5228	Date Prepared:	2003-11-19	Prepared By:	JSW

[5]received out of holding time

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		874.0	mg/L	2	10.00

Sample: 21687 - MW D-2 (175')

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5806	Date Analyzed:	2003-11-18	Analyzed By:	DS
Prep Batch:	5188	Date Prepared:	2003-11-14	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<5.00	mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	[6]	12.2	mg/L	0.1	150	81	83 - 174

Sample: 21687 - MW D-2 (175')

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	5811	Date Analyzed:	2003-11-18	Analyzed By:	MT
Prep Batch:	5201	Date Prepared:	2003-11-18	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<0.100	mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0953	mg/L	1	0.100	95	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0915	mg/L	1	0.100	92	70 - 130

Sample: 21688 - MW D-2 (215')

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	5952	Date Analyzed:	2003-11-20	Analyzed By:	RS
Prep Batch:	5340	Date Prepared:	2003-11-20	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		232	mg/L as CaCo3	1	4.00
Total Alkalinity		232	mg/L as CaCo3	1	4.00

Sample: 21688 - MW D-2 (215')

[6]Surrogate recovery out of range due to matrix effects. QC show the process within control.

Analysis:	Bromide (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5883	Date Analyzed:	2003-11-21	Analyzed By:	JSW
Prep Batch:	5268	Date Prepared:	2003-11-20	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Bromide		<1.00		mg/L	5	0.200

Sample: 21688 - MW D-2 (215')

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	5810	Date Analyzed:	2003-11-18	Analyzed By:	MT
Prep Batch:	5201	Date Prepared:	2003-11-18	Prepared By:	MT

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		<0.00100		mg/L	1	0.00100
Toluene		<0.00100		mg/L	1	0.00100
Ethylbenzene		<0.00100		mg/L	1	0.00100
Xylene (isomers)		<0.00100		mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0989	mg/L	1	0.100	99	65.5 - 119
4-Bromofluorobenzene (4-BFB)		0.0987	mg/L	1	0.100	99	68.6 - 120

Sample: 21688 - MW D-2 (215')

Analysis:	Cations	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	6026	Date Analyzed:	2003-12-01	Analyzed By:	BC
Prep Batch:	5273	Date Prepared:	2003-11-21	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Calcium		141		mg/L	1	0.500
Dissolved Potassium		4.85		mg/L	1	0.500
Dissolved Magnesium		22.5		mg/L	1	0.500
Dissolved Sodium		105		mg/L	1	0.500

Sample: 21688 - MW D-2 (215')

Analysis:	Conductivity	Analytical Method:	SM 2510B	Prep Method:	N/A
QC Batch:	5906	Date Analyzed:	2003-11-21	Analyzed By:	JSW
Prep Batch:	5288	Date Prepared:	2003-11-21	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Specific Conductance		1440		μMHOS/cm	1	0.00

Sample: 21688 - MW D-2 (215')

Analysis:	Hardness	Analytical Method:	S 6010B	Prep Method:	N/A
QC Batch:	6031	Date Analyzed:	2003-12-01	Analyzed By:	BC
Prep Batch:	5273	Date Prepared:	2003-11-21	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Hardness (by ICP)		445		mg eq CaCO3/L	1	0.00

Sample: 21688 - MW D-2 (215')

Analysis:	Ion Chromatography	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5855	Date Analyzed:	2003-11-19	Analyzed By:	JSW
Prep Batch:	5242	Date Prepared:	2003-11-18	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		258		mg/L	10	0.500
Fluoride		<1.00		mg/L	5	0.200
Sulfate		85.2		mg/L	5	0.500

Sample: 21688 - MW D-2 (215')

Analysis:	NO2 (Spec)	Analytical Method:	SM 4500-NO2 B	Prep Method:	N/A
QC Batch:	5826	Date Analyzed:	2003-11-19	Analyzed By:	JSW
Prep Batch:	5219	Date Prepared:	2003-11-19	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrite-N		0.328		mg/L	5	0.0100

Sample: 21688 - MW D-2 (215')

Analysis:	NO3 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5883	Date Analyzed:	2003-11-21	Analyzed By:	JSW
Prep Batch:	5268	Date Prepared:	2003-11-20	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Nitrate-N		2.31		mg/L	5	0.200

Sample: 21688 - MW D-2 (215')

Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	5841	Date Analyzed:	2003-11-18	Analyzed By:	RS
Prep Batch:	5234	Date Prepared:	2003-11-18	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
pH	[7]	7.40	s.u.	1	0.00

Sample: 21688 - MW D-2 (215')

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	5836	Date Analyzed:	2003-11-20	Analyzed By:	JSW
Prep Batch:	5228	Date Prepared:	2003-11-19	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		912.0	mg/L	2	10.00

Sample: 21688 - MW D-2 (215')

Analysis:	TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	5806	Date Analyzed:	2003-11-18	Analyzed By:	DS
Prep Batch:	5188	Date Prepared:	2003-11-14	Prepared By:	DS

Parameter	Flag	RL Result	Units	Dilution	RL
DRO		<5.00	mg/L	0.1	50.0

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	[8]	12.3	mg/L	0.1	150	82	83 - 174

Sample: 21688 - MW D-2 (215')

Analysis:	TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5030B
QC Batch:	5811	Date Analyzed:	2003-11-18	Analyzed By:	MT
Prep Batch:	5201	Date Prepared:	2003-11-18	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
GRO		<0.100	mg/L	1	0.100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0942	mg/L	1	0.100	94	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0906	mg/L	1	0.100	91	70 - 130

Sample: 21689 - Trip Blank

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	5830	Date Analyzed:	2003-11-19	Analyzed By:	MT

[7] received out of holding time
[8] Surrogate recovery out of range due to matrix effects. QC show the process within control.

Prep Batch: 5221 Date Prepared: 2003-11-19 Prepared By: MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.103	mg/L	1	0.100	103	70 - 130
4-Bromofluorobenzene (4-BFB)	[9]	*0.140*	mg/L	*1*	*0.100*	*140*	*70 - 130*

Method Blank (1) QC Batch: 5806

Parameter	Flag	Result	Units	RL
DRO		<5.00	mg/L	50

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		19.4	mg/L	0.1	150	129	83 - 174

Method Blank (1) QC Batch: 5810

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene (isomers)		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0987	mg/L	1	0.100	99	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0983	mg/L	1	0.100	98	70 - 130

Method Blank (1) QC Batch: 5811

Parameter	Flag	Result	Units	RL
GRO		<0.100	mg/L	0.1

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0942	mg/L	1	0.100	94	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0906	mg/L	1	0.100	91	70 - 130

[9]High surrogate recovery due to peak interference.

Method Blank (1) QC Batch: 5826

Parameter	Flag	Result	Units	RL
Nitrite-N		<0.0100	mg/L	0.01

Method Blank (1) QC Batch: 5830

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene (isomers)		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0978	mg/L	1	0.100	98	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0891	mg/L	1	0.100	89	70 - 130

Method Blank (1) QC Batch: 5836

Parameter	Flag	Result	Units	RL
Total Dissolved Solids		<10.00	mg/L	10

Method Blank (1) QC Batch: 5844

Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 5855

Parameter	Flag	Result	Units	RL
Chloride		<0.500	mg/L	0.5
Fluoride		<0.200	mg/L	0.2
Sulfate		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 5883

Parameter	Flag	Result	Units	RL
Bromide		<0.200	mg/L	0.2

Method Blank (1) QC Batch: 5883

Parameter	Flag	Result	Units	RL
Nitrate-N		<0.200	mg/L	0.2

Method Blank (1) QC Batch: 5906

Parameter	Flag	Result	Units	RL
Specific Conductance		2.61	μMHOS/cm	

Method Blank (1) QC Batch: 5952

Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 6026

Parameter	Flag	Result	Units	RL
Dissolved Calcium		<0.500	mg/L	0.5
Dissolved Potassium		<0.500	mg/L	0.5
Dissolved Magnesium		<0.500	mg/L	0.5
Dissolved Sodium		<0.500	mg/L	0.5

Duplicate (1) QC Batch: 5836

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	836.0	912.0	mg/L	2	9	14.2

Duplicate (1) QC Batch: 5841

continued ...

duplicate continued ...

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH [10]	8.60	8.60	s.u.	1	0	0

Duplicate (1) QC Batch: 5844

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	164	162	mg/L as CaCo3	1	1	20
Total Alkalinity	164	162	mg/L as CaCo3	1	1	5.16

Duplicate (1) QC Batch: 5906

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Specific Conductance	4110	4110	μMHOS/cm	1	0	3.37

Laboratory Control Spike (LCS-1) QC Batch: 5806

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
DRO	22.0	23.2	mg/L	0.1	250	<0.190	88	5	68.5 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Triacontane	15.8	16.4	mg/L	0.1	150	105	109	83 - 174

Laboratory Control Spike (LCS-1) QC Batch: 5810

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.102	0.0995	mg/L	1	0.100	<0.000410	102	3	79.7 - 110	20
Toluene	0.102	0.0994	mg/L	1	0.100	<0.000760	102	2	81.7 - 108	20
Ethylbenzene	0.102	0.100	mg/L	1	0.100	<0.00100	102	1	80.4 - 109	20
Xylene (isomers)	0.305	0.302	mg/L	1	0.300	<0.00100	102	1	81 - 109	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0935	0.0963	mg/L	1	0.100	94	96	65.5 - 119

continued ...

[10] received out of holding time

control spikes continued ...

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
4-Bromofluorobenzene (4-BFB)	0.0951	0.0973	mg/L	1	0.100	95	97	68.6 - 120

Laboratory Control Spike (LCS-1) QC Batch: 5811

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
GRO	0.996	1.03	mg/L	1	1.00	<0.0261	100	3	70.7 - 128	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0999	0.102	mg/L	1	0.100	100	102	38.9 - 148
4-Bromofluorobenzene (4-BFB)	0.0966	0.0992	mg/L	1	0.100	97	99	46.1 - 116

Laboratory Control Spike (LCS-1) QC Batch: 5830

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.101	0.102	mg/L	1	0.100	<0.000238	101	1	70 - 130	20
Benzene	0.101	0.102	mg/L	1	0.100	<0.000238	101	1	70 - 130	20
Toluene	0.0971	0.0983	mg/L	1	0.100	<0.000532	97	1	70 - 130	20
Toluene	0.0971	0.0983	mg/L	1	0.100	<0.000532	97	1	70 - 130	20
Ethylbenzene	0.0946	0.0982	mg/L	1	0.100	<0.00160	95	4	70 - 130	20
Ethylbenzene	0.0946	0.0982	mg/L	1	0.100	<0.00160	95	4	70 - 130	20
Xylene (isomers)	0.282	0.292	mg/L	1	0.300	<0.00571	94	4	70 - 130	20
Xylene (isomers)	0.282	0.292	mg/L	1	0.300	<0.00571	94	4	70 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0908	0.0976	mg/L	1	0.100	91	98	70 - 130
Trifluorotoluene (TFT)	0.0908	0.0976	mg/L	1	0.100	91	98	70 - 130
4-Bromofluorobenzene (4-BFB)	0.0885	0.0959	mg/L	1	0.100	88	96	70 - 130
4-Bromofluorobenzene (4-BFB)	0.0885	0.0959	mg/L	1	0.100	88	96	70 - 130

Laboratory Control Spike (LCS-1) QC Batch: 5855

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	12.0	12.0	mg/L	1	12.5	<1.49	96	0	90 - 110	20
Fluoride	2.56	2.60	mg/L	1	2.50	<0.0153	102	2	90 - 110	20
Sulfate	12.1	12.2	mg/L	1	12.5	<0.171	97	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5883

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Bromide	2.43	2.44	mg/L	1	2.50	<0.0800	97	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5883

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrate-N	2.33	2.34	mg/L	1	2.50	<0.126	93	0	90 - 110	20
Nitrate-N	2.33	2.34	mg/L	1	2.50	<0.126	93	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 6026

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Calcium	97.7	94.7	mg/L	1	100	<0.183	98	3	85 - 115	20
Dissolved Potassium	96.7	95.3	mg/L	1	100	<0.135	97	1	85 - 115	20
Dissolved Magnesium	95.7	94.0	mg/L	1	100	<0.183	96	2	85 - 115	20
Dissolved Sodium	103	102	mg/L	1	100	<0.105	103	1	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5826

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrite-N	0.0723	0.0747	mg/L	1	0.0800	<0.000820	90	3	68.7 - 117	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5855

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	2130	2140	mg/L	100	12.5	1000	90	0	56.4 - 130	20
Fluoride	223	228	mg/L	100	2.50	<1.53	89	2	65.1 - 121	20
Sulfate	1630	1640	mg/L	100	12.5	547	87	1	69.9 - 114	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5883

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Bromide	123	124	mg/L	50	2.50	<4.00	98	1	68.9 - 134	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5883

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Nitrate-N	127	128	mg/L	50	2.50	13.9	90	1	65.8 - 123	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 6026

Param		MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Calcium	[11]	168	189	mg/L	1	100	105	63	12	75 - 125	20
Dissolved Potassium		125	130	mg/L	1	100	24.4	101	4	75 - 125	20
Dissolved Magnesium	[12][13]	206	213	mg/L	1	100	145	61	3	75 - 125	20
Dissolved Sodium	[14][15]	236	252	mg/L	1	100	178	58	6	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1) QC Batch: 5806

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/L	250	227	91	83 - 174	2003-11-18

Standard (CCV-1) QC Batch: 5806

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/L	250	254	101	83 - 174	2003-11-18

Standard (ICV-1) QC Batch: 5810

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.100	100	85 - 115	2003-11-18
Toluene		mg/L	0.100	0.100	100	85 - 115	2003-11-18
Ethylbenzene		mg/L	0.100	0.101	101	85 - 115	2003-11-18
Xylene (isomers)		mg/L	0.300	0.302	101	85 - 115	2003-11-18

Standard (CCV-1) QC Batch: 5810

[11]ms recovery out of limits due to matrix effect
[12]ms recovery out of limits due to matrix effect
[13]ms recovery out of limits due to matrix effect
[14]ms recovery out of limits due to matrix effect
[15]ms recovery out of limits due to matrix effect

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.101	101	85 - 115	2003-11-18
Toluene		mg/L	0.100	0.100	100	85 - 115	2003-11-18
Ethylbenzene		mg/L	0.100	0.100	100	85 - 115	2003-11-18
Xylene (isomers)		mg/L	0.300	0.301	100	85 - 115	2003-11-18

Standard (ICV-1) QC Batch: 5811

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	1.04	104	85 - 115	2003-11-18

Standard (CCV-1) QC Batch: 5811

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/L	1.00	0.932	93	85 - 115	2003-11-18

Standard (ICV-1) QC Batch: 5826

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrite-N		mg/L	0.0800	0.0790	99	85 - 115	2003-11-19

Standard (CCV-1) QC Batch: 5826

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrite-N		mg/L	0.0800	0.0803	100	85 - 115	2003-11-19

Standard (CCV-1) QC Batch: 5830

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.107	107	85 - 115	2003-11-19
Toluene		mg/L	0.100	0.109	109	85 - 115	2003-11-19
Ethylbenzene	[16]	mg/L	0.100	0.121	121	85 - 115	2003-11-19
Xylene (isomers)	[17]	mg/L	0.300	0.398	133	85 - 115	2003-11-19

Standard (CCV-2) QC Batch: 5830

[16]Average of ICV, CCV components within acceptable range.
[17]Average of ICV, CCV components within acceptable range.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.101	101	85 - 115	2003-11-19
Toluene		mg/L	0.100	0.101	101	85 - 115	2003-11-19
Ethylbenzene	[18]	mg/L	0.100	0.116	116	85 - 115	2003-11-19
Xylene (isomers)	[19]	mg/L	0.300	0.372	124	85 - 115	2003-11-19

Standard (ICV-1) QC Batch: 5836

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	995.0	100	90 - 110	2003-11-20

Standard (CCV-1) QC Batch: 5836

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	997.0	100	90 - 110	2003-11-20

Standard (ICV-1) QC Batch: 5841

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7.00	7.10	101	98 - 102	2003-11-18

Standard (CCV-1) QC Batch: 5841

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		s.u.	7.00	7.10	101	98 - 102	2003-11-18

Standard (ICV-1) QC Batch: 5844

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-18
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-18
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-11-18
Total Alkalinity		mg/L as CaCo3	250	240	96	90 - 110	2003-11-18

Standard (CCV-1) QC Batch: 5844

[18] Average of ICV, CCV components within acceptable range.
[19] Average of ICV, CCV components within acceptable range.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-18
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-18
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-11-18
Total Alkalinity		mg/L as CaCo3	250	244	98	90 - 110	2003-11-18

Standard (ICV-1) QC Batch: 5855

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	11.7	94	90 - 110	2003-11-19
Fluoride		mg/L	2.50	2.31	92	90 - 110	2003-11-19
Sulfate		mg/L	12.5	11.4	91	90 - 110	2003-11-19

Standard (CCV-1) QC Batch: 5855

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	11.8	94	90 - 110	2003-11-19
Fluoride		mg/L	2.50	2.64	106	90 - 110	2003-11-19
Sulfate		mg/L	12.5	12.2	98	90 - 110	2003-11-19

Standard (ICV-1) QC Batch: 5883

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.44	98	90 - 110	2003-11-21

Standard (ICV-1) QC Batch: 5883

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate-N		mg/L	2.50	2.35	94	90 - 110	2003-11-21
Nitrate-N		mg/L	2.50	2.35	94	90 - 110	2003-11-21

Standard (CCV-1) QC Batch: 5883

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bromide		mg/L	2.50	2.44	98	90 - 110	2003-11-21

Standard (CCV-1) QC Batch: 5883

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Nitrate-N		mg/L	2.50	2.34	94	90 - 110	2003-11-21

Standard (ICV-1) QC Batch: 5906

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		µMHOS/cm	1410	1410	100	90 - 110	2003-11-21

Standard (CCV-1) QC Batch: 5906

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Specific Conductance		µMHOS/cm	1410	1410	100	90 - 110	2003-11-21

Standard (ICV-1) QC Batch: 5952

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-20
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-20
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-11-20
Total Alkalinity		mg/L as CaCo3	250	240	96	90 - 110	2003-11-20

Standard (CCV-1) QC Batch: 5952

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-20
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-11-20
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-11-20
Total Alkalinity		mg/L as CaCo3	250	238	95	90 - 110	2003-11-20

Standard (ICV-1) QC Batch: 6026

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25.0	24.9	100	90 - 110	2003-12-01
Dissolved Potassium		mg/L	25.0	25.5	102	90 - 110	2003-12-01
Dissolved Magnesium		mg/L	25.0	24.7	99	90 - 110	2003-12-01
Dissolved Sodium		mg/L	25.0	25.7	103	90 - 110	2003-12-01

Standard (CCV-1) QC Batch: 6026

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		mg/L	25.0	25.3	101	90 - 110	2003-12-01
Dissolved Potassium		mg/L	25.0	24.7	99	90 - 110	2003-12-01
Dissolved Magnesium		mg/L	25.0	25.3	101	90 - 110	2003-12-01
Dissolved Sodium		mg/L	25.0	25.1	100	90 - 110	2003-12-01

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name: MT000803.0001

Project Location: Pure Resources

Laboratory: Trace

Project Manager: Frank Kieffer

Sampler(s)/Affiliation: ARCADIS

Sample ID/Location	Matrix	Date Sampled	Time	ANALYSIS / METHOD / SIZE: (2) BTEX 40 ml VOA HCl	(2) TPH GRO 40 ml HCl	(2) TPH DRO 40 ml HCl	(1) General Water Chemistry* liter			Remarks	Total
MW D-2 (90')	L	11-14-03	1400	2	2	2	1	21685			7
MW D-2 (125')	L	11-14-03	1440	2	2	2	1	86			7
MW D-2 (175')	L	11-14-03	1510	2	2	2	1	87			7
MW D-2 (215')	L	11-14-03	1600	2	2	2	1	88			7
Trip Blank				2				89			2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 30 (HS)

Relinquished by: Kelly Lynch	Organization: ARCADIS	Date 11/17/03	Time 1600	Seal Intact?	
Received by: Helen Shelton	Organization: Trace Analysis	Date 11/17/03	Time 1600	Yes	No N/A
Relinquished by: Helen Shelton	Organization: Trace Analysis	Date 11/17/03	Time 1700	Seal Intact?	
Received by: Vicki Ainsley	Organization: TraceAnalysis	Date 11/18/03	Time 9:30	Yes	No N/A

Special Instructions/Remarks:

* General Water Chemistry - HCO3,CO3,Cl,SO4,Br,Ca,Mg,Na,K,F,Alkalinity,TDS,Spec Cond,pH

Delivery Method: ☐ In Person ☒ Common Carrier: Fone Star SPECIFY 2# P524157 ☐ Lab Courier ☐ Other _____ SPECIFY

AG 05-12/01

Report Date: December 1, 2003
MT000803.0001

Work Order: 3111802
Pure Resources

Page Number: 27 of 27
Lovington,NM

21685-84

ARCADIS

Laboratory Task Order No./P.O. No. 3111802

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name MT000803.0001

Project Location Pure Resources

Laboratory Trace

Project Manager Frank Kieffer

Sampler(s)/Affiliation ARCADIS

Sample ID/Location	Matrix	Date Sampled	Time	(2) BTEX 40 ml VOA HCl	(2) TPH GRO 40 ml HCl	(2) TPH DRO 40 ml HCl	(1) General Water Chemistry* liter	ANALYSIS / METHOD / SIZE	Remarks	Total
MW D-2 (90')	L	11-14-03	1400	2	2	2	1	21685		7
MW D-2 (125')	L	11-14-03	1440	2	2	2	1	86		7
MW D-2 (175')	L	11-14-03	1510	2	2	2	1	87		7
MW D-2 (215')	L	11-14-03	1600	2	2	2	1	88		7
Trip Blank				2				89		2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 30

Relinquished by: Rebecca Lynch	Organization: ARCADIS	Date 11/17/03	Time 1600	Seal Intact?	
Received by: Helen Shelton	Organization: Trace Analysis	Date 11/17/03	Time 1600	Yes No N/A	
Relinquished by: Helen Shelton	Organization: Trace Analysis	Date 11/17/03	Time 1700	Seal Intact?	
Received by: Vicki Ansley	Organization: TraceAnalysis	Date 11/18/03	Time 9:30	Yes No N/A	

Special Instructions/Remarks:

* General Water Chemistry - HCO3,CO3,Cl,SO4,Br,Ca,Mg,Na,K,F,Alkalinity,TDS,Spec Cond,pH

Delivery Method: ☐ In Person ☒ Common Carrier Lone Star SPECIFY ☐ Lab Courier ☐ Other 12hFIP SPECIFY

AG 05-12/01

ARCADIS

Appendix B

New Mexico Completion Reports and Well Logs

WELL LOG

WELL NO. MW-Q

ARCADIS 1004 N. Big Spring St. Suite 300, Midland, TX 79701-3383 Tel: 432/687-5400 Fax: 432/687-5401

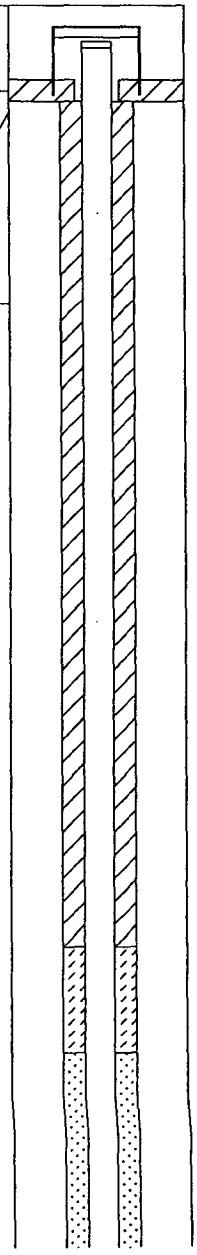
PROJECT NUMBER: MT000803.0001
CLIENT NAME: Pure Resources, Inc.
PROJECT NAME: Lovington Paddock Site
SITE LOCATION: Lea County, New Mexico
—
DRILLING CO: White Drilling Co.
DRILLING METHOD: Rotary, Air/Water
SAMPLE METHOD: Shovel
DATE BEGUN: 11/04/03 DATE COMPLETED: 11/04/03
DRILLER: B. Atkins ELEVATION (SURF.): 3,811.16'
LOGGER: R. Lang ELEVATION (T.O.C.): 3,814.23'
FILE NAME: MW-Q.dat UNIQUE NUMBER: 31-014-00623

STATIC WATER LEVEL: -94.89' MEAS. PT.: T.O.C. DATE: 11/4/03
HOLE SIZE(S): 7 7/8" TOTAL DEPTH: -105.0'
SURFACE COMPLETION: 8" Locking Steel Sleeve, 4'x4'x6" Conc. Slab

	TYPES	DEPTHS
GROUT TYPE:	Portland Cement	-40.0' to Surface
SEAL TYPE:	Bentonite Chips	-45.0' to -40.0'
SCREEN PACK:	8/16 Sand	-105' to -45.0'
CASING TYPE:	4" Diameter Sch. 40 PVC Blank	-55.0' to 2.0'
	—	—
	—	—
WELL SCREEN:	4" Diameter Sch. 40 PVC, 0.020" slots	-105.0' to -55.0'
PLUG BACK:	—	—

DEPTH	SAMPLED	SAMPLING METHOD	ANALYZED	MOISTURE	RECOVERY	OVM READING	U. S. C. S. CLASS	LITHOLOGY	DESCRIPTION
0									CLAY 7.5YR 2.5/3 very dark brown, topsoil.
-5		Shovel				0.0	CH		CALICHE 2.5YR 8/3 pink, very fine grained, subangular, loose, 50% SAND, 50% CALICHE, GLEY 1 7/N light gray, dry, firm, indurated.
		Shovel				0.0			
-15		Shovel				0.0			SAND 10R 7/2 pale red, fine grained, well rounded to subangular, well sorted, loose, dry. Samples became damp at -78.0', wet at -80.0'.
-20		Shovel				0.0			
-25		Shovel				0.0			
-30		Shovel				0.0			
-35		Shovel				0.0			
-40		Shovel				0.0			
-45		Shovel				0.0			
-50		Shovel				0.0			

WELL INSTALLATION



WELL LOG

WELL NO. MW-Q

ARCADIS 1004 N. Big Spring St. Suite 300, Midland, TX 79701-3383 Tel: 432/687-5400 Fax: 432/687-5401

PROJECT NUMBER: MT000803.0001
CLIENT NAME: Pure Resources, Inc.
PROJECT NAME: Lovington Paddock Site
SITE LOCATION: Lea County, New Mexico
—
DRILLING CO: White Drilling Co.
DRILLING METHOD: Rotary, Air/Water
SAMPLE METHOD: Shovel
DATE BEGUN: 11/04/03 DATE COMPLETED: 11/04/03
DRILLER: B. Atkins ELEVATION (SURF.): 3,811.16'
LOGGER: R. Lang ELEVATION (T.O.C.): 3,814.23'
FILE NAME: MW-Q.dat UNIQUE NUMBER: 31-014-00623

STATIC WATER LEVEL: -94.89' MEAS. PT.: T.O.C. DATE: 11/4/03
HOLE SIZE(S): 7 7/8" TOTAL DEPTH: -105.0'
SURFACE COMPLETION: 8" Locking Steel Sleeve, 4'x4'x6" Conc. Slab

	TYPES	DEPTHS
GROUT TYPE:	Portland Cement	-40.0' to Surface
SEAL TYPE:	Bentonite Chips	-45.0' to -40.0'
SCREEN PACK:	8/16 Sand	-105' to -45.0'
CASING TYPE:	4" Diameter Sch. 40 PVC Blank	-55.0' to 2.0'
	—	—
	—	—
WELL SCREEN:	4" Diameter Sch. 40 PVC, 0.020" slots	-105.0' to -55.0'
PLUG BACK:	—	—

DEPTH	SAMPLED	SAMPLING METHOD	ANALYZED	MOISTURE	RECOVERY	OVM READING	U. S. C. S. CLASS	LITHOLOGY	DESCRIPTION	WELL INSTALLATION
-55										
		Shovel				0.0				
-60										
		Shovel				0.0				
-65										
		Shovel				0.0				
-70										
		Shovel				0.0				
-75										
		Shovel				0.0				
-80										
		Shovel				0.0				
-85										
		Shovel				0.0				
-90									SANDSTONE 7.5YR, fine grained, subrounded to subangular, well sorted, firm, CALICHE cement.	
		Shovel				0.0				
-95										
		Shovel				0.0				
-100									SAND 2.5YR 6/4 light reddish brown, loose.	
		Shovel				0.0				
-105										

WELL LOG

WELL NO. MWD-2

ARCADIS 1004 N. Big Spring St. Suite 300, Midland, TX 79701-3383 Tel: 432/687-5400 Fax: 432/687-5401

PROJECT NUMBER: MT000803.0001
CLIENT NAME: Pure Resources, Inc.
PROJECT NAME: Lovington Paddock Site
SITE LOCATION: Lea County, New Mexico
—
DRILLING CO: White Drilling Co.
DRILLING METHOD: Rotary, Air/Mud
SAMPLE METHOD: Shovel/Screen
DATE BEGUN: 10/30/03 DATE COMPLETED: 10/31/03
DRILLER: B. Atkins ELEVATION (SURF.): 3,812.89'
LOGGER: R. Lang ELEVATION (T.O.C.): 3,815.94'
FILE NAME: MWD-2.dat UNIQUE NUMBER: 31-014-00625

STATIC WATER LEVEL: -86.30' MEAS. PT.: T.O.C. DATE: 11/3/03
HOLE SIZE(S): 7 7/8" TOTAL DEPTH: -242.0'
SURFACE COMPLETION: 8" Locking Steel Sleeve, 4'x4'x6" Conc. Slab

	TYPES	DEPTHS
GROUT TYPE:	Portland Cement	-43.0' to Surface
SEAL TYPE:	Bentonite Chips	-50.0' to -43.0'
SCREEN PACK:	8/16 Sand	-242' to -50.0'
CASING TYPE:	4" Diameter Sch. 40 PVC Blank	-62.0' to 2.0'
	—	—
	—	—
WELL SCREEN:	4" Diameter Sch. 40 PVC, 0.020" slots	-242.0' to -62.0'
PLUG BACK:	—	—

DEPTH	SAMPLED	SAMPLING METHOD	ANALYZED	MOISTURE	RECOVERY	OVM READING	U. S. C. S. CLASS	LITHOLOGY	DESCRIPTION	WELL INSTALLATION
0									CLAY 7.5YR 3/4 dark brown, CLAY soil, dry.	
-5		Shovel				0.0	CH		CALICHE 10R 8/1 white, arenaceous, hard, dry.	
-10									SAND 10R 8/3 pink, SILT to fine grained, subangular, well sorted, loose, dry.	
-15		Shovel				0.0				
-20										
-25		Shovel				0.0				
-30										
-35		Shovel				6.7				
-40										
-45		Shovel				0.0				
-50										
-55		Shovel				0.0			SAND 10R 8/3 pink, SILT to fine grained, subangular, well sorted, loose, dry, interbeded with layers of SANDSTONE: 2.5YR 6/1 reddish gray, hard, fair sorting, CALICHE cement, 90% SAND, 10% SANDSTONE.	
-60									SANDSTONE 10R 8/3 pink, SILT to fine grained, subangular, well sorted, loose, dry, with rare CALICHE interbeds. NOTE: found water @ -77.0', switched from air to water @ -80.0'.	

WELL LOG

WELL NO. MWD-2

ARCADIS 1004 N. Big Spring St. Suite 300, Midland, TX 79701-3383 Tel: 432/687-5400 Fax: 432/687-5401

PROJECT NUMBER: MT000803.0001
CLIENT NAME: Pure Resources, Inc.
PROJECT NAME: Lovington Paddock Site
SITE LOCATION: Lea County, New Mexico
—
DRILLING CO: White Drilling Co.
DRILLING METHOD: Rotary, Air/Mud
SAMPLE METHOD: Shovel/Screen
DATE BEGUN: 10/30/03 DATE COMPLETED: 10/31/03
DRILLER: B. Atkins ELEVATION (SURF.): 3,812.89'
LOGGER: R. Lang ELEVATION (T.O.C.): 3,815.94'
FILE NAME: MWD-2.dat UNIQUE NUMBER: 31-014-00625

STATIC WATER LEVEL: -86.30' MEAS. PT.: T.O.C. DATE: 11/3/03
HOLE SIZE(S): 7 7/8" TOTAL DEPTH: -242.0'
SURFACE COMPLETION: 8" Locking Steel Sleeve, 4'x4'x6" Conc. Slab

	TYPES	DEPTHS
GROUT TYPE:	Portland Cement	-43.0' to Surface
SEAL TYPE:	Bentonite Chips	-50.0' to -43.0'
SCREEN PACK:	8/16 Sand	-242' to -50.0'
CASING TYPE:	4" Diameter Sch. 40 PVC Blank	-62.0' to 2.0'
	—	—
	—	—
WELL SCREEN:	4" Diameter Sch. 40 PVC, 0.020" slots	-242.0' to -62.0'
PLUG BACK:	—	—

DEPTH	SAMPLED	SAMPLING METHOD	ANALYZED	MOISTURE	RECOVERY	OVM READING	U. S. C. S. CLASS	LITHOLOGY	DESCRIPTION	WELL INSTALLATION
-65		Shovel				0.0				
-70										
-75		Shovel				0.0				
-80									SAND 10R 8/3 pink, SILT to fine grained SAND, well rounded, well sorted, loose, CALICHE 10R 8/4 pink, indurated as rare interbeds.	
-85		Shovel				0.0				
-90										
-95		Shovel				0.0				
-100										
-105		Shovel				0.0				
-110										
-115		Shovel				0.0				
-120										
-125		Shovel				0.0				

WELL LOG

WELL NO.
MWD-2

ARCADIS
1004 N. Big Spring St. Suite 300, Midland, TX 79701-3383 Tel: 432/687-5400 Fax: 432/687-5401

PROJECT NUMBER: MT000803.0001
CLIENT NAME: Pure Resources, Inc.
PROJECT NAME: Lovington Paddock Site
SITE LOCATION: Lea County, New Mexico
—
DRILLING CO: White Drilling Co.
DRILLING METHOD: Rotary, Air/Mud
SAMPLE METHOD: Shovel/Screen
DATE BEGUN: 10/30/03 DATE COMPLETED: 10/31/03
DRILLER: B. Atkins ELEVATION (SURF.): 3,812.89'
LOGGER: R. Lang ELEVATION (T.O.C.): 3,815.94'
FILE NAME: MWD-2.dat UNIQUE NUMBER: 31-014-00625

STATIC WATER LEVEL: -86.30' MEAS. PT.: T.O.C. DATE: 11/3/03
HOLE SIZE(S): 7 7/8" TOTAL DEPTH: -242.0'
SURFACE COMPLETION: 8" Locking Steel Sleeve, 4'x4'x6" Conc. Slab

	TYPES	DEPTHS
GROUT TYPE:	Portland Cement	-43.0' to Surface
SEAL TYPE:	Bentonite Chips	-50.0' to -43.0'
SCREEN PACK:	8/16 Sand	-242' to -50.0'
CASING TYPE:	4" Diameter Sch. 40 PVC Blank	-62.0' to 2.0'
	—	—
	—	—
WELL SCREEN:	4" Diameter Sch. 40 PVC, 0.020" slots	-242.0' to -62.0'
PLUG BACK:	—	—

DEPTH	SAMPLED	SAMPLING METHOD	ANALYZED	MOISTURE	RECOVERY	OVM READING	U. S. C. S. CLASS	LITHOLOGY	DESCRIPTION	WELL INSTALLATION
130										
135		Shovel				0.0				
140										
145		Shovel				0.0				
150										
155		Shovel				0.0				
160										
165		Shovel				0.0				
170										
175		Shovel				0.0			CLAY 2.5YR 6/4 light reddish brown, soft to firm, arenaceous.	
180										
185		Shovel				0.0				
190										

WELL LOG

WELL NO. MWD-2

ARCADIS 1004 N. Big Spring St. Suite 300, Midland, TX 79701-3383 Tel: 432/687-5400 Fax: 432/687-5401

PROJECT NUMBER: MT000803.0001
CLIENT NAME: Pure Resources, Inc.
PROJECT NAME: Lovington Paddock Site
SITE LOCATION: Lea County, New Mexico
—
DRILLING CO: White Drilling Co.
DRILLING METHOD: Rotary, Air/Mud
SAMPLE METHOD: Shovel/Screen
DATE BEGUN: 10/30/03 DATE COMPLETED: 10/31/03
DRILLER: B. Atkins ELEVATION (SURF.): 3,812.89'
LOGGER: R. Lang ELEVATION (T.O.C.): 3,815.94'
FILE NAME: MWD-2.dat UNIQUE NUMBER: 31-014-00625

STATIC WATER LEVEL: -86.30' MEAS. PT.: T.O.C. DATE: 11/3/03
HOLE SIZE(S): 7 7/8" TOTAL DEPTH: -242.0'
SURFACE COMPLETION: 8" Locking Steel Sleeve, 4'x4'x6" Conc. Slab

	TYPES	DEPTHS
GROUT TYPE:	Portland Cement	-43.0' to Surface
SEAL TYPE:	Bentonite Chips	-50.0' to -43.0'
SCREEN PACK:	8/16 Sand	-242' to -50.0'
CASING TYPE:	4" Diameter Sch. 40 PVC Blank	-62.0' to 2.0'
	—	—
	—	—
WELL SCREEN:	4" Diameter Sch. 40 PVC, 0.020" slots	-242.0' to -62.0'
PLUG BACK:	—	—

DEPTH	SAMPLED	SAMPLING METHOD	ANALYZED	MOISTURE	RECOVERY	OVM READING	U. S. C. S. CLASS	LITHOLOGY	DESCRIPTION	WELL INSTALLATION
195		Shovel				0.0				
200										
205		Shovel				0.0				
215		Shovel				0.0			GRAVEL 5YR 5/6 CHERT and LITHIC GRAVEL to 5mm, well rounded to subangular.	
220									CLAY 10YR 7/6 very pale brown, cretaceous, firm to soft arenaceous, interbedded with SANDSTONE: 10YR 6/6 brownish yellow, fine grained to SILT, subangular, poorly sorted, soft, argillaceous, very fine GRAVEL interbeds.	
225		Shovel				0.0				
230										
235		Shovel				0.0				
240		Shovel				0.0			CLAY 10YR 3/6 dark red, firm.	

WELL LOG

WELL NO. BW-1

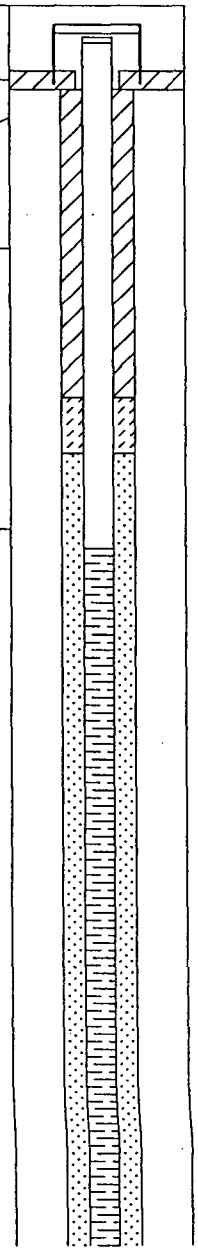
ARCADIS 1004 N. Big Spring St.. Suite 300, Midland, TX 79701-3383 Tel: 432/687-5400 Fax: 432/687-5401

PROJECT NUMBER: MT000803.0001
CLIENT NAME: Pure Resources, Inc.
PROJECT NAME: Lovington Paddock Site
SITE LOCATION: Lea County, New Mexico
—
DRILLING CO: White Drilling Co.
DRILLING METHOD: Rotary, Air/Water
SAMPLE METHOD: Shovel/Split Spoon/Screen
DATE BEGUN: 11/03/03 DATE COMPLETED: 11/03/03
DRILLER: B. Atkins ELEVATION (SURF.): 3,813.10'
LOGGER: R. Lang ELEVATION (T.O.C.): 3,816.14'
FILE NAME: BW-1.dat UNIQUE NUMBER: 31-014-00624

STATIC WATER LEVEL: -88.48' MEAS. PT.: T.O.C. DATE: 11/3/03
HOLE SIZE(S): 7 7/8" TOTAL DEPTH: -125.0'
SURFACE COMPLETION: 8" Locking Steel Sleeve, 4'x4'x6" Conc. Slab

	TYPES	DEPTHS
GROUT TYPE:	Bentonite Chips	-17.0' to Surface
SEAL TYPE:	Bentonite Chips	-20.0' to -17.0'
SCREEN PACK:	8/16 Sand	-125' to -20.0'
CASING TYPE:	4" Diameter Sch. 40 PVC Blank	-25.0' to 2.0'
	—	—
	—	—
WELL SCREEN:	4" Diameter Sch. 40 PVC, 0.020" slots	-125.0' to -25.0'
PLUG BACK:	—	—

DEPTH	SAMPLED	SAMPLING METHOD	ANALYZED	MOISTURE	RECOVERY	OVM READING	U. S. C. S. CLASS	LITHOLOGY	DESCRIPTION	WELL INSTALLATION
0									CLAY 7.5YR 3/3 dark brown, CLAY soil.	
-5		Shovel				0.0	CH		CALICHE 10R 8/1 white soft, arenaceous, dry.	
-10		Shovel				0.0				
-15		Shovel				0.0			SAND 2.5YR 7/3 light reddish brown, fine grained SAND to SILT, well sorted, soft to loose, 50% SAND, 50% CALICHE 10R 8/1 white, arenaceous, soft and dry, as interbeds.	
-20		Shovel				0.0				
-25		Shovel				0.0				
-30		Shovel				0.0			SAND 2.5YR 8/3 pink, very fine grained, SILT, well sorted, loose. NOTE: Strong solvent or petroleum odor at -50.0', sample became moist at -75.0', at -80.0' switched to water as drilling fluid.	
-35		Shovel				0.0				
-40		Shovel				0.0				
-45		Shovel				0.0				
-50		Shovel				0.0				
-55		Shovel				105.0				
-60		Split Spoon				835.0 650				



WELL LOG

WELL NO. BW-1

ARCADIS 1004 N. Big Spring St. Suite 300, Midland, TX 79701-3383 Tel: 432/687-5400 Fax: 432/687-5401

PROJECT NUMBER: MT000803.0001
CLIENT NAME: Pure Resources, Inc.
PROJECT NAME: Lovington Paddock Site
SITE LOCATION: Lea County, New Mexico
—
DRILLING CO: White Drilling Co.
DRILLING METHOD: Rotary, Air/Water
SAMPLE METHOD: Shovel/Split Spoon/Screen
DATE BEGUN: 11/03/03 DATE COMPLETED: 11/03/03
DRILLER: B. Atkins ELEVATION (SURF.): 3,813.10'
LOGGER: R. Lang ELEVATION (T.O.C.): 3,816.14'
FILE NAME: BW-1.dat UNIQUE NUMBER: 31-014-00624

STATIC WATER LEVEL: -88.48' MEAS. PT.: T.O.C. DATE: 11/3/03
HOLE SIZE(S): 7 7/8" TOTAL DEPTH: -125.0'
SURFACE COMPLETION: 8" Locking Steel Sleeve, 4'x4'x6" Conc. Slab

	TYPES	DEPTHS
GROUT TYPE:	Bentonite Chips	-17.0' to Surface
SEAL TYPE:	Bentonite Chips	-20.0' to -17.0'
SCREEN PACK:	8/16 Sand	-125' to -20.0'
CASING TYPE:	4" Diameter Sch. 40 PVC Blank	-25.0' to 2.0'
	—	—
	—	—
WELL SCREEN:	4" Diameter Sch. 40 PVC, 0.020" slots	-125.0' to -25.0'
PLUG BACK:	—	—

DEPTH	SAMPLED	SAMPLING METHOD	ANALYZED	MOISTURE	RECOVERY	OVM READING	U. S. C. S. CLASS	LITHOLOGY	DESCRIPTION	WELL INSTALLATION
-65		Shovel				839				
		Shovel				856				
-70		Shovel				78				
-75		Shovel				7.5				
-80		Screen				0.1				
-85		Screen				0.2				
-90		Screen				0.0				
-95		Screen				0.0				
-100		Screen				0.0				
-105		Screen				0.0				
-110		Screen				0.0				
-115		Screen				0.0			SANDSTONE 10R 8/3 pink, very fine grained, subrounded, well sorted, firm, CALICHE cement.	
-120		Screen				0.0			SAND 2.5YR 7/3 light reddish brown, very fine grained, well rounded, well sorted, loose.	
-125										

ARCADIS

Appendix C

Biosparge Compressor Operational Records

PURE'S

BIOSPARGE BW-1 FIELD DATA FOR DECEMBER 2003

DATE	PRESSURE #1 PSI Gauge C wellhead	FLOW RATE CFM	PRESSURE #2 PSI Gauge B preflow control	PRESSURE #3 PSI Gauge A prefilter #2	PRESSURE #4 PSI Gauge D Casing	PRESSURE #5 PSI Gauge E compressor	TEMPERATURE	COMMENTS Adjust Flow Control valve to hit target Flow Rate of 5 CFM; Gauge C pressure should be about 35 PSI
location			30-40	80-140	Less 3	120		Enter readings for the correct date; no reading for a date is okay
12/8/2003								
12/9/2003								
12/10/2003								
12/11/2003								
12/12/2003	15	5	34	120	1	121	70	
12/13/2003	15	5	34	125	1	108	55	
12/14/2003	15	5	34	110	1	115	65	
12/15/2003	16	5	33	120	1	125	62	
12/16/2003	16	5	34	120	1	122	50	
12/17/2003	16	5	34	124	1	135	70	
12/18/2003	16	5	34	120	1	120	58	
12/19/2003	16	5	34	127	1	123	68	
12/20/2003	16	5	34	110	1	120	64	
12/20/2003								
12/21/2003	16	5	33	135	1	130	80	
12/22/2003	16	5	34	130	1	120	58	
12/23/2003	16	5	33	130	1	126	67	
12/24/2003	16	5	33	120	1	130	55	
12/25/2003	16	5	34	130	1	126	55	
12/26/2003	16	5	34	126	0	120	66	
12/27/2003	16	5	33	127	0	121	54	
12/28/2003	16	5	33	138	0	135	38	
12/29/2003	16	5	33	123	0	124	42	
12/30/2003	16	5	34	127	0	120	66	
12/31/2003	16	5	34	115	0	120	63	

BIOSPARGE BW-1 FIELD DATA FOR JANUARY 2004

DATE	PRESSURE #1 PSI Gauge C	FLOW RATE CFM	PRESSURE #2 PSI Gauge B	PRESSURE #3 PSI Gauge A	PRESSURE #4 PSI Gauge D	PRESSURE #5 PSI Gauge E	TEMPERATURE	COMMENTS
								Adjust Flow Control valve to hit target Flow Rate of 5 CFM;
								Gauge C pressure should be about 35 PSI
location	wellhead		preflow control (30-40)	prefilter #2 (80-140)	Casing (Less 3)	compressor (120)		
								Enter readings for the correct date; no reading for a date is okay
1/1/2004	16	5	33	132	0	126	68	
1/2/2004	16	5	34	120	0	120	56	
1/3/2004	16	5	33	122	0	126	63	
1/4/2004	16	5	33	122	0	120	50	
1/5/2004	16	5	32	125	0	120	56	
1/6/2004	16	5	26	120	0	110	30	
1/7/2004	16	5	34	123	0	125	45	
1/8/2004	16	5	30	124	0	122	52	
1/9/2004	16	5	34	120	0	120	60	
1/10/2004	16	5	34	128	0	130	66	
1/11/2004	16	5	34	121	0	124	76	
1/12/2004	16	5	34	121	0	128	59	
1/13/2004	17	5	28	42	0	40	58	
1/14/2004	18	5	38	82	0	8	85	
1/15/2004	Ser	Lim	Un.	+				
1/16/2004	18	5	35	70	0	70	69	
1/17/2004	18	5	35	70	0	72	42	
1/18/2004	18	3	26	43	0	40	47	
1/19/2004	18	3	26	37	0	40	54	
1/20/2004	20	3	24	42	0	48	52	
1/21/2004	21	3	25	40	0	46	78	
1/22/2004	20	4	29	40	0	70	46	
1/23/2004	20	4	24	35	0	80	48	
1/24/2004	18	4	20	40	0	70	50	
1/25/2004	18	4	20	40	0	70	50	
1/26/2004	24	2	27	38	0	57	62	
1/27/2004	24	2	27	34	0	57	60	
1/28/2004	18	2	19	34	0	70	52	
1/29/2004	18	2	20	30	0	62	65	
1/30/2004	18	2	20	30	0	62	62	
1/31/2004	30	5	38	87	0	81	68	

BIOSPARGE SW-1 FIELD DATA FOR FEBRUARY 2004

DATE	PRESSURE #1 PSI Gauge C	FLOW RATE CFM	PRESSURE #2 PSI Gauge B	PRESSURE #3 PSI Gauge A	PRESSURE #4 PSI Gauge D	PRESSURE #5 PSI Gauge E	TEMPERATURE	COMMENTS Adjust Flow Control valve to hit target Flow Rate of 6 CFM; Gauge C pressure should be about 35 PSI
location	wellhead		preflow control	profiler #2	Casing	compressor		Enter readings for the correct date; no reading for a date is okay
2/1/2004								POWER TURNED OFF
2/2/2004								" " "
2/3/2004	34	3	38	88	0	80	44	
2/4/2004								DOWN FOR REPAIRS
2/5/2004								"
2/6/2004								
2/7/2004								
2/8/2004								
2/9/2004								
2/10/2004								BELT BLEW OFF
2/11/2004								
2/12/2004								
2/13/2004								
2/14/2004								NOT RUNNING (LEVEL)
2/15/2004								
2/16/2004								
2/17/2004								
2/18/2004								
2/19/2004								
2/20/2004								
2/21/2004								
2/22/2004								
2/23/2004								
2/24/2004								
2/25/2004	25	5	40	102	0	98	62	BACK IN SERVICE
2/26/2004	25	5	40	100	0	95	62	
2/27/2004	26	5	40	98	0	102	62	
2/28/2004	26	5	40	106	0	103	72	
2/29/2004	26	5	40	110	0	100	60	

PURE RESOURCES
TAA INC.

MOSPARGE SVE-1 FIELD DATA FOR MARCH 2004

DATE	PRESSURE #1 PSI Gauge C	FLOW RATE CFM	PRESSURE #2 PSI Gauge B	PRESSURE #3 PSI Gauge A	PRESSURE #4 PSI Gauge D	PRESSURE #5 PSI Gauge E	TEMPERATURE	COMMENTS
location	manifold		prefilter surface	prefilter #2	Casing	compressor		
3/1/2004	26	5	40	101	0	100	66	
3/2/2004	26	5	40	106	0	102	58	
3/3/2004	11	0	9	21	0	30	34	Belt burnt off
3/4/2004								" " "
3/5/2004								
3/6/2004								Not operational - New Compressor - No Motor
3/7/2004								"
3/8/2004								" "
3/9/2004								"
3/10/2004								"
3/11/2004								"
3/12/2004								"
3/13/2004								"
3/14/2004								"
3/15/2004								"
3/16/2004	21	5	39	142	0	148	64	
3/17/2004	22	5	39	149	0	150	79	
3/18/2004	21	5	38	171	0	162	72	
3/19/2004	21	5	39	164	0	161	81	
3/20/2004	21	5	38	178	0	169	91	
3/21/2004	21	5	38	160	0	150	54	
3/22/2004	21	5	38	170	0	170	64	
3/23/2004	23	5	38	165	0	168	68	
3/24/2004	23	5	39	160	0	154	93	
3/25/2004	22	4	39	165	0	163	81	
3/26/2004	22	4	38	166	0	164	66	
3/27/2004	22	4	38	160	0	168	66	
3/28/2004	22	4	38	160	0	170	63	
3/29/2004	22	4	38	165	0	170	62	
3/30/2004	28	5	40	152	0	145	73	
3/31/2004	28	5	42	147	0	146	73	

BIOSPARGE BW-1 FIELD DATA FOR APRIL 2004

DATE	PRESSURE #1 PSI Gauge C wellhead	FLOW RATE CFM	PRESSURE #2 PSI Gauge B prefilow control	PRESSURE #3 PSI Gauge A prefilter#2	PRESSURE #4 PSI Gauge D Casing	PRESSURE #5 PSI Gauge E compressor	TEMPERATURE	COMMENTS Adjust Flow Control valve to obtaining a Flow Rate of 5 CFM. Gauge B pressure should be about 35 PSI
location								Enter readings for the correct date, no reading for a date is okay
4/1/2004	27	5	40	172	0	170	94	
4/2/2004	27	5	40	170	0	170	74	
4/3/2004	27	5	41	157	0	158	60	
4/4/2004	26	5	40	150	0	150	44	
4/5/2004	26	5	41	145	0	145	61	
4/6/2004	26	5	41	152	0	152	73	
4/7/2004	26	5	40	170	0	162	62	
4/8/2004	26	5	40	170	0	165	68	
4/9/2004	26	5	40	146	0	156	61	
4/10/2004	26	5	40	154	0	155	44	
4/11/2004	26	5	40	153	0	162	39	
4/12/2004	26	5	40	155	0	159	76	
4/13/2004	26	5	40	146	0	148	56	
4/14/2004	26	5	41	145	0	155	61	
4/15/2004	26	5	40	157	0	150	70	
4/16/2004	26	5	40	164	0	168	73	
4/17/2004	26	5	40	165	0	168	73	
4/18/2304	24	5	40	152	0	152	70	
4/19/2004	23	5	40	160	0	152	70	
4/20/2004	23	5	40	163	0	150	65	
4/21/2004	26	5	40	168	0	171	72	
4/22/2004	26	5	41	162	0	164	66	
4/23/2004	24	5	40	162	0	164	72	
4/24/2004	23	5	40	152	0	164	66	
4/25/2004	26	5	41	164	0	165	74	
4/26/2004	26	5	41	154	0	155	70	
4/27/2004	26	5	42	148	0	148	73	
4/28/2004	26	5	41	145	0	147	70	
4/29/2004	26	5	41	165	0	166	75	
4/30/2004	26	5	40	167	0	168	67	

PURE RESOURCES
FAX NO.

BIOSPARGE BWW FIELD DATA FOR MAY 2004

DATE	PRESSURE #1 PSI Gauge C wellhead	FLOW RATE CFM	PRESSURE #2 PSI Gauge B prefiow control	PRESSURE #3 PSI Gauge A prefilter #2	PRESSURE #4 PSI Gauge D Casing	PRESSURE #5 PSI Gauge E compressor	TEMPERATURE	COMMENTS Adjust Flow Control valve to Arrange Flow Rate of 5 CFM. Gauge C pressure should be about 35 PSI Enter readings for the correct date, no leading 0's or date is wrong!
Location								
5/1/2004	26	5	41	158	0	160	45	
5/2/2004	26	5	40	166	0	166	70	
5/3/2004	26	5	41	150	0	145	82	
5/4/2004	26	5	40	160	0	160	85	
5/5/2004	26	5	40	161	0	150	90	
5/6/2004	26	5	40	162	0	160	90	
5/7/2004	26	5	40	152	0	149	85	
5/8/2004	26	5	40	150	0	140	80	
5/9/2004	26	5	40	162	0	165	80	
5/10/2004	26	5	40	162	0	166	85	
5/11/2004	26	5	40	150	0	140	85	
5/12/2004	26	5	41	154	0	156	90	
5/13/2004	26	5	40	169	0	171	78	
5/14/2004	26	5	40	100	0	150	65	
5/15/2004	26	5	40	152	0	150	70	
5/16/2004	26	5	42	152	0	145	75	
5/17/2004	26	5	40	163	0	164	90	
5/18/2004	26	5	41	147	0	150	96	
5/19/2004	31	5	40	160	0	155	90	
5/20/2004	39	5	40	140	0	150	80	
5/21/2004	32	5	41	168	0	172	89	
5/22/2004	32	5	41	152	0	154	89	
5/23/2004	32	5	42	152	0	172	80	
5/24/2004	32	5	41	158	0	162	97	
5/25/2004	32	5	41	152	0	143	97	
5/26/2004	32	5	41	154	0	157	94	
5/27/2004	32	5	41	150	0	145	87	
5/28/2004	32	5	41	148	0	150	95	
5/29/2004								
5/30/2004								
5/31/2004								

BIOSPARGE BW-1 FIELD DATA FOR JUNE 2004

DATE	PRESSURE #1 PSI Gauge C wellhead	FLOW RATE CFM	PRESSURE #2 PSI Gauge B preflow control	PRESSURE #3 PSI Gauge A preflow #2	PRESSURE #4 PSI Gauge D Casing	PRESSURE #5 PSI Gauge E temperature	TEMPERATURE	COMMENTS Actual Flow Comes Where to Indicate Flow Rate of 5 CFM Gauge C pressure should be about 35 PSI.
6/1/2004	31	5	40	164	0	150	95	
6/2/2004	31	5	40	166	0	168	100	
6/3/2004	31	5	41	165	0	168	73	
6/4/2004	32	5	40	164	0	168	97	
6/5/2004	32	5	41	154	0	158	82	
6/6/2004	32	5	41	147	0	150	92	
6/7/2004	32	5	41	158	0	168	94	
6/8/2004	32	5	41	160	0	165	90	
6/9/2004	30	5	40	165	0	175	90	
6/10/2004	30	5	40	165	0	170	100	
6/11/2004	32	5	40	162	0	165	102	
6/12/2004	32	5	41	157	0	150	99	
6/13/2004	32	5	41	158	0	163	100	
6/14/2004	32	5	41	164	0	167	105	
6/15/2004	32	5	41	153	0	157	99	
6/16/2004	32	5	41	154	0	158	87	
6/17/2004	32	5	41	147	0	140	59	
6/18/2004	32	5	41	156	0	155	92	
6/19/2004	32	5	41	165	0	160	95	
6/20/2004	32	5	41	160	0	160	100	
6/21/2004	32	5	41	160	0	160	95	
6/22/2004	32	5	40	165	0	160	90	
6/23/2004	32	5	42	147	0	152	106	
6/24/2004	32	5	41	172	0	176	106	
6/25/2004	32	5	40	160	0	176	106	
6/26/2004	32	5	42	160	0	160	106	
6/27/2004	32	5	41	160	0	150	100	
6/28/2004	32	5	41	169	0	167	84	
6/29/2004								
6/30/2004								

Appendix D

Biosparge Analytical Data

ARCADIS Geraghty & Miller
Summary Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: December 8, 2003

Work Order: 3112405

Project Location: Pure Resources
Project Number: MT00803.0001.00012

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
22089	MW-B ✓	water	2003-11-19	17:30	2003-11-24
22090	MW-N ✓	water	2003-11-20	12:30	2003-11-24
22091	MW-C ✓	water	2003-11-21	09:15	2003-11-24
22092	BW-I ✓	water	2003-11-20	15:15	2003-11-24
22093	MW-I ✓	water	2003-11-21	13:00	2003-11-24
22094	MW-A ✓	water	2003-11-20	17:20	2003-11-24
22095	MW-H ✓	water	2003-11-21	10:50	2003-11-24
22096	Trip Blank	water	2003-11-21	00:00	2003-11-24

	BTEX			
Sample - Field Code	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (isomers) (mg/L)
22089 - MW-B	0.139	0.00990	<0.00100	0.0202
22090 - MW-N	<0.00100	<0.00100	<0.00100	<0.00100
22091 - MW-C	0.588	<0.0200	<0.0200	<0.0200
22092 - BW-I	1.09	<0.100	<0.100	<0.100
22093 - MW-I	1.59	<0.200	<0.200	<0.200
22094 - MW-A	2.18	<0.200	<0.200	<0.200
22095 - MW-H	0.813	0.0228	<0.0100	0.0133
22096 - Trip Blank	<0.00100	<0.00100	<0.00100	<0.00100

Sample: 22089 - MW-B

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		228	mg/L as CaCo3	4.00
Total Alkalinity		228	mg/L as CaCo3	4.00
Chloride		45.9	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		<0.0500	mg/L	0.0500
Sulfate		36.4	mg/L	0.500
Total Dissolved Solids		450.0	mg/L	10.00
Total Organic Carbon		3.29	mg/L	1.00

Sample: 22090 - MW-N

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		192	mg/L as CaCo3	4.00
Total Alkalinity		192	mg/L as CaCo3	4.00
Chloride		95.1	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		<0.0500	mg/L	0.0500
Sulfate		40.1	mg/L	0.500
Total Dissolved Solids		477.0	mg/L	10.00
Total Organic Carbon		<1.00	mg/L	1.00

Sample: 22091 - MW-C

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		270	mg/L as CaCo3	4.00
Total Alkalinity		270	mg/L as CaCo3	4.00
Chloride		32.6	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		<0.0500	mg/L	0.0500
Sulfate		29.2	mg/L	0.500
Total Dissolved Solids		435.0	mg/L	10.00
Total Organic Carbon		2.56	mg/L	1.00

Sample: 22092 - BW-I

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		344	mg/L as CaCo3	4.00
Total Alkalinity		344	mg/L as CaCo3	4.00
Chloride		24.5	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		<0.0500	mg/L	0.0500
Sulfate		37.9	mg/L	0.500
Total Dissolved Solids		510.0	mg/L	10.00
Total Organic Carbon		4.74	mg/L	1.00

Sample: 22093 - MW-I

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		672	mg/L as CaCo3	4.00
Total Alkalinity		672	mg/L as CaCo3	4.00
Chloride		45.0	mg/L	0.500
Dissolved Iron		0.446	mg/L	0.0500
Total Iron		5.50	mg/L	0.0500

continued ...

ample 22093 continued ...

Param	Flag	Result	Units	RL
Sulfate		38.9	mg/L	0.500
Total Dissolved Solids		882.0	mg/L	10.00
Total Organic Carbon		7.43	mg/L	1.00

Sample: 22094 - MW-A

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		428	mg/L as CaCo3	4.00
Total Alkalinity		428	mg/L as CaCo3	4.00
Chloride		36.0	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		0.211	mg/L	0.0500
Sulfate		37.8	mg/L	0.500
Total Dissolved Solids		614.0	mg/L	10.00
Total Organic Carbon		8.62	mg/L	1.00

Sample: 22095 - MW-H

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		248	mg/L as CaCo3	4.00
Total Alkalinity		248	mg/L as CaCo3	4.00
Chloride		46.0	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		<0.0500	mg/L	0.0500
Sulfate		64.4	mg/L	0.500
Total Dissolved Solids		428.0	mg/L	10.00
Total Organic Carbon		4.15	mg/L	1.00

TRACEANALYSIS, INC.

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E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: December 8, 2003

Work Order: 3112405

Project Location: Pure Resources
Project Number: MT00803.0001.00012

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
22089	MW-B	water	2003-11-19	17:30	2003-11-24
22090	MW-N	water	2003-11-20	12:30	2003-11-24
22091	MW-C	water	2003-11-21	09:15	2003-11-24
22092	BW-I	water	2003-11-20	15:15	2003-11-24
22093	MW-I	water	2003-11-21	13:00	2003-11-24
22094	MW-A	water	2003-11-20	17:20	2003-11-24
22095	MW-H	water	2003-11-21	10:50	2003-11-24
22096	Trip Blank	water	2003-11-21	00:00	2003-11-24

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 24 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 22089 - MW-B

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	6116	Date Analyzed:	2003-12-02	Analyzed By:	RS
Prep Batch:	5458	Date Prepared:	2003-12-02	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		228	mg/L as CaCo3	1	4.00
Total Alkalinity		228	mg/L as CaCo3	1	4.00

Sample: 22089 - MW-B

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	5999	Date Analyzed:	2003-11-25	Analyzed By:	MT
Prep Batch:	5366	Date Prepared:	2003-11-25	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		0.139	mg/L	1	0.00100
Toluene		0.00990	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		0.0202	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.110	mg/L	1	0.100	110	70 - 130
4-Bromofluorobenzene (4-BFB)	[1]	0.134	mg/L	1	0.100	134	70 - 130

Sample: 22089 - MW-B

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5997	Date Analyzed:	2003-11-26	Analyzed By:	JSW
Prep Batch:	5364	Date Prepared:	2003-11-25	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		45.9	mg/L	5	0.500

Sample: 22089 - MW-B

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	6007	Date Analyzed:	2003-11-26	Analyzed By:	RR
Prep Batch:	5347	Date Prepared:	2003-11-25	Prepared By:	TP

[1] High surrogate recovery due to peak interference.

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 22089 - MW-B

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	6024	Date Analyzed:	2003-12-01	Analyzed By:	RR
Prep Batch:	5349	Date Prepared:	2003-11-25	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Iron		<0.0500	mg/L	1	0.0500

Sample: 22089 - MW-B

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5997	Date Analyzed:	2003-11-26	Analyzed By:	JSW
Prep Batch:	5364	Date Prepared:	2003-11-25	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		36.4	mg/L	5	0.500

Sample: 22089 - MW-B

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	6028	Date Analyzed:	2003-12-01	Analyzed By:	JSW
Prep Batch:	5394	Date Prepared:	2003-11-26	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		450.0	mg/L	1	10.00

Sample: 22089 - MW-B

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	6111	Date Analyzed:	2003-12-03	Analyzed By:	RC
Prep Batch:	5460	Date Prepared:	2003-12-03	Prepared By:	RC

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		3.29	mg/L	1	1.00

Sample: 22090 - MW-N

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	6116	Date Analyzed:	2003-12-02	Analyzed By:	RS

Prep Batch: 5458 Date Prepared: 2003-12-02 Prepared By: RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		192	mg/L as CaCo3	1	4.00
Total Alkalinity		192	mg/L as CaCo3	1	4.00

Sample: 22090 - MW-N

Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5030B
QC Batch: 5999 Date Analyzed: 2003-11-25 Analyzed By: MT
Prep Batch: 5366 Date Prepared: 2003-11-25 Prepared By: MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.107	mg/L	1	0.100	107	70 - 130
Bromofluorobenzene (4-BFB)		0.125	mg/L	1	0.100	125	70 - 130

Sample: 22090 - MW-N

Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 5997 Date Analyzed: 2003-11-26 Analyzed By: JSW
Prep Batch: 5364 Date Prepared: 2003-11-25 Prepared By: JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		95.1	mg/L	5	0.500

Sample: 22090 - MW-N

Analysis: Fe, Dissolved Analytical Method: S 6010B Prep Method: S 3005A
QC Batch: 6007 Date Analyzed: 2003-11-26 Analyzed By: RR
Prep Batch: 5347 Date Prepared: 2003-11-25 Prepared By: TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 22090 - MW-N

Analysis: Fe, Total Analytical Method: S 6010B Prep Method: S 3010A

QC Batch: 6024 Date Analyzed: 2003-12-01 Analyzed By: RR
Prep Batch: 5349 Date Prepared: 2003-11-25 Prepared By: TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Iron		<0.0500		mg/L	1	0.0500

Sample: 22090 - MW-N

Analysis: SO4 (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 5997 Date Analyzed: 2003-11-26 Analyzed By: JSW
Prep Batch: 5364 Date Prepared: 2003-11-25 Prepared By: JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Sulfate		40.1		mg/L	5	0.500

Sample: 22090 - MW-N

Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 6028 Date Analyzed: 2003-12-01 Analyzed By: JSW
Prep Batch: 5394 Date Prepared: 2003-11-26 Prepared By: RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Dissolved Solids		477.0		mg/L	1	10.00

Sample: 22090 - MW-N

Analysis: TOC Analytical Method: E 415.1 Prep Method: N/A
QC Batch: 6111 Date Analyzed: 2003-12-03 Analyzed By: RC
Prep Batch: 5460 Date Prepared: 2003-12-03 Prepared By: RC

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Organic Carbon		<1.00		mg/L	1	1.00

Sample: 22091 - MW-C

Analysis: Alkalinity Analytical Method: SM 2320B Prep Method: N/A
QC Batch: 6116 Date Analyzed: 2003-12-02 Analyzed By: RS
Prep Batch: 5458 Date Prepared: 2003-12-02 Prepared By: RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		270		mg/L as CaCo3	1	4.00
Total Alkalinity		270		mg/L as CaCo3	1	4.00

Sample: 22091 - MW-C

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	6052	Date Analyzed:	2003-12-01	Analyzed By:	BS
Prep Batch:	5413	Date Prepared:	2003-12-01	Prepared By:	BS

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		0.588		mg/L	20	0.00100
Toluene		<0.0200		mg/L	20	0.00100
Ethylbenzene		<0.0200		mg/L	20	0.00100
Xylene (isomers)		<0.0200		mg/L	20	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.83	mg/L	20	0.100	92	65.5 - 119
4-Bromofluorobenzene (4-BFB)		1.81	mg/L	20	0.100	90	68.6 - 120

Sample: 22091 - MW-C

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5997	Date Analyzed:	2003-11-26	Analyzed By:	JSW
Prep Batch:	5364	Date Prepared:	2003-11-25	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		32.6		mg/L	5	0.500

Sample: 22091 - MW-C

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	6007	Date Analyzed:	2003-11-26	Analyzed By:	RR
Prep Batch:	5347	Date Prepared:	2003-11-25	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Iron		<0.0500		mg/L	1	0.0500

Sample: 22091 - MW-C

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	6024	Date Analyzed:	2003-12-01	Analyzed By:	RR
Prep Batch:	5349	Date Prepared:	2003-11-25	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Iron		<0.0500		mg/L	1	0.0500

Sample: 22091 - MW-C

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5997	Date Analyzed:	2003-11-26	Analyzed By:	JSW
Prep Batch:	5364	Date Prepared:	2003-11-25	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Sulfate		29.2		mg/L	5	0.500

Sample: 22091 - MW-C

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	6028	Date Analyzed:	2003-12-01	Analyzed By:	JSW
Prep Batch:	5394	Date Prepared:	2003-11-26	Prepared By:	RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Dissolved Solids		435.0		mg/L	1	10.00

Sample: 22091 - MW-C

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	6111	Date Analyzed:	2003-12-03	Analyzed By:	RC
Prep Batch:	5460	Date Prepared:	2003-12-03	Prepared By:	RC

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Organic Carbon		2.56		mg/L	1	1.00

Sample: 22092 - BW-I

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	6116	Date Analyzed:	2003-12-02	Analyzed By:	RS
Prep Batch:	5458	Date Prepared:	2003-12-02	Prepared By:	RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		344		mg/L as CaCo3	1	4.00
Total Alkalinity		344		mg/L as CaCo3	1	4.00

Sample: 22092 - BW-I

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	6052	Date Analyzed:	2003-12-01	Analyzed By:	BS
Prep Batch:	5413	Date Prepared:	2003-12-01	Prepared By:	BS

continued ...

sample 22092 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		1.09	mg/L	100	0.00100
Toluene		<0.100	mg/L	100	0.00100
Ethylbenzene		<0.100	mg/L	100	0.00100
Xylene (isomers)		<0.100	mg/L	100	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		9.03	mg/L	100	0.100	90	65.5 - 119
4-Bromofluorobenzene (4-BFB)		8.84	mg/L	100	0.100	88	68.6 - 120

Sample: 22092 - BW-I

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5997	Date Analyzed:	2003-11-26	Analyzed By:	JSW
Prep Batch:	5364	Date Prepared:	2003-11-25	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		24.5	mg/L	5	0.500

Sample: 22092 - BW-I

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	6007	Date Analyzed:	2003-11-26	Analyzed By:	RR
Prep Batch:	5347	Date Prepared:	2003-11-25	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 22092 - BW-I

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	6024	Date Analyzed:	2003-12-01	Analyzed By:	RR
Prep Batch:	5349	Date Prepared:	2003-11-25	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Iron		<0.0500	mg/L	1	0.0500

Sample: 22092 - BW-I

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A

QC Batch: 5997 Date Analyzed: 2003-11-26 Analyzed By: JSW
Prep Batch: 5364 Date Prepared: 2003-11-25 Prepared By: JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Sulfate		37.9		mg/L	5	0.500

Sample: 22092 - BW-I

Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 6028 Date Analyzed: 2003-12-01 Analyzed By: JSW
Prep Batch: 5394 Date Prepared: 2003-11-26 Prepared By: RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Dissolved Solids		510.0		mg/L	1	10.00

Sample: 22092 - BW-I

Analysis: TOC Analytical Method: E 415.1 Prep Method: N/A
QC Batch: 6111 Date Analyzed: 2003-12-03 Analyzed By: RC
Prep Batch: 5460 Date Prepared: 2003-12-03 Prepared By: RC

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Organic Carbon		4.74		mg/L	1	1.00

Sample: 22093 - MW-I

Analysis: Alkalinity Analytical Method: SM 2320B Prep Method: N/A
QC Batch: 6116 Date Analyzed: 2003-12-02 Analyzed By: RS
Prep Batch: 5458 Date Prepared: 2003-12-02 Prepared By: RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		672		mg/L as CaCo3	1	4.00
Total Alkalinity		672		mg/L as CaCo3	1	4.00

Sample: 22093 - MW-I

Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5030B
QC Batch: 6052 Date Analyzed: 2003-12-01 Analyzed By: BS
Prep Batch: 5413 Date Prepared: 2003-12-01 Prepared By: BS

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		1.59		mg/L	200	0.00100

continued ...

sample 22093 continued ...

Parameter	Flag	Result	RL	Units	Dilution	RL
Toluene		<0.200		mg/L	200	0.00100
Ethylbenzene		<0.200		mg/L	200	0.00100
Xylene (isomers)		<0.200		mg/L	200	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		16.8	mg/L	200	0.100	84	65.5 - 119
4-Bromofluorobenzene (4-BFB)		16.6	mg/L	200	0.100	83	68.6 - 120

Sample: 22093 - MW-I

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5997	Date Analyzed:	2003-11-26	Analyzed By:	JSW
Prep Batch:	5364	Date Prepared:	2003-11-25	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		45.0		mg/L	10	0.500

Sample: 22093 - MW-I

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	6007	Date Analyzed:	2003-11-26	Analyzed By:	RR
Prep Batch:	5347	Date Prepared:	2003-11-25	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Iron		0.446		mg/L	1	0.0500

Sample: 22093 - MW-I

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	6024	Date Analyzed:	2003-12-01	Analyzed By:	RR
Prep Batch:	5349	Date Prepared:	2003-11-25	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Iron		5.50		mg/L	1	0.0500

Sample: 22093 - MW-I

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5997	Date Analyzed:	2003-11-26	Analyzed By:	JSW
Prep Batch:	5364	Date Prepared:	2003-11-25	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		38.9	mg/L	10	0.500

Sample: 22093 - MW-I

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	6029	Date Analyzed:	2003-12-01	Analyzed By:	JSW
Prep Batch:	5395	Date Prepared:	2003-11-26	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		882.0	mg/L	1	10.00

Sample: 22093 - MW-I

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	6111	Date Analyzed:	2003-12-03	Analyzed By:	RC
Prep Batch:	5460	Date Prepared:	2003-12-03	Prepared By:	RC

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		7.43	mg/L	1	1.00

Sample: 22094 - MW-A

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	6116	Date Analyzed:	2003-12-02	Analyzed By:	RS
Prep Batch:	5458	Date Prepared:	2003-12-02	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		428	mg/L as CaCo3	1	4.00
Total Alkalinity		428	mg/L as CaCo3	1	4.00

Sample: 22094 - MW-A

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	6052	Date Analyzed:	2003-12-01	Analyzed By:	BS
Prep Batch:	5413	Date Prepared:	2003-12-01	Prepared By:	BS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		2.18	mg/L	200	0.00100
Toluene		<0.200	mg/L	200	0.00100
Ethylbenzene		<0.200	mg/L	200	0.00100
Xylene (isomers)		<0.200	mg/L	200	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		17.1	mg/L	200	0.100	86	65.5 - 119
4-Bromofluorobenzene (4-BFB)		16.9	mg/L	200	0.100	85	68.6 - 120

Sample: 22094 - MW-A

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5997	Date Analyzed:	2003-11-26	Analyzed By:	JSW
Prep Batch:	5364	Date Prepared:	2003-11-25	Prepared By:	JSW

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		36.0	mg/L	5	0.500

Sample: 22094 - MW-A

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	6007	Date Analyzed:	2003-11-26	Analyzed By:	RR
Prep Batch:	5347	Date Prepared:	2003-11-25	Prepared By:	TP

Parameter	Flag	Result	RL Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 22094 - MW-A

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	6024	Date Analyzed:	2003-12-01	Analyzed By:	RR
Prep Batch:	5349	Date Prepared:	2003-11-25	Prepared By:	TP

Parameter	Flag	Result	RL Units	Dilution	RL
Total Iron		0.211	mg/L	1	0.0500

Sample: 22094 - MW-A

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5997	Date Analyzed:	2003-11-26	Analyzed By:	JSW
Prep Batch:	5364	Date Prepared:	2003-11-25	Prepared By:	JSW

Parameter	Flag	Result	RL Units	Dilution	RL
Sulfate		37.8	mg/L	5	0.500

Sample: 22094 - MW-A

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A

QC Batch: 6029 Date Analyzed: 2003-12-01 Analyzed By: JSW
Prep Batch: 5395 Date Prepared: 2003-11-26 Prepared By: RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Dissolved Solids		614.0		mg/L	1	10.00

Sample: 22094 - MW-A

Analysis: TOC Analytical Method: E 415.1 Prep Method: N/A
QC Batch: 6111 Date Analyzed: 2003-12-03 Analyzed By: RC
Prep Batch: 5460 Date Prepared: 2003-12-03 Prepared By: RC

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Organic Carbon		8.62		mg/L	1	1.00

Sample: 22095 - MW-H

Analysis: Alkalinity Analytical Method: SM 2320B Prep Method: N/A
QC Batch: 6116 Date Analyzed: 2003-12-02 Analyzed By: RS
Prep Batch: 5458 Date Prepared: 2003-12-02 Prepared By: RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		248		mg/L as CaCo3	1	4.00
Total Alkalinity		248		mg/L as CaCo3	1	4.00

Sample: 22095 - MW-H

Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5030B
QC Batch: 6052 Date Analyzed: 2003-12-01 Analyzed By: BS
Prep Batch: 5413 Date Prepared: 2003-12-01 Prepared By: BS

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		0.813		mg/L	10	0.00100
Toluene		0.0228		mg/L	10	0.00100
Ethylbenzene		<0.0100		mg/L	10	0.00100
Xylene (isomers)		0.0133		mg/L	10	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.831	mg/L	10	0.100	83	65.5 - 119
4-Bromofluorobenzene (4-BFB)		0.820	mg/L	10	0.100	82	68.6 - 120

Sample: 22095 - MW-H

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5997	Date Analyzed:	2003-11-26	Analyzed By:	JSW
Prep Batch:	5364	Date Prepared:	2003-11-25	Prepared By:	JSW

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		46.0	mg/L	5	0.500

Sample: 22095 - MW-H

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	6007	Date Analyzed:	2003-11-26	Analyzed By:	RR
Prep Batch:	5347	Date Prepared:	2003-11-25	Prepared By:	TP

Parameter	Flag	Result	RL Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 22095 - MW-H

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	6024	Date Analyzed:	2003-12-01	Analyzed By:	RR
Prep Batch:	5349	Date Prepared:	2003-11-25	Prepared By:	TP

Parameter	Flag	Result	RL Units	Dilution	RL
Total Iron		<0.0500	mg/L	1	0.0500

Sample: 22095 - MW-H

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	5997	Date Analyzed:	2003-11-26	Analyzed By:	JSW
Prep Batch:	5364	Date Prepared:	2003-11-25	Prepared By:	JSW

Parameter	Flag	Result	RL Units	Dilution	RL
Sulfate		64.4	mg/L	5	0.500

Sample: 22095 - MW-H

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	6029	Date Analyzed:	2003-12-01	Analyzed By:	JSW
Prep Batch:	5395	Date Prepared:	2003-11-26	Prepared By:	RS

Parameter	Flag	Result	RL Units	Dilution	RL
Total Dissolved Solids		428.0	mg/L	1	10.00

Sample: 22095 - MW-H

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	6172	Date Analyzed:	2003-12-05	Analyzed By:	RC
Prep Batch:	5511	Date Prepared:	2003-12-05	Prepared By:	RC

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		4.15	mg/L	1	1.00

Sample: 22096 - Trip Blank

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	6052	Date Analyzed:	2003-12-01	Analyzed By:	BS
Prep Batch:	5413	Date Prepared:	2003-12-01	Prepared By:	BS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0891	mg/L	1	0.100	89	65.5 - 119
4-Bromofluorobenzene (4-BFB)		0.0877	mg/L	1	0.100	88	68.6 - 120

Method Blank (1) QC Batch: 5997

Parameter	Flag	Result	Units	RL
Chloride		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 5997

Parameter	Flag	Result	Units	RL
Sulfate		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 5999

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene (isomers)		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.106	mg/L	1	0.100	106	70 - 130
4-Bromofluorobenzene (4-BFB)		0.122	mg/L	1	0.100	122	70 - 130

Method Blank (1) QC Batch: 6007

Parameter	Flag	Result	Units	RL
Dissolved Iron		<0.0500	mg/L	0.05

Method Blank (1) QC Batch: 6024

Parameter	Flag	Result	Units	RL
Total Iron		<0.0500	mg/L	0.05

Method Blank (1) QC Batch: 6028

Parameter	Flag	Result	Units	RL
Total Dissolved Solids		<10.00	mg/L	10

Method Blank (1) QC Batch: 6029

Parameter	Flag	Result	Units	RL
Total Dissolved Solids		<10.00	mg/L	10

Method Blank (1) QC Batch: 6111

Parameter	Flag	Result	Units	RL
Total Organic Carbon		<1.00	mg/L	1

Method Blank (1) QC Batch: 6116

Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 6172

Parameter	Flag	Result	Units	RL
Total Organic Carbon		<1.00	mg/L	1

Duplicate (1) QC Batch: 6028

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	802.0	826.0	mg/L	2	3	14.2

Duplicate (1) QC Batch: 6116

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	482	480	mg/L as CaCo3	1	0	20
Total Alkalinity	482	480	mg/L as CaCo3	1	0	5.16

Laboratory Control Spike (LCS-1) QC Batch: 5997

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	12.4	12.9	mg/L	1	12.5	<1.49	99	4	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5997

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Sulfate	12.4	12.6	mg/L	1	12.5	<0.171	99	2	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 5999

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.108	0.108	mg/L	1	0.100	<0.000238	108	0	70 - 130	20
Toluene	0.105	0.104	mg/L	1	0.100	<0.000532	105	1	70 - 130	20
Ethylbenzene	0.109	0.112	mg/L	1	0.100	<0.00160	109	3	70 - 130	20
Xylene (isomers)	0.337	0.349	mg/L	1	0.300	<0.00571	112	3	70 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate		LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)		0.112	0.114	mg/L	1	0.100	112	114	70 - 130
4-Bromofluorobenzene (4-BFB)	[2,3]	0.136	0.138	mg/L	1	0.100	136	138	70 - 130

Laboratory Control Spike (LCS-1) QC Batch: 6007

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Iron	0.528	0.520	mg/L	1	0.500	<0.00281	106	2	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 6024

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Iron	0.487	0.486	mg/L	1	0.500	<0.00220	97	0	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 6111

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	4.88	4.72	mg/L	1	5.00	<0.843	98	3	78 - 120	13

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 6172

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	4.74	4.60	mg/L	1	5.00	<0.843	95	3	78 - 120	13

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5997

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	1230	1220	mg/L	50	12.5	561	107	1	56.4 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 5997

[2]High surrogate recovery due to prep. ICV, CCV show the method to be in control.
[3]High surrogate recovery due to prep. ICV, CCV show the method to be in control.

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Sulfate	682	681	mg/L	50	12.5	54	100	0	69.9 - 114	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 6007

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Iron	0.517	0.480	mg/L	1	0.500	0.018	100	7	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 6024

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Iron	0.499	0.502	mg/L	1	0.500	<0.00220	100	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 6111

Param		MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	[5]	16.4	16.6	mg/L	1	5.00	8.62	156	1	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 6172

Param		MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	[6]	7.00	5.00	mg/L	1	5.00	1.52	110	33	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1) QC Batch: 5997

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	13.2	106	90 - 110	2003-11-26

Standard (ICV-1) QC Batch: 5997

[4]Matrix spike result out of recovery limits due to matrix effect.
[5]Matrix spike result out of recovery limits due to matrix effect.
[6]Matrix spike result out of recovery limits due to sample matrix.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	12.5	12.5	100	90 - 110	2003-11-26

Standard (CCV-1) QC Batch: 5997

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	11.7	94	90 - 110	2003-11-26

Standard (CCV-1) QC Batch: 5997

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	12.5	12.0	96	90 - 110	2003-11-26

Standard (ICV-1) QC Batch: 5999

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.100	100	85 - 115	2003-11-25
Toluene		mg/L	0.100	0.0972	97	85 - 115	2003-11-25
Ethylbenzene		mg/L	0.100	0.105	105	85 - 115	2003-11-25
Xylene (isomers)		mg/L	0.300	0.324	108	85 - 115	2003-11-25

Standard (CCV-1) QC Batch: 5999

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.113	113	85 - 115	2003-11-25
Toluene		mg/L	0.100	0.110	110	85 - 115	2003-11-25
Ethylbenzene	[7]	mg/L	0.100	0.117	117	85 - 115	2003-11-25
Xylene (isomers)	[8]	mg/L	0.300	0.364	121	85 - 115	2003-11-25

Standard (ICV-1) QC Batch: 6007

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Iron		mg/L	1.00	0.982	98	90 - 110	2003-11-26

Standard (CCV-1) QC Batch: 6007

[7]Average of ICV, CCV components within acceptable range.
[8]Average of ICV, CCV components within acceptable range.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Iron		mg/L	1.00	1.02	102	90 - 110	2003-11-26

Standard (ICV-1) QC Batch: 6024

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Iron		mg/L	1.00	1.02	102	90 - 110	2003-12-01

Standard (CCV-1) QC Batch: 6024

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Iron		mg/L	1.00	0.995	100	90 - 110	2003-12-01

Standard (ICV-1) QC Batch: 6028

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	996.0	100	90 - 110	2003-12-01

Standard (CCV-1) QC Batch: 6028

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	979.0	98	90 - 110	2003-12-01

Standard (ICV-1) QC Batch: 6029

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	979.0	98	90 - 110	2003-12-01

Standard (CCV-1) QC Batch: 6029

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	981.0	98	90 - 110	2003-12-01

Standard (ICV-1) QC Batch: 6052

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0880	88	85 - 115	2003-12-01
Toluene		mg/L	0.100	0.0876	88	85 - 115	2003-12-01
Ethylbenzene		mg/L	0.100	0.0873	87	85 - 115	2003-12-01
Xylene (isomers)		mg/L	0.300	0.261	87	85 - 115	2003-12-01

Standard (CCV-1) QC Batch: 6052

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0964	96	85 - 115	2003-12-01
Toluene		mg/L	0.100	0.0912	91	85 - 115	2003-12-01
Ethylbenzene		mg/L	0.100	0.0866	87	85 - 115	2003-12-01
Xylene (isomers)		mg/L	0.300	0.260	87	85 - 115	2003-12-01

Standard (ICV-1) QC Batch: 6111

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	4.51	90	85 - 115	2003-12-03

Standard (CCV-1) QC Batch: 6111

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	5.04	101	85 - 115	2003-12-03

Standard (ICV-1) QC Batch: 6116

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-12-02
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-12-02
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2003-12-02
Total Alkalinity		mg/L as CaCo3	250	240	96	90 - 110	2003-12-02

Standard (CCV-1) QC Batch: 6116

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-12-02
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2003-12-02
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	242		0 - 200	2003-12-02
Total Alkalinity		mg/L as CaCo3	250	242	97	90 - 110	2003-12-02

Standard (CCV-1) QC Batch: 6172

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	4.90	98	85 - 115	2003-12-05

Standard (ICV-1) QC Batch: 6172

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	5.70	114	85 - 115	2003-12-05

22084-76

ARCADIS

Laboratory Task Order No./P.O. No. [redacted] 3112405

CHAIN-OF-CUSTODY RECORD

Page [redacted] of [redacted]

Project Number/Name MT000803.0001.00012

Project Location Pure Resources

Laboratory Trace Analysis

Project Manager Frank Kieffer

Sampler(s)/Affiliation ARCADIS

Sample ID/Location	Matrix	Date Sampled	Time	(2) 40 ml BTEX HCl	(1) liter Total Alk, TDS, Sulfate, Chloride Neat	(1) 250 ml Total Iron	(1) 250 ml Dissolved Iron field filtered HNO3	(2) 40 ml TOC HCl	Remarks	Total
MW-B	L	11-19-03	1730	2	1	1	1	2	22084	7
MW-N	L	11-20-03	1230	2	1	1	1	2	90	7
MW-C	L	11-21-03	915	2	1	1	1	2	91	7
BW-2	L	11-20-03	1515	2	1	1	1	2	92	7
MW-I	L	11-21-03	1300	2	1	1	1	2	93	7
MW-A	L	11-20-03	1720	2	1	1	1	2	94	7
MW-H	L	11-21-03	1050	2	1	1	1	2	95	7
Trip Blank				2					96	2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 51

Relinquished by: [signature]	Organization: ARCADIS	Date 11/21/03	Time 1645	Seal Intact?	Yes No N/A
Received by: [signature]	Organization: Trace	Date 11/21/03	Time 1645		
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	Yes No N/A
Received by: Vicki Hensley	Organization: Trace Analysis	Date 11/21/03	Time 8:52		

Special Instructions/Remarks:

Bus no Bus Bill # 2°

PVF 12/8/03

Delivery Method: ☐ In Person ☐ Common Carrier NA ☐ Lab Courier ☐ Other

SPECIFY

SPECIFY

AG 05-12/01

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

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E-mail to:samplereceiving@airtoxics.com

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0311403A

Work Order Summary

CLIENT:	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701	**BILL TO:**	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701
PHONE:	(432) 687-5400	**P.O. #**	
FAX:		**PROJECT #**	Soil Gas Sampling
DATE RECEIVED:	11/21/03	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	12/6/03		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	BW-1	Mod. Method TO-15	4.0 "Hg
02A	MW-A	Mod. Method TO-15	4.0 "Hg
03A	MW-B	Mod. Method TO-15	4.0 "Hg
04A	MW-C	Mod. Method TO-15	3.5 "Hg
05A	MW-D	Mod. Method TO-15	0.5 "Hg
06A	MW-H	Mod. Method TO-15	3.5 "Hg
07A	MW-I	Mod. Method TO-15	4.0 "Hg
08A	MW-N	Mod. Method TO-15	3.5 "Hg
09A	MW-10	Mod. Method TO-15	4.0 "Hg
10A	VP10	Mod. Method TO-15	4.0 "Hg
11A	Lab Blank	Mod. Method TO-15	NA
12A	CCV	Mod. Method TO-15	NA
13A	LCS	Mod. Method TO-15	NA

CERTIFIED BY: Linda D. Truman DATE: 12/06/03

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, 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: 07/01/03, Expiration date: 06/30/04
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
Mod. Method TO-15
Arcadis Geraghty & Miller
Workorder# 0311403A

Ten 1 Liter Summa Canister samples were received on November 21, 2003. The laboratory performed the analysis via Modified Method TO-15 using GC/MS in the full scan mode. The method involves direct injection of up to a 40 mL sample aliquot into a vapor management system. Following dehumidification the sample passes directly into the GC/MS for analysis. See the data sheets for the reporting limits of each compound.

Requirement	*TO-14A/TO-15*	*ATL Modifications*
Concentration of IS Spike	10 ppbv (TO-15)	500 ppbv
BFB Acceptance Criteria	CLP protocol (TO-15)	SW-846 protocol
Sampling Drying System	Nafion Dryer (TO-14A)	Multisorbent concentrator
Blank acceptance criteria	< 0.2 ppbv (TO-14A)	< RL.
IS Recovery	TO-15: Within 40 % of mean over ICAL for blanks, and w/in 40 % of daily CCV for samples	Within 40 % of CCV recovery for blank and samples.
Sample volume	Up to 400 mL (TO-14A)	Up to 40 mLs
ICAL RRF for quantitation	RRF for quantitation taken from daily CCV or midlevel of Initial Calibration	Average RRF from Initial Calibration is used for quantitation
Primary Ions for Quantification	Freon 114: 85, Carbon Tetrachloride: 117, Trichloroethene: 130, Ethyl Benzene, m,p- and o-Xylene: 91	Freon 114: 135, Carbon Tetrachloride: 119, Trichloroethene: 95, Ethyl Benzene, m,p- and o-Xylene: 106
Daily CCV	</= 30 % D	</= 30 % D with 2 allowed out up to 40%; flag associated sample results.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV.

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: BW-1

ID#: 0311403A-01A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112523**	**Date of Collection: 11/19/03**	
Dil. Factor:	**71.7**	**Date of Analysis: 11/25/03 02:19 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	360	300000
Toluene	360	76000
Ethyl Benzene	360	2000
m,p-Xylene	360	8800
o-Xylene	360	4200

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-A

ID#: 0311403A-02A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112524**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**212**	**Date of Analysis:**	**11/25/03 02:51 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	1100	840000
Toluene	1100	210000
Ethyl Benzene	1100	3800
m,p-Xylene	1100	45000
o-Xylene	1100	12000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-B

ID#: 0311403A-03A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	3112525	Date of Collection:	11/19/03
Dil. Factor:	129	Date of Analysis:	11/25/03 03:24 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	640	570000
Toluene	640	210000
Ethyl Benzene	640	8200
m,p-Xylene	640	27000
o-Xylene	640	6200

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-C

ID#: 0311403A-04A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112526**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**57.2**	**Date of Analysis:**	**11/25/03 03:51 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	290	160000
Toluene	290	74000
Ethyl Benzene	290	5100
m,p-Xylene	290	12000
o-Xylene	290	3800

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-D

ID#: 0311403A-05A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112527**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.05**	**Date of Analysis:**	**11/25/03 04:17 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	10	70
Toluene	10	77
Ethyl Benzene	10	Not Detected
m,p-Xylene	10	12
o-Xylene	10	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-H

ID#: 0311403A-06A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112528**	**Date of Collection:**	**11/20/03**
Dil. Factor:	**105**	**Date of Analysis:**	**11/25/03 04:45 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	520	520000
Toluene	520	200000
Ethyl Benzene	520	9900
m,p-Xylene	520	26000
o-Xylene	520	7600

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-I

ID#: 0311403A-07A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112531**	**Date of Collection: 11/20/03**	
Dil. Factor:	**373**	**Date of Analysis: 11/25/03 06:32 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	1900	1600000
Toluene	1900	590000
Ethyl Benzene	1900	26000
m,p-Xylene	1900	87000
o-Xylene	1900	22000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-N

ID#: 0311403A-08A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112534**	**Date of Collection: 11/20/03**	
Dil. Factor:	**2.29**	**Date of Analysis: 11/25/03 07:53 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	11	1600
Toluene	11	530
Ethyl Benzene	11	39
m,p-Xylene	11	100
o-Xylene	11	28

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-10

ID#: 0311403A-09A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112533**	**Date of Collection:**	**11/20/03**
Dil. Factor:	**169**	**Date of Analysis:**	**11/25/03 07:26 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	840	840000
Toluene	840	350000
Ethyl Benzene	840	28000
m,p-Xylene	840	54000
o-Xylene	840	13000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: VP10

ID#: 0311403A-10A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112535**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.33**	**Date of Analysis:**	**11/25/03 08:16 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	12	1300
Toluene	12	350
Ethyl Benzene	12	Not Detected
m,p-Xylene	12	29
o-Xylene	12	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0311403A-11A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112509**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/25/03 04:35 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	5.0	Not Detected
Toluene	5.0	Not Detected
Ethyl Benzene	5.0	Not Detected
m,p-Xylene	5.0	Not Detected
o-Xylene	5.0	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

AIR TOXICS LTD.

SAMPLE NAME: CCV

ID#: 0311403A-12A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/25/03 01:46 AM**	

Compound	%Recovery
Benzene	100
Toluene	106
Ethyl Benzene	112
m,p-Xylene	114
o-Xylene	103

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0311403A-13A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/25/03 02:11 AM**	

Compound	%Recovery
Benzene	106
Toluene	106
Ethyl Benzene	107
m,p-Xylene	110
o-Xylene	89

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

ARCADIS

Laboratory Task Order No./P.O. No ATL #3988 **CHAIN-OF-CUSTODY RECORD** 0311403A Page 1 of 1

Project Number/Name MT000803.0001

Project Location LOVINGTON, NM

Laboratory AIR TOXICS LTD

Project Manager Frank Kiefer

Sampler(s)/Affiliation R. MORGAN / ARCADIS
R LANG

	Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	BTEX TO-15	CH4, O2, CO2 ASTM 1946	Remarks	Total	MW (1-24c)
3A	BW-1	AIR	11/19 1457		✓	✓	1 liter	1	40"Hg
2A	MW-A		11/19 1545		✓	✓			40"Hg
3A	MW-B		11/19 1605		✓	✓			40"Hg
4A	MW-C		11/19 1627		✓	✓			35"Hg
5A	MW-D		11/19 1705		✓	✓			0.5"Hg
6A	MW-H		11/20 930		✓	✓			3.5"Hg
7A	MW-I		11/20 1000		✓	✓			45"Hg
8A	MW-N		11/20 1050		✓	✓			35"Hg
9A	MW-10		11/20 1030		✓	✓			40"Hg
0A	VP10		11/19 1515		✓				40"Hg
	VP30 > DO NOT RUN								
	VP90								

CUSTODY SEAL INTACT?
Y N NONE TEMP

Total No. of Bottles/ Containers 12

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by: R. Lang	Organization: Arcadis	Date 11/20/03	Time 1500	Seal Intact?	
Received by: F. Kiefer	Organization: Arcadis	Date 11/20/03	Time 1500	Yes No N/A	
Relinquished by: F. Kiefer	Organization: Arcadis	Date / /	Time	Seal Intact?	
Received by: Laurie Thomas	Organization: ATL	Date 11/21/03	Time 945	Yes No (N/A)	

Special Instructions/Remarks: QUOTE ATTACHED

*DO NOT RUN Samples VP30, VP90

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex ☐ Lab Courier ☐ Other

SPEC FY

AS 05-2001

AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Air Toxics Ltd. Introduces the Electronic Report

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

This electronic report includes the following:

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

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

(916) 985-1000 .FAX (916) 985-1020
Hours 8:00 A.M to 6:00 P.M. Pacific
E-mail to:samplereceiving@airtoxics.com

@ AIR TOXICS LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0311403B

Work Order Summary

CLIENT:	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701	**BILL TO:**	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701
PHONE:	(432) 687-5400	**P.O. #**	
FAX:		**PROJECT #**	MT000903.0001 MT000903.0001
DATE RECEIVED:	11/21/03	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	12/6/03		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	BW-1	Modified ASTM D-1946	4.0 "Hg
02A	MW-A	Modified ASTM D-1946	4.0 "Hg
03A	MW-B	Modified ASTM D-1946	4.0 "Hg
04A	MW-C	Modified ASTM D-1946	3.5 "Hg
04AA	MW-C Duplicate	Modified ASTM D-1946	3.5 "Hg
05A	MW-D	Modified ASTM D-1946	0.5 "Hg
06A	MW-H	Modified ASTM D-1946	3.5 "Hg
07A	MW-I	Modified ASTM D-1946	4.0 "Hg
08A	MW-N	Modified ASTM D-1946	3.5 "Hg
09A	MW-10	Modified ASTM D-1946	4.0 "Hg
10A	VP10	Modified ASTM D-1946	4.0 "Hg
11A	Lab Blank	Modified ASTM D-1946	NA
12A	LCS	Modified ASTM D-1946	NA

CERTIFIED BY: Linda L. Truman DATE: 12/06/03

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, 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: 07/01/03, Expiration date: 06/30/04
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
Modified ASTM D-1946
Arcadis Geraghty & Miller
Workorder# 0311403B

Nine 1 Liter Summa Canister samples were received on November 21, 2003. The laboratory performed analysis via Modified ASTM Method D-1946 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. See the data sheets for the reporting limits for each compound.

Requirement	*ASTM D-1946*	*ATL Modifications*
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A 3-point calibration curve is performed. Quantitation is based on a daily calibration standard which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL (2.0 mL for He and H2) on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 30% RPD for detections > 5 X's the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

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: BW-1

ID#: 0311403B-01A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112519**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.33**	**Date of Analysis:**	**11/25/03 03:43 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	11
Methane	0.00023	0.14
Carbon Dioxide	0.0023	7.1

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-A

ID#: 0311403B-02A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112520**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.33**	**Date of Analysis:**	**11/25/03 04:06 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	7.2
Methane	0.00023	0.15
Carbon Dioxide	0.0023	7.3

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-B

ID#: 0311403B-03A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112521**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.33**	**Date of Analysis:**	**11/25/03 04:29 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	9.4
Methane	0.00023	0.071
Carbon Dioxide	0.0023	6.5

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-C

ID#: 0311403B-04A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112523**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.29**	**Date of Analysis:**	**11/25/03 05:17 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	16
Methane	0.00023	0.0034
Carbon Dioxide	0.0023	2.8

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-C Duplicate

ID#: 0311403B-04AA

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112524**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.29**	**Date of Analysis:**	**11/25/03 05:38 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	16
Methane	0.00023	0.0036
Carbon Dioxide	0.0023	2.8

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-D

ID#: 0311403B-05A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112525**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.05**	**Date of Analysis:**	**11/25/03 06:25 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	20
Methane	0.00020	Not Detected
Carbon Dioxide	0.0020	0.72

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-H

ID#: 0311403B-06A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112526**	**Date of Collection: 11/20/03**	
Dil. Factor:	**2.29**	**Date of Analysis: 11/25/03 06:45 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	15
Methane	0.00023	0.090
Carbon Dioxide	0.0023	3.2

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-I

ID#: 0311403B-07A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112527**	**Date of Collection:**	**11/20/03**
Dil. Factor:	**2.33**	**Date of Analysis:**	**11/25/03 07:05 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	7.0
Methane	0.00023	0.042
Carbon Dioxide	0.0023	9.6

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-N

ID#: 0311403B-08A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112528**	**Date of Collection: 11/20/03**	
Dil. Factor:	**2.29**	**Date of Analysis: 11/25/03 07:26 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	10
Methane	0.00023	0.0014
Carbon Dioxide	0.0023	8.1

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-10

ID#: 0311403B-09A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112529**	**Date of Collection:**	**11/20/03**
Dil. Factor:	**2.33**	**Date of Analysis:**	**11/25/03 07:46 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	6.8
Methane	0.00023	0.21
Carbon Dioxide	0.0023	8.2

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: VP10

ID#: 0311403B-10A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	3112530	Date of Collection:	11/19/03
Dil. Factor:	2.33	Date of Analysis:	11/25/03 08:06 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	16
Methane	0.00023	0.00028
Carbon Dioxide	0.0023	3.4

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0311403B-11A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/25/03 01:40 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	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#: 0311403B-12A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	3112502	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 11/25/03 12:22 AM	

Compound	%Recovery
Oxygen	89
Methane	96
Carbon Dioxide	99

Container Type: NA - Not Applicable

ARCADIS

0311403B

Laboratory Task Order No./P.O. No. ATL #3988 **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name: MITOCO803.0001
Project Location: LOVINGTON, NM
Laboratory: AIR TOXICS LTD
Project Manager: FRANK KIEFFER
Sampler(s)/Affiliation: R. MORGAN / ARCADIS
R LAING

	Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	BTEX TO-15	CH4, O2, CO2 ASTM 1946	Remarks	Total	
CA	BW-1	AIR	11/19 1457		✓	✓	1 liter	1	4.0"Hg
QA	MW-A		11/19 1545		✓	✓			4.0"Hg
CA	MW-B		11/19 1605		✓	✓			4.0"Hg
3A	MW-C		11/19 1629		✓	✓			3.5"Hg
5A	MW-D		11/19 1705		✓	✓			0.5"Hg
6A	MW-H		11/20 930		✓	✓			3.5"Hg
7A	MW-I		11/20 1005		✓	✓			4.0"Hg
8A	MW-N		11/20 1050		✓	✓			3.5"Hg
9A	MW-10		11/20 1050		✓	✓			4.0"Hg
0A	VP10		11/20 915		✓	✓			4.0"Hg
	VP30	> DO NOT RUN							
	VP90								

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 12

Relinquished by: R. Laing	Organization: Arcadis	Date 11/20/03	Time 1500	Seal Intact?	
Received by: F Kieffer	Organization: Arcadis	Date 11/20/03	Time 1500	Yes	No N/A
Relinquished by: F Kieffer	Organization: Arcadis	Date / /	Time	Seal Intact?	
Received by: Samuel Thomas	Organization: ATL	Date 11/21/03	Time 945	Yes	No (N/A)

Special Instructions/Remarks: QUOTE ATTACHED

DO NOT RUN Samples: VP30, VP90

Delivery Method: ☐ In Person ☒ Common Carrier FedEx ☐ Lab Courier ☐ Other (SPECIFY)

MICROSEEPS

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300

Midland, TX 79701

Order #: P0311461
Report Date: 12/15/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Laboratory Results

Total pages in data package: 9

Lab Sample #	Client Sample ID
P0311461-01	MW-B
P0311461-02	MW-N
P0311461-03	MW-C
P0311461-04	BW-1
P0311461-05	MW-I
P0311461-06	MW-A
P0311461-07	MW-H

Microseeps test results meet all the requirements of the NELAC standards.

Approved By: Valerie Hall

The analytical results reported here are reliable and usable to the precision expressed in this report. As required by some regulating authorities, a full discussion of the uncertainty in our analytical results can be obtained at our web site or through customer service. Unless otherwise specified, all results are reported on a wet weight basis.

NOTES:

ARCADIS

Laboratory Task Order No./P.O. No. P0311461

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name MT000803.0001.00012

Project Location Pure Resources

Laboratory Microseeps

Project Manager Frank Kieffer

Sampler(s)/Affiliation ARCADIS

	Sample ID/Location	Matrix	Date Sampled	Time	ANALYSIS / METHOD / SIZE: (2) 40 ml special cap Permanent Gases	Remarks	Total
01	MW-B	L	11-19-03	1730	2		2
02	MW-N	L	11-20-03	1230	2		2
03	MW-C	L	11-21-03	915	2		2
04	BW-1	L	11-20-03	1515	2		2
05	MW-I	L	11-21-03	1300	2		2
06	MW-A	L	11-20-03	1720	2		2
07	MW-H	L	11-21-03	1050	2		2

Total No. of Bottles/Containers: 14

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by: [signature]	Organization: ARCADIS	Date 11/21/03	Time	Seal Intact?	Yes No N/A
Received by: [signature]	Organization: Arcadis	Date 11/24/03	Time 1230		
Relinquished by: [signature]	Organization:	Date / /	Time	Seal Intact?	Yes No N/A
Received by: [signature]	Organization: Microseeps	Date 11/25/03	Time 1200		

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier Fed-Ex (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

Order #: P0311461
Report Date: 12/15/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0311461-01

Sample Description	Matrix	Sampled Date/Time	Received
MW-B	Water	19 Nov. 03 17:30	25 Nov. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	28	0.60	mg/L	AM20GAX	jl	12/11/03
Methane	2.9	0.015	ug/L	AM20GAX	jl	12/11/03
Nitrogen	14	0.40	mg/L	AM20GAX	jl	12/11/03
Oxygen	3.1	0.15	mg/L	AM20GAX	jl	12/11/03

N - NELAC certified analysis

Order #: P0311461
Report Date: 12/15/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0311461-02

Sample Description	Matrix	Sampled Date/Time	Received
MW-N	Water	20 Nov. 03 12:30	25 Nov. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	24	0.60	mg/L	AM20GAX	jl	12/11/03
Methane	0.94	0.015	ug/L	AM20GAX	jl	12/11/03
Nitrogen	13	0.40	mg/L	AM20GAX	jl	12/11/03
Oxygen	4.9	0.15	mg/L	AM20GAX	jl	12/11/03

N - NELAC certified analysis

Order #: P0311461
Report Date: 12/15/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0311461-03

Sample Description	Matrix	Sampled Date/Time	Received
MW-C	Water	21 Nov. 03 9:15	25 Nov. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	43	0.60	mg/L	AM20GAX	jl	12/11/03
Methane	5.3	0.015	ug/L	AM20GAX	jl	12/11/03
Nitrogen	15	0.40	mg/L	AM20GAX	jl	12/11/03
Oxygen	0.94	0.15	mg/L	AM20GAX	jl	12/11/03

N - NELAC certified analysis

Order #: P0311461
Report Date: 12/15/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0311461-04

Sample Description	Matrix	Sampled Date/Time	Received
BW-1	Water	20 Nov. 03 15:15	25 Nov. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	75	0.60	mg/L	AM20GAX	jl	12/11/03
Methane	19	0.015	ug/L	AM20GAX	jl	12/11/03
Nitrogen	13	0.40	mg/L	AM20GAX	jl	12/11/03
Oxygen	0.70	0.15	mg/L	AM20GAX	jl	12/11/03

N - NELAC certified analysis

Order #: P0311461
Report Date: 12/15/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0311461-05

Sample Description	Matrix	Sampled Date/Time	Received
MW-I	Water	21 Nov. 03 13:00	25 Nov. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	900	0.60	mg/L	AM20GAX	jl	12/11/03
Methane	2.6	0.015	ug/L	AM20GAX	jl	12/11/03
Nitrogen	3.9	0.40	mg/L	AM20GAX	jl	12/11/03
Oxygen	1.6	0.15	mg/L	AM20GAX	jl	12/11/03

N - NELAC certified analysis

Order #: P0311461
Report Date: 12/15/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0311461-06

Sample Description	Matrix	Sampled Date/Time	Received
MW-A	Water	20 Nov. 03 17:20	25 Nov. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	100	0.60	mg/L	AM20GAX	jl	12/11/03
Methane	5.0	0.015	ug/L	AM20GAX	jl	12/11/03
Nitrogen	15	0.40	mg/L	AM20GAX	jl	12/11/03
Oxygen	1.4	0.15	mg/L	AM20GAX	jl	12/11/03

N - NELAC certified analysis

Order #: P0311461
Report Date: 12/15/03
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0311461-07

Sample Description	Matrix	Sampled Date/Time	Received
MW-H	Water	21 Nov. 03 10:50	25 Nov. 03

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	45	0.60	mg/L	AM20GAX	jl	12/11/03
Methane	4.4	0.015	ug/L	AM20GAX	jl	12/11/03
Nitrogen	16	0.40	mg/L	AM20GAX	jl	12/11/03
Oxygen	0.98	0.15	mg/L	AM20GAX	jl	12/11/03

N - NELAC certified analysis

ARCADIS

Laboratory Task Order No./P.O. No. [redacted] **CHAIN-OF-CUSTODY RECORD** Page [redacted] of 1

Project Number/Name 11T000801.0001.T0012

Project Location LOVINGTON, NM

Laboratory EA

Project Manager FRANK KELLER

Sampler(s)/Affiliation _____

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: BTEX						Remarks	Total
VP 10	Soil	12/3-12/04		X							1
VP 30	"	"		X							1
VP 10	"	"		X							1

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 3

Relinquished by: [signature]	Organization: ARCADIS	Date 12/5/03	Time 930	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes	No N/A
Relinquished by: _____	Organization: _____	Date / /	Time _____	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes	No N/A

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier Fedex (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

EA GROUP

Laboratory Analytical Report

Arcadis Geraghty & Miller
1004 N Big Spring St., #300
Midland, TX 79701

Attention:
Frank Kieffer

Project Identification

MT000803-001 T0012,
Lovington NM

Purchase Order:

EA Group
Order Number
0401-00056

Donald R. Richner, CIH
Laboratory Manager

January 8, 2004

EA GROUP

Project Summary

The following analytical report contains the results as requested for samples submitted to EA Group. The results included in this report have been reviewed for compliance with the analytical methods indicated in this report. All data have been found to be compliant with accepted laboratory protocol. Exceptions, if any, are noted below. Analytes appearing in bold type were analyzed at a subcontract facility. EA Group is VAP, AIHA and ELLAP accredited. For industrial hygiene reports, air and/or surface concentrations results are based upon field sampling information provided by the client. Unless otherwise noted the following apply: Sample condition was acceptable upon receipt and Industrial hygiene results will not be blank corrected.

Data Interpretation

For assistance with report interpretation or questions regarding regulatory limits, please contact Client Services at 440-951-3514 or customerservice@eagroup-ohio.com.

Sample Summary

Sample Receive Date: 12/16/2003

EAG Sample Identification	Client Sample Identification	EAG Sample Identification	Client Sample Identification
040100056 - 001	VP10	040100056 - 002	VP30
040100056 - 003	VP90		

Quality Control Narrative

Please note that the sample results should be used for guidance purposes only, due to the extremely long exposure time of 216 hours.

****

 Unless noted, soil, sludge, and sediment results are reported on dry weight basis. The "Sample Reporting Limit" is based on the method used for analysis and does not refer to any regulatory limit. These results relate only to the items tested.

EA GROUP

EAG Workorder: 0401-00056 **Matrix:** OVM **Date Sampled:**

EAG ID: 0401-00056-001 **QC Batch / Analyst:** 046046/JAH **Date Received:** 12/16/2003

Client ID: VP10

Client Project: MT000803-001 T0012, Lovington NM

Parameter	Result	Reporting Limit	Units	Date Analyzed
Organics in Air: OSHA 7				12/19/2004
Benzene	<3.0	3.0	ug/sample	12/19/2004
Ethylbenzene	<3.0	3.0	ug/sample	12/19/2004
Toluene	<3.0	3.0	ug/sample	12/19/2004
Xylenes	<3.0	3.0	ug/sample	12/19/2004
Passive Badge Desorption	Complete		ug/sample	12/19/2004

EA GROUP

EAG Workorder: 0401-00056 **Matrix:** OVM **Date Sampled:**

EAG ID: 0401-00056-002 **QC Batch / Analyst:** 046046/JAH **Date Received:** 12/16/2003

Client ID: VP30

Client Project: MT000803-001 T0012, Lovington NM

Parameter	Result	Reporting Limit	Units	Date Analyzed
Organics in Air: OSHA 7				12/19/2004
Benzene	41	3.0	ug/sample	12/19/2004
Ethylbenzene	<3.0	3.0	ug/sample	12/19/2004
Toluene	<3.0	3.0	ug/sample	12/19/2004
Xylenes	<3.0	3.0	ug/sample	12/19/2004
Passive Badge Desorption	Complete		ug/sample	12/19/2004

EA GROUP

EAG Workorder: 0401-00056 **Matrix:** OVM **Date Sampled:**

EAG ID: 0401-00056-003 **QC Batch / Analyst:** 046046/JAH **Date Received:** 12/16/2003

Client ID: VP90

Client Project: MT000803-001 T0012, Lovington NM

Parameter	Result	Reporting Limit	Units	Date Analyzed
Organics in Air: OSHA 7				12/19/2004
Benzene	<3.0	3.0	ug/sample	12/19/2004
Ethylbenzene	<3.0	3.0	ug/sample	12/19/2004
Toluene	<3.0	3.0	ug/sample	12/19/2004
Xylenes	<3.0	3.0	ug/sample	12/19/2004
Passive Badge Desorption	Complete		ug/sample	12/19/2004

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name: 30000803.0001 T0012

Project Location: LOVINGTON, NM

Laboratory: EA

Project Manager: FRANK KIEFFER

Sampler(s)/Affiliation: _____

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: BTEX						Remarks	Total
VP 10	Soil	12/3-12/03		X							1
VP 30	"	"		X							1
VP 90	"	"		X							1

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 3

				Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 12/5/03	Time 930	Yes No N/A
Received by: [signature]	Organization: FAG	Date 12/6/03	Time 1000	
Relinquished by: _____	Organization: _____	Date / /	Time _____	Seal Intact?
Received by: _____	Organization: _____	Date / /	Time _____	Yes No N/A

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier Fed ex (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

Summary Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: January 23, 2004
Work Order: 4011606

Project Location: Pure Resources
Project Number: MT000803.0001.00012

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
25165	MW-N	water	2004-01-13	10:20	2004-01-16
25166	MW-I	water	2004-01-13	13:45	2004-01-16
25167	MW-C	water	2004-01-13	15:10	2004-01-16
25168	MW-H	water	2004-01-13	16:35	2004-01-16
25169	MW-B	water	2004-01-13	17:50	2004-01-16
25170	MW-A	water	2004-01-14	16:40	2004-01-16
25171	BW-1	water	2004-01-15	10:40	2004-01-16

	BTEX			
Sample - Field Code	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (isomers) (mg/L)
25165 - MW-N	<0.00100	<0.00100	<0.00100	<0.00100
25166 - MW-I	0.708	0.0193	<0.0100	<0.0100
25167 - MW-C	0.00860	0.00210	<0.00100	<0.00100
25168 - MW-H	0.0600	0.0115	<0.00100	0.0105
25169 - MW-B	0.00660	0.00300	<0.00100	<0.00100
25170 - MW-A	7.81	<0.200	<0.200	<0.200
25171 - BW-1	<0.00100	<0.00100	<0.00100	<0.00100

Sample: 25165 - MW-N

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		182	mg/L as CaCo3	4.00
Total Alkalinity		182	mg/L as CaCo3	4.00
Chloride		45.2	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		0.333	mg/L	0.0500
Sulfate		40.6	mg/L	0.500
Total Dissolved Solids		379.0	mg/L	10.00
Total Organic Carbon		<1.00	mg/L	1.00

Sample: 25166 - MW-I

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		206	mg/L as CaCo3	4.00
Total Alkalinity		206	mg/L as CaCo3	4.00
Chloride		34.4	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		0.354	mg/L	0.0500
Sulfate		41.3	mg/L	0.500
Total Dissolved Solids		393.0	mg/L	10.00
Total Organic Carbon		1.71	mg/L	1.00

Sample: 25167 - MW-C

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		220	mg/L as CaCo3	4.00
Total Alkalinity		220	mg/L as CaCo3	4.00
Chloride		21.7	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		8.25	mg/L	0.0500
Sulfate		32.2	mg/L	0.500
Total Dissolved Solids		362.0	mg/L	10.00
Total Organic Carbon		1.31	mg/L	1.00

Sample: 25168 - MW-H

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		180	mg/L as CaCo3	4.00
Total Alkalinity		180	mg/L as CaCo3	4.00
Chloride		20.9	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		0.200	mg/L	0.0500
Sulfate		37.9	mg/L	0.500
Total Dissolved Solids		321.0	mg/L	10.00
Total Organic Carbon		<1.00	mg/L	1.00

Sample: 25169 - MW-B

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		178	mg/L as CaCo3	4.00
Total Alkalinity		178	mg/L as CaCo3	4.00
Chloride		19.8	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		0.475	mg/L	0.0500
Sulfate		35.4	mg/L	0.500

continued ...

sample 25169 continued ...

Param	Flag	Result	Units	RL
Total Dissolved Solids		324.0	mg/L	10.00
Total Organic Carbon		<1.00	mg/L	1.00

Sample: 25170 - MW-A

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		490	mg/L as CaCo3	4.00
Total Alkalinity		490	mg/L as CaCo3	4.00
Chloride		34.8	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		1.43	mg/L	0.0500
Sulfate		33.7	mg/L	0.500
Total Dissolved Solids		670.0	mg/L	10.00
Total Organic Carbon		12.3	mg/L	1.00

Sample: 25171 - BW-1

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		120	mg/L as CaCo3	4.00
Total Alkalinity		120	mg/L as CaCo3	4.00
Chloride		21.4	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		0.124	mg/L	0.0500
Sulfate		64.3	mg/L	0.500
Total Dissolved Solids		295.0	mg/L	10.00
Total Organic Carbon		<1.00	mg/L	1.00

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
155 McCutcheon, Suite H El Paso, Texas 79932 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: January 23, 2004

Work Order: 4011606

Project Location: Pure Resources
Project Number: MT000803.0001.00012

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
25165	MW-N	water	2004-01-13	10:20	2004-01-16
25166	MW-I	water	2004-01-13	13:45	2004-01-16
25167	MW-C	water	2004-01-13	15:10	2004-01-16
25168	MW-H	water	2004-01-13	16:35	2004-01-16
25169	MW-B	water	2004-01-13	17:50	2004-01-16
25170	MW-A	water	2004-01-14	16:40	2004-01-16
25171	BW-1	water	2004-01-15	10:40	2004-01-16

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 28 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 25165 - MW-N

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	6987	Date Analyzed:	2004-01-20	Analyzed By:	RS
Prep Batch:	6252	Date Prepared:	2004-01-20	Prepared By:	RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		182		mg/L as CaCo3	1	4.00
Total Alkalinity		182		mg/L as CaCo3	1	4.00

Sample: 25165 - MW-N

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	6976	Date Analyzed:	2004-01-17	Analyzed By:	MT
Prep Batch:	6238	Date Prepared:	2004-01-17	Prepared By:	MT

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		<0.00100		mg/L	1	0.00100
Toluene		<0.00100		mg/L	1	0.00100
Ethylbenzene		<0.00100		mg/L	1	0.00100
Xylene (isomers)		<0.00100		mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.110	mg/L	1	0.100	110	79.7 - 119
4-Bromofluorobenzene (4-BFB)		0.112	mg/L	1	0.100	112	65.6 - 141

Sample: 25165 - MW-N

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	6934	Date Analyzed:	2004-01-19	Analyzed By:	JSW
Prep Batch:	6207	Date Prepared:	2004-01-16	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		45.2		mg/L	5	0.500

Sample: 25165 - MW-N

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	7008	Date Analyzed:	2004-01-20	Analyzed By:	BC
Prep Batch:	6210	Date Prepared:	2004-01-19	Prepared By:	TP

continued ...

sample 25165 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 25165 - MW-N

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	7004	Date Analyzed:	2004-01-20	Analyzed By:	BC
Prep Batch:	6213	Date Prepared:	2004-01-19	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Iron		0.333	mg/L	1	0.0500

Sample: 25165 - MW-N

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	6934	Date Analyzed:	2004-01-19	Analyzed By:	JSW
Prep Batch:	6207	Date Prepared:	2004-01-16	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		40.6	mg/L	5	0.500

Sample: 25165 - MW-N

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	6893	Date Analyzed:	2004-01-19	Analyzed By:	JSW
Prep Batch:	6180	Date Prepared:	2004-01-16	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		379.0	mg/L	1	10.00

Sample: 25165 - MW-N

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	6913	Date Analyzed:	2004-01-18	Analyzed By:	RC
Prep Batch:	6199	Date Prepared:	2004-01-18	Prepared By:	RC

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		<1.00	mg/L	1	1.00

Sample: 25166 - MW-I

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	6987	Date Analyzed:	2004-01-20	Analyzed By:	RS
Prep Batch:	6252	Date Prepared:	2004-01-20	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		206	mg/L as CaCo3	1	4.00
Total Alkalinity		206	mg/L as CaCo3	1	4.00

Sample: 25166 - MW-I

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	6995	Date Analyzed:	2004-01-20	Analyzed By:	BS
Prep Batch:	6258	Date Prepared:	2004-01-20	Prepared By:	BS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		0.708	mg/L	10	0.00100
Toluene		0.0193	mg/L	10	0.00100
Ethylbenzene		<0.0100	mg/L	10	0.00100
Xylene (isomers)		<0.0100	mg/L	10	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.10	mg/L	10	0.100	110	79.7 - 119
4-Bromofluorobenzene (4-BFB)		1.12	mg/L	10	0.100	112	65.6 - 141

Sample: 25166 - MW-I

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	6934	Date Analyzed:	2004-01-19	Analyzed By:	JSW
Prep Batch:	6207	Date Prepared:	2004-01-16	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		34.4	mg/L	5	0.500

Sample: 25166 - MW-I

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	7008	Date Analyzed:	2004-01-20	Analyzed By:	BC
Prep Batch:	6210	Date Prepared:	2004-01-19	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 25166 - MW-I

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	7004	Date Analyzed:	2004-01-20	Analyzed By:	BC
Prep Batch:	6213	Date Prepared:	2004-01-19	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Iron		0.354		mg/L	1	0.0500

Sample: 25166 - MW-I

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	6934	Date Analyzed:	2004-01-19	Analyzed By:	JSW
Prep Batch:	6207	Date Prepared:	2004-01-16	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Sulfate		41.3		mg/L	5	0.500

Sample: 25166 - MW-I

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	7014	Date Analyzed:	2004-01-21	Analyzed By:	JSW
Prep Batch:	6271	Date Prepared:	2004-01-20	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Dissolved Solids		393.0		mg/L	1	10.00

Sample: 25166 - MW-I

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	6913	Date Analyzed:	2004-01-18	Analyzed By:	RC
Prep Batch:	6199	Date Prepared:	2004-01-18	Prepared By:	RC

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Organic Carbon		1.71		mg/L	1	1.00

Sample: 25167 - MW-C

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	6987	Date Analyzed:	2004-01-20	Analyzed By:	RS
Prep Batch:	6252	Date Prepared:	2004-01-20	Prepared By:	RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00

continued ...

sample 25167 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		220	mg/L as CaCo3	1	4.00
Total Alkalinity		220	mg/L as CaCo3	1	4.00

Sample: 25167 - MW-C

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	6976	Date Analyzed:	2004-01-17	Analyzed By:	MT
Prep Batch:	6238	Date Prepared:	2004-01-17	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		0.00860	mg/L	1	0.00100
Toluene		0.00210	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.103	mg/L	1	0.100	103	79.7 - 119
4-Bromofluorobenzene (4-BFB)		0.107	mg/L	1	0.100	107	65.6 - 141

Sample: 25167 - MW-C

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	7048	Date Analyzed:	2004-01-23	Analyzed By:	JSW
Prep Batch:	6304	Date Prepared:	2004-01-22	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		21.7	mg/L	5	0.500

Sample: 25167 - MW-C

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	7008	Date Analyzed:	2004-01-20	Analyzed By:	BC
Prep Batch:	6210	Date Prepared:	2004-01-19	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 25167 - MW-C

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	7004	Date Analyzed:	2004-01-20	Analyzed By:	BC

Prep Batch: 6213 Date Prepared: 2004-01-19 Prepared By: TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Iron		8.25		mg/L	1	0.0500

Sample: 25167 - MW-C

Analysis: SO4 (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 7048 Date Analyzed: 2004-01-23 Analyzed By: JSW
Prep Batch: 6304 Date Prepared: 2004-01-22 Prepared By: JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Sulfate		32.2		mg/L	5	0.500

Sample: 25167 - MW-C

Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 7014 Date Analyzed: 2004-01-21 Analyzed By: JSW
Prep Batch: 6271 Date Prepared: 2004-01-20 Prepared By: JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Dissolved Solids		362.0		mg/L	1	10.00

Sample: 25167 - MW-C

Analysis: TOC Analytical Method: E 415.1 Prep Method: N/A
QC Batch: 6913 Date Analyzed: 2004-01-18 Analyzed By: RC
Prep Batch: 6199 Date Prepared: 2004-01-18 Prepared By: RC

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Organic Carbon		1.31		mg/L	1	1.00

Sample: 25168 - MW-H

Analysis: Alkalinity Analytical Method: SM 2320B Prep Method: N/A
QC Batch: 6987 Date Analyzed: 2004-01-20 Analyzed By: RS
Prep Batch: 6252 Date Prepared: 2004-01-20 Prepared By: RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		180		mg/L as CaCo3	1	4.00
Total Alkalinity		180		mg/L as CaCo3	1	4.00

Sample: 25168 - MW-H

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	6976	Date Analyzed:	2004-01-17	Analyzed By:	MT
Prep Batch:	6238	Date Prepared:	2004-01-17	Prepared By:	MT

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		0.0600		mg/L	1	0.00100
Toluene		0.0115		mg/L	1	0.00100
Ethylbenzene		<0.00100		mg/L	1	0.00100
Xylene (isomers)		0.0105		mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.108	mg/L	1	0.100	108	79.7 - 119
4-Bromofluorobenzene (4-BFB)		0.111	mg/L	1	0.100	111	65.6 - 141

Sample: 25168 - MW-H

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	7048	Date Analyzed:	2004-01-23	Analyzed By:	JSW
Prep Batch:	6304	Date Prepared:	2004-01-22	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		20.9		mg/L	5	0.500

Sample: 25168 - MW-H

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	7008	Date Analyzed:	2004-01-20	Analyzed By:	BC
Prep Batch:	6210	Date Prepared:	2004-01-19	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Iron		<0.0500		mg/L	1	0.0500

Sample: 25168 - MW-H

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	7004	Date Analyzed:	2004-01-20	Analyzed By:	BC
Prep Batch:	6213	Date Prepared:	2004-01-19	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Iron		0.200		mg/L	1	0.0500

Sample: 25168 - MW-H

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	7048	Date Analyzed:	2004-01-23	Analyzed By:	JSW
Prep Batch:	6304	Date Prepared:	2004-01-22	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		37.9	mg/L	5	0.500

Sample: 25168 - MW-H

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	7014	Date Analyzed:	2004-01-21	Analyzed By:	JSW
Prep Batch:	6271	Date Prepared:	2004-01-20	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		321.0	mg/L	1	10.00

Sample: 25168 - MW-H

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	6913	Date Analyzed:	2004-01-18	Analyzed By:	RC
Prep Batch:	6199	Date Prepared:	2004-01-18	Prepared By:	RC

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		<1.00	mg/L	1	1.00

Sample: 25169 - MW-B

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	6987	Date Analyzed:	2004-01-20	Analyzed By:	RS
Prep Batch:	6252	Date Prepared:	2004-01-20	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		178	mg/L as CaCo3	1	4.00
Total Alkalinity		178	mg/L as CaCo3	1	4.00

Sample: 25169 - MW-B

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	6976	Date Analyzed:	2004-01-17	Analyzed By:	MT
Prep Batch:	6238	Date Prepared:	2004-01-17	Prepared By:	MT

continued ...

sample 25169 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		0.00660	mg/L	1	0.00100
Toluene		0.00300	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene (isomers)		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.106	mg/L	1	0.100	106	79.7 - 119
4-Bromofluorobenzene (4-BFB)		0.114	mg/L	1	0.100	114	65.6 - 141

Sample: 25169 - MW-B

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	7048	Date Analyzed:	2004-01-23	Analyzed By:	JSW
Prep Batch:	6304	Date Prepared:	2004-01-22	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		19.8	mg/L	5	0.500

Sample: 25169 - MW-B

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	7008	Date Analyzed:	2004-01-20	Analyzed By:	BC
Prep Batch:	6210	Date Prepared:	2004-01-19	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 25169 - MW-B

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	7004	Date Analyzed:	2004-01-20	Analyzed By:	BC
Prep Batch:	6213	Date Prepared:	2004-01-19	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Iron		0.475	mg/L	1	0.0500

Sample: 25169 - MW-B

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A

QC Batch: 7048 Date Analyzed: 2004-01-23 Analyzed By: JSW
Prep Batch: 6304 Date Prepared: 2004-01-22 Prepared By: JSW

Parameter	Flag	Result	RL Units	Dilution	RL
Sulfate		35.4	mg/L	5	0.500

Sample: 25169 - MW-B

Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 7014 Date Analyzed: 2004-01-21 Analyzed By: JSW
Prep Batch: 6271 Date Prepared: 2004-01-20 Prepared By: JSW

Parameter	Flag	Result	RL Units	Dilution	RL
Total Dissolved Solids		324.0	mg/L	1	10.00

Sample: 25169 - MW-B

Parameter	Flag	Result	RL Units	Dilution	RL
Total Organic Carbon		<1.00	mg/L	1	1.00

Sample: 25170 - MW-A

Analysis: Alkalinity Analytical Method: SM 2320B Prep Method: N/A
QC Batch: 6987 Date Analyzed: 2004-01-20 Analyzed By: RS
Prep Batch: 6252 Date Prepared: 2004-01-20 Prepared By: RS

Parameter	Flag	Result	RL Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		490	mg/L as CaCo3	1	4.00
Total Alkalinity		490	mg/L as CaCo3	1	4.00

Sample: 25170 - MW-A

Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5030B
QC Batch: 6995 Date Analyzed: 2004-01-20 Analyzed By: BS
Prep Batch: 6258 Date Prepared: 2004-01-20 Prepared By: BS

Parameter	Flag	Result	RL Units	Dilution	RL
Benzene		7.81	mg/L	200	0.00100
Toluene		<0.200	mg/L	200	0.00100
Ethylbenzene		<0.200	mg/L	200	0.00100
Xylene (isomers)		<0.200	mg/L	200	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		22.1	mg/L	200	0.100	110	79.7 - 119
4-Bromofluorobenzene (4-BFB)		22.3	mg/L	200	0.100	111	65.6 - 141

Sample: 25170 - MW-A

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	7048	Date Analyzed:	2004-01-23	Analyzed By:	JSW
Prep Batch:	6304	Date Prepared:	2004-01-22	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		34.8	mg/L	10	0.500

Sample: 25170 - MW-A

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	7008	Date Analyzed:	2004-01-20	Analyzed By:	BC
Prep Batch:	6210	Date Prepared:	2004-01-19	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 25170 - MW-A

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	7004	Date Analyzed:	2004-01-20	Analyzed By:	BC
Prep Batch:	6213	Date Prepared:	2004-01-19	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Iron		1.43	mg/L	1	0.0500

Sample: 25170 - MW-A

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	7048	Date Analyzed:	2004-01-23	Analyzed By:	JSW
Prep Batch:	6304	Date Prepared:	2004-01-22	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		33.7	mg/L	10	0.500

Sample: 25170 - MW-A

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A

QC Batch: 7014 Date Analyzed: 2004-01-21 Analyzed By: JSW
Prep Batch: 6271 Date Prepared: 2004-01-20 Prepared By: JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Dissolved Solids		670.0		mg/L	1	10.00

Sample: 25170 - MW-A

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Organic Carbon		12.3		mg/L	1	1.00

Sample: 25171 - BW-1

Analysis: Alkalinity Analytical Method: SM 2320B Prep Method: N/A
QC Batch: 7058 Date Analyzed: 2004-01-22 Analyzed By: RS
Prep Batch: 6314 Date Prepared: 2004-01-22 Prepared By: RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00		mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		120		mg/L as CaCo3	1	4.00
Total Alkalinity		120		mg/L as CaCo3	1	4.00

Sample: 25171 - BW-1

Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5030B
QC Batch: 6996 Date Analyzed: 2004-01-20 Analyzed By: BS
Prep Batch: 6259 Date Prepared: 2004-01-20 Prepared By: BS

Parameter	Flag	Result	RL	Units	Dilution	RL
Benzene		<0.00100		mg/L	1	0.00100
Toluene		<0.00100		mg/L	1	0.00100
Ethylbenzene		<0.00100		mg/L	1	0.00100
Xylene (isomers)		<0.00100		mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.114	mg/L	1	0.100	114	79.7 - 119
4-Bromofluorobenzene (4-BFB)		0.112	mg/L	1	0.100	112	65.6 - 141

Sample: 25171 - BW-1

Analysis: Chloride (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 7048 Date Analyzed: 2004-01-23 Analyzed By: JSW
Prep Batch: 6304 Date Prepared: 2004-01-22 Prepared By: JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		21.4	mg/L	5	0.500

Sample: 25171 - BW-1

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	7008	Date Analyzed:	2004-01-20	Analyzed By:	BC
Prep Batch:	6210	Date Prepared:	2004-01-19	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 25171 - BW-1

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	7004	Date Analyzed:	2004-01-20	Analyzed By:	BC
Prep Batch:	6213	Date Prepared:	2004-01-19	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Iron		0.124	mg/L	1	0.0500

Sample: 25171 - BW-1

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	7048	Date Analyzed:	2004-01-23	Analyzed By:	JSW
Prep Batch:	6304	Date Prepared:	2004-01-22	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		64.3	mg/L	5	0.500

Sample: 25171 - BW-1

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	7014	Date Analyzed:	2004-01-21	Analyzed By:	JSW
Prep Batch:	6271	Date Prepared:	2004-01-20	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		295.0	mg/L	1	10.00

Sample: 25171 - BW-1

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		<1.00	mg/L	1	1.00

Method Blank (1) QC Batch: 6893

Parameter	Flag	Result	Units	RL
Total Dissolved Solids		<10.00	mg/L	10

Method Blank (1) QC Batch: 6913

Parameter	Flag	Result	Units	RL
Total Organic Carbon		<1.00	mg/L	1

Method Blank (1) QC Batch: 6934

Parameter	Flag	Result	Units	RL
Chloride		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 6934

Parameter	Flag	Result	Units	RL
Sulfate		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 6976

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene (isomers)		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.113	mg/L	1	0.100	113	76.2 - 119
4-Bromofluorobenzene (4-BFB)		0.117	mg/L	1	0.100	117	58.5 - 136

Method Blank (1) QC Batch: 6987

Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 6995

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene (isomers)		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.114	mg/L	1	0.100	114	76.2 - 119
4-Bromofluorobenzene (4-BFB)		0.109	mg/L	1	0.100	109	58.5 - 136

Method Blank (1) QC Batch: 6996

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene (isomers)		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.116	mg/L	1	0.100	116	76.2 - 119
4-Bromofluorobenzene (4-BFB)		0.114	mg/L	1	0.100	114	58.5 - 136

Method Blank (1) QC Batch: 7004

Parameter	Flag	Result	Units	RL
Total Iron		<0.0500	mg/L	0.05

Method Blank (1) QC Batch: 7008

Parameter	Flag	Result	Units	RL
Dissolved Iron		<0.0500	mg/L	0.05

Method Blank (1) QC Batch: 7014

Parameter	Flag	Result	Units	RL
Total Dissolved Solids		<10.00	mg/L	10

Method Blank (1) QC Batch: 7021

Parameter	Flag	Result	Units	RL
Total Organic Carbon		<1.00	mg/L	1

Method Blank (1) QC Batch: 7048

Parameter	Flag	Result	Units	RL
Chloride		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 7048

Parameter	Flag	Result	Units	RL
Sulfate		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 7058

Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Duplicate (1) QC Batch: 6893

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	800.0	798.0	mg/L	2	0	8.7

Duplicate (1) QC Batch: 6987

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20

continued ...

duplicate continued ...

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	168	162	mg/L as CaCo3	1	4	20
Total Alkalinity	168	162	mg/L as CaCo3	1	4	4.8

Duplicate (1) QC Batch: 7014

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	2072	1996	mg/L	2	4	8.7

Duplicate (1) QC Batch: 7058

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	116	120	mg/L as CaCo3	1	3	20
Total Alkalinity	116	120	mg/L as CaCo3	1	3	4.8

Laboratory Control Spike (LCS-1) QC Batch: 6913

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	5.48	5.24	mg/L	1	5.00	<0.843	110	4	78 - 120	13

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 6934

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	11.3	11.3	mg/L	1	12.5	<0.337	90	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 6934

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Sulfate	12.0	11.9	mg/L	1	12.5	<0.409	96	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 6976

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.110	0.111	mg/L	1	0.100	<0.000238	110	1	84.6 - 117	20
Toluene	0.106	0.108	mg/L	1	0.100	<0.000532	106	2	80.9 - 115	20
Ethylbenzene	0.109	0.110	mg/L	1	0.100	<0.00160	109	1	77.6 - 119	20
Xylene (isomers)	0.329	0.335	mg/L	1	0.300	<0.00571	110	2	76.2 - 122	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.111	0.111	mg/L	1	0.100	111	111	79.7 - 119
4-Bromofluorobenzene (4-BFB)	0.116	0.116	mg/L	1	0.100	116	116	65.6 - 141

Laboratory Control Spike (LCS-1) QC Batch: 6995

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.110	0.0942	mg/L	1	0.100	<0.000238	110	15	84.6 - 117	20
Toluene	0.105	0.0922	mg/L	1	0.100	<0.000532	105	13	80.9 - 115	20
Ethylbenzene	0.109	0.0930	mg/L	1	0.100	<0.00160	109	16	77.6 - 119	20
Xylene (isomers)	0.329	0.278	mg/L	1	0.300	<0.00571	110	17	76.2 - 122	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.112	0.0971	mg/L	1	0.100	112	97	79.7 - 119
4-Bromofluorobenzene (4-BFB)	0.112	0.0963	mg/L	1	0.100	112	96	65.6 - 141

Laboratory Control Spike (LCS-1) QC Batch: 6996

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.110	0.104	mg/L	1	0.100	<0.000238	110	5	84.6 - 117	20
Toluene	0.105	0.0995	mg/L	1	0.100	<0.000532	105	5	80.9 - 115	20
Ethylbenzene	0.106	0.103	mg/L	1	0.100	<0.00160	106	3	77.6 - 119	20
Xylene (isomers)	0.322	0.310	mg/L	1	0.300	<0.00571	107	4	76.2 - 122	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.107	0.107	mg/L	1	0.100	107	107	79.7 - 119
4-Bromofluorobenzene (4-BFB)	0.109	0.111	mg/L	1	0.100	109	111	65.6 - 141

Laboratory Control Spike (LCS-1) QC Batch: 7004

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Iron	0.503	0.501	mg/L	1	0.500	<0.00281	101	0	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 7008

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Iron	0.504	0.510	mg/L	1	0.500	<0.00281	101	1	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 7021

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	4.82	4.95	mg/L	1	5.00	<0.843	96	3	78 - 120	13

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 7048

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	12.4	12.3	mg/L	1	12.5	<0.337	99	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 7048

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Sulfate	12.8	12.8	mg/L	1	12.5	<0.409	102	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 6913

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	5.60	5.44	mg/L	1	5.00	<0.843	112	3	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 6934

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	2030	2050	mg/L	100	12.5	917	89	1	74.3 - 118	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 6934

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Sulfate	1280	1310	mg/L	100	12.5	122	93	2	77.8 - 112	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 7004

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Iron	0.473	0.553	mg/L	1	0.500	<0.00281	95	16	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 7008

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Iron	0.505	0.505	mg/L	1	0.500	<0.00281	101	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 7021

Param		MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	[12]	5.94	5.73	mg/L	1	5.00	2.09	77	4	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 7048

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	141	143	mg/L	10	12.5	34.8	85	1	74.3 - 118	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 7048

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Sulfate	150	149	mg/L	10	12.5	33.7	93	1	77.8 - 112	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1) QC Batch: 6893

[1]Matrix spike recovery out of limits due to sample matrix.
[2]Matrix spike recovery out of limits due to sample matrix.

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	1023	102	90 - 110	2004-01-19

Standard (CCV-1) QC Batch: 6893

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	970.0	97	90 - 110	2004-01-19

Standard (ICV-1) QC Batch: 6913

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	5.38	108	85 - 115	2004-01-18

Standard (CCV-1) QC Batch: 6913

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	5.53	111	85 - 115	2004-01-18

Standard (ICV-1) QC Batch: 6934

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	11.4	91	90 - 110	2004-01-19

Standard (ICV-1) QC Batch: 6934

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	12.5	12.0	96	90 - 110	2004-01-19

Standard (CCV-1) QC Batch: 6934

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	11.3	90	90 - 110	2004-01-19

Standard (CCV-1) QC Batch: 6934

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	12.5	11.9	95	90 - 110	2004-01-19

Standard (ICV-1) QC Batch: 6976

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.110	110	85 - 115	2004-01-17
Toluene		mg/L	0.100	0.107	107	85 - 115	2004-01-17
Ethylbenzene		mg/L	0.100	0.110	110	85 - 115	2004-01-17
Xylene (isomers)		mg/L	0.300	0.332	111	85 - 115	2004-01-17

Standard (CCV-1) QC Batch: 6976

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.107	107	85 - 115	2004-01-17
Toluene		mg/L	0.100	0.104	104	85 - 115	2004-01-17
Ethylbenzene		mg/L	0.100	0.106	106	85 - 115	2004-01-17
Xylene (isomers)		mg/L	0.300	0.322	107	85 - 115	2004-01-17

Standard (CCV-2) QC Batch: 6976

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.115	115	85 - 115	2004-01-17
Toluene		mg/L	0.100	0.105	105	85 - 115	2004-01-17
Ethylbenzene		mg/L	0.100	0.111	111	85 - 115	2004-01-17
Xylene (isomers)		mg/L	0.300	0.331	110	85 - 115	2004-01-17

Standard (ICV-1) QC Batch: 6987

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2004-01-20
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2004-01-20
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2004-01-20
Total Alkalinity		mg/L as CaCo3	250	238	95	90 - 110	2004-01-20

Standard (CCV-1) QC Batch: 6987

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2004-01-20

continued ...

standard continued ...

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2004-01-20
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2004-01-20
Total Alkalinity		mg/L as CaCo3	250	242	97	90 - 110	2004-01-20

Standard (CCV-1) QC Batch: 6995

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.112	112	85 - 115	2004-01-20
Toluene		mg/L	0.100	0.108	108	85 - 115	2004-01-20
Ethylbenzene		mg/L	0.100	0.110	110	85 - 115	2004-01-20
Xylene (isomers)		mg/L	0.300	0.329	110	85 - 115	2004-01-20

Standard (CCV-2) QC Batch: 6995

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.107	107	85 - 115	2004-01-20
Toluene		mg/L	0.100	0.103	103	85 - 115	2004-01-20
Ethylbenzene		mg/L	0.100	0.108	108	85 - 115	2004-01-20
Xylene (isomers)		mg/L	0.300	0.324	108	85 - 115	2004-01-20

Standard (ICV-1) QC Batch: 6996

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.108	108	85 - 115	2004-01-20
Toluene		mg/L	0.100	0.105	105	85 - 115	2004-01-20
Ethylbenzene		mg/L	0.100	0.109	109	85 - 115	2004-01-20
Xylene (isomers)		mg/L	0.300	0.326	109	85 - 115	2004-01-20

Standard (CCV-1) QC Batch: 6996

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.108	108	85 - 115	2004-01-20
Toluene		mg/L	0.100	0.106	106	85 - 115	2004-01-20
Ethylbenzene		mg/L	0.100	0.108	108	85 - 115	2004-01-20
Xylene (isomers)		mg/L	0.300	0.328	109	85 - 115	2004-01-20

Standard (ICV-1) QC Batch: 7004

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Iron		mg/L	1.00	1.01	101	90 - 110	2004-01-20

Standard (CCV-1) QC Batch: 7004

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Iron		mg/L	1.00	1.02	102	90 - 110	2004-01-20

Standard (ICV-1) QC Batch: 7008

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Iron		mg/L	1.00	1.01	101	90 - 110	2004-01-20

Standard (CCV-1) QC Batch: 7008

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Iron		mg/L	1.00	1.03	103	90 - 110	2004-01-20

Standard (ICV-1) QC Batch: 7014

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	981.0	98	90 - 110	2004-01-21

Standard (CCV-1) QC Batch: 7014

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	1006	101	90 - 110	2004-01-21

Standard (ICV-1) QC Batch: 7021

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	5.15	103	85 - 115	2004-01-21

Standard (CCV-1) QC Batch: 7021

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	5.37	107	85 - 115	2004-01-21

Standard (ICV-1) QC Batch: 7048

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	12.3	98	90 - 110	2004-01-23

Standard (ICV-1) QC Batch: 7048

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	12.5	12.7	102	90 - 110	2004-01-23

Standard (CCV-1) QC Batch: 7048

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	12.3	98	90 - 110	2004-01-23

Standard (CCV-1) QC Batch: 7048

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	12.5	12.7	102	90 - 110	2004-01-23

Standard (ICV-1) QC Batch: 7058

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2004-01-22
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2004-01-22
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2004-01-22
Total Alkalinity		mg/L as CaCo3	250	242	97	90 - 110	2004-01-22

Standard (CCV-1) QC Batch: 7058

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2004-01-22
Carbonate Alkalinity		mg/L as CaCo3	0.00	<1.00		0 - 200	2004-01-22

continued ...

standard continued ...

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Bicarbonate Alkalinity		mg/L as CaCo3	0.00	<4.00		0 - 200	2004-01-22
Total Alkalinity		mg/L as CaCo3	250	244	98	90 - 110	2004-01-22

4011606

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name MT000803.0001.00012

Project Location Pure Resources

Laboratory Trace Analysis

Project Manager Frank Kieffer

Sampler(s)/Affiliation ARCADIS

Sample ID/Location	Matrix	Date Sampled	Time	ANALYSIS / METHOD / SIZE: (2) 40 mL vial BTEX HCl	(1) L plastic Total Alkalinity, TDS, SO4, Cl Neat	(1) 250 mL plastic Total Iron	(1) 250 mL Dissolved Iron (field filtered) H1403	(1) ~~250 mL plastic~~ TOC 3 40ml VOC HCl H1403		Remarks	Total
MW-N	L	1-13-04	1020	2	1	1	1	3		25165	8
MW-I	L	1-13-04	1345	2	1	1	1	3		66	8
MW-C	L	1-13-04	1610	2	1	1	1	3		67	8
MW-H	L	1-13-04	1635	2	1	1	1	3		68	8
MW-B	L	1-13-04	1750	2	1	1	1	3		69	8
MW A	L	1-14-04	1640	2	1	1	1	3		70	8
~~MW~~ BW1	L	1-15-04	1040	2	1	1	1	3		71	8

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 56 (HS)

Relinquished by: Regan Patterson	Organization: ARCADIS	Date 1/15/04	Time 1600	Seal Intact?	
Received by: Nelda Skelton	Organization: Trace Analysis	Date 1/15/04	Time 1600	Yes No N/A	
Relinquished by: Nelda Skelton	Organization: Trace Analysis	Date 1/15/04	Time 1730	Seal Intact?	
Received by: Vicki Reed	Organization: Trace Analysis	Date 1/16/04	Time 10:03	Yes No N/A	

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier Lone Star SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

1C P524095 NA

AG 05-12/01

25165-11

40116006

ARCADIS

Laboratory Task Order No./P.O. No. ●

CHAIN-OF-CUSTODY RECORD

Page ● of 1

Project Number/Name MT000803.0001.00012

Project Location Pure Resources

Laboratory Trace Analysis

Project Manager Frank Kieffer

Sampler(s)/Affiliation ARCADIS

Sample ID/Location	Matrix	Date Sampled	Time	(2) 40 mL vial BTEX HCl	(1) L plastic Total Alkalinity, TDS, SO4, Cl Neat	(1) 250 mL plastic Total Iron	(1) 250 mL Dissolved Iron (field filtered) HNO3	(1) ~~250 mL plastic~~ TOC 3 40ml VOC HCl HNO3	Cl, SO4	Remarks	Total
MW-N	L	1-13-04	1020	2	TDS 1	1	1	3	•	25165	8
MW-I	L	1-13-04	1345	2	1	1	1	3	•	66	8
MW-C	L	1-13-04	1510	2	1	1	1	3	•	67	8
MW-H	L	1-13-04	1635	2	1	1	1	3	•	68	8
MW-B	L	1-13-04	1750	2	1	1	1	3	•	69	8
MW A	L	1-14-04	1640	2	1	1	1	3	•	70	8
~~MW~~ BW1	L	1-15-04	1040	2	1	1	1	3	•	71	8

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers 56 (HS)

Relinquished by: Rosa Mazza	Organization: ARCADIS	Date 1/15/04	Time 1600	Seal Intact? Yes No N/A
Received by: Helen Shelton	Organization: Trace Analysis	Date 1/15/04	Time 1600	
Relinquished by: Helen Shelton	Organization: Trace Analysis	Date 1/15/04	Time 1730	Seal Intact? Yes No N/A
Received by: Dick Kent	Organization: TraceAnalysis	Date 1/16/04	Time 10:03	

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex SPECIFY ☐ Lab Courier ☐ Other SPECIFY

1A P524095 NA

AG 05-12/01

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This electronic report includes the following:

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

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E-mail to:samplereceiving@airtoxics.com

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0311403B

Work Order Summary

CLIENT:	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701	**BILL TO:**	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701
PHONE:	(432) 687-5400	**P.O. #**	
FAX:		**PROJECT #**	MT000903.0001 MT000903.0001
DATE RECEIVED:	11/21/03	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	12/6/03		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	BW-1	Modified ASTM D-1946	4.0 "Hg
02A	MW-A	Modified ASTM D-1946	4.0 "Hg
03A	MW-B	Modified ASTM D-1946	4.0 "Hg
04A	MW-C	Modified ASTM D-1946	3.5 "Hg
04AA	MW-C Duplicate	Modified ASTM D-1946	3.5 "Hg
05A	MW-D	Modified ASTM D-1946	0.5 "Hg
06A	MW-H	Modified ASTM D-1946	3.5 "Hg
07A	MW-I	Modified ASTM D-1946	4.0 "Hg
08A	MW-N	Modified ASTM D-1946	3.5 "Hg
09A	MW-10	Modified ASTM D-1946	4.0 "Hg
10A	VP10	Modified ASTM D-1946	4.0 "Hg
11A	Lab Blank	Modified ASTM D-1946	NA
12A	LCS	Modified ASTM D-1946	NA

CERTIFIED BY: Linda D. Fruman DATE: 12/06/03

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, 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: 07/01/03, Expiration date: 06/30/04
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified ASTM D-1946
Arcadis Geraghty & Miller
Workorder# 0311403B

Nine 1 Liter Summa Canister samples were received on November 21, 2003. The laboratory performed analysis via Modified ASTM Method D-1946 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. See the data sheets for the reporting limits for each compound.

Requirement	*ASTM D-1946*	*ATL Modifications*
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A 3-point calibration curve is performed. Quantitation is based on a daily calibration standard which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL (2.0 mL for He and H2) on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 30% RPD for detections > 5 X's the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

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: BW-1

ID#: 0311403B-01A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112519**	**Date of Collection: 11/19/03**	
Dil. Factor:	**2.33**	**Date of Analysis: 11/25/03 03:43 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	11
Methane	0.00023	0.14
Carbon Dioxide	0.0023	7.1

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-A

ID#: 0311403B-02A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112520**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.33**	**Date of Analysis:**	**11/25/03 04:06 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	7.2
Methane	0.00023	0.15
Carbon Dioxide	0.0023	7.3

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-B

ID#: 0311403B-03A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112521**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.33**	**Date of Analysis:**	**11/25/03 04:29 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	9.4
Methane	0.00023	0.071
Carbon Dioxide	0.0023	6.5

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-C

ID#: 0311403B-04A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112523**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.29**	**Date of Analysis:**	**11/25/03 05:17 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	16
Methane	0.00023	0.0034
Carbon Dioxide	0.0023	2.8

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-C Duplicate

ID#: 0311403B-04AA

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112524**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.29**	**Date of Analysis:**	**11/25/03 05:38 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	16
Methane	0.00023	0.0036
Carbon Dioxide	0.0023	2.8

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-D

ID#: 0311403B-05A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112525**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.05**	**Date of Analysis:**	**11/25/03 06:25 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.20	20
Methane	0.00020	Not Detected
Carbon Dioxide	0.0020	0.72

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-H

ID#: 0311403B-06A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112526**	**Date of Collection:**	**11/20/03**
Dil. Factor:	**2.29**	**Date of Analysis:**	**11/25/03 06:45 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	15
Methane	0.00023	0.090
Carbon Dioxide	0.0023	3.2

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-I

ID#: 0311403B-07A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112527**	**Date of Collection: 11/20/03**	
Dil. Factor:	**2.33**	**Date of Analysis: 11/25/03 07:05 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	7.0
Methane	0.00023	0.042
Carbon Dioxide	0.0023	9.6

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-N

ID#: 0311403B-08A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112528**	**Date of Collection: 11/20/03**	
Dil. Factor:	**2.29**	**Date of Analysis: 11/25/03 07:26 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	10
Methane	0.00023	0.0014
Carbon Dioxide	0.0023	8.1

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-10

ID#: 0311403B-09A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112529**	**Date of Collection:**	**11/20/03**
Dil. Factor:	**2.33**	**Date of Analysis:**	**11/25/03 07:46 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	6.8
Methane	0.00023	0.21
Carbon Dioxide	0.0023	8.2

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: VP10

ID#: 0311403B-10A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112530**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.33**	**Date of Analysis:**	**11/25/03 08:06 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	16
Methane	0.00023	0.00028
Carbon Dioxide	0.0023	3.4

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0311403B-11A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/25/03 01:40 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	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#: 0311403B-12A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3112502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/25/03 12:22 AM**	

Compound	%Recovery
Oxygen	89
Methane	96
Carbon Dioxide	99

Container Type: NA - Not Applicable

ARCADIS

0311403B

Laboratory Task Order No./P.O. No. ATL # 3988 **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name: NITOCO803.0001

Project Location: LOVINGTON, NM

Laboratory: AIR TOXICS LTD

Project Manager: FRANK Kieffer

Sampler(s)/Affiliation: R. MORGAN / ARCADIS
R LAING

	Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	BTEX TO-15	CH4, O2, CO2 ASTM 1946				Remarks	Total	
CVA	BW-1	AIR	11/18 1457		✓	✓				1 Liter	1	4.0"Hg
02A	MW-A		11/19 1545		✓	✓						4.0"Hg
03A	MW-B		11/19 1605		✓	✓						4.0"Hg
31A	MW-C		11/19 1629		✓	✓						3.5"Hg
35A	MW-D		11/19 1705		✓	✓						0.5"Hg
06A	MW-H		11/20 930		✓	✓						3.5"Hg
07A	MW-I		11/20 1000		✓	✓						4.0"Hg
38A	MW-N		11/20 1050		✓	✓						3.5"Hg
39A	MW-10		11/20 1130		✓	✓						4.0"Hg
10A	VP10		11/20 1155		✓	✓						4.0"Hg
	VP30	> DO NOT RUN								0	—	
	VP90											

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 12

Relinquished by: R. Morgan	Organization: Arcadis	Date 11/20/03	Time 1500	Seal Intact?	
Received by: F Kieffer	Organization: Arcadis	Date 11/20/03	Time 1500	Yes No N/A	
Relinquished by: F Kieffer	Organization: Arcadis	Date / /	Time	Seal Intact?	
Received by: Laurie Thomas	Organization: ATL	Date 11/21/03	Time 945	Yes No (N/A)	

Special Instructions/Remarks: QUOTE ATTACHED

*DO NOT RUN Samples VP30, VP90

Delivery Method: ☐ In Person ☒ Common Carrier FedEx ☐ Lab Courier ☐ Other

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This electronic report includes the following:

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

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E-mail to:samplereceiving@airtoxics.com

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0401209B

Work Order Summary

CLIENT:	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701	**BILL TO:**	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701
PHONE:	(432) 687-5400	**P.O. #**	
FAX:		**PROJECT #**	MT000803.0001.00012 PURE RESOURCES
DATE RECEIVED:	1/16/04	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	1/29/04		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	MW-C	Modified ASTM D-1946	4.5 "Hg
02A	MW-D	Modified ASTM D-1946	4.5 "Hg
03A	MW-N	Modified ASTM D-1946	5.0 "Hg
04A	MW-I	Modified ASTM D-1946	4.0 "Hg
05A	MW-H	Modified ASTM D-1946	4.0 "Hg
05AA	MW-H Duplicate	Modified ASTM D-1946	4.0 "Hg
06A	MW-B	Modified ASTM D-1946	4.0 "Hg
07A	MW-10	Modified ASTM D-1946	4.0 "Hg
08A	MW-4	Modified ASTM D-1946	3.5 "Hg
09A	MW-A	Modified ASTM D-1946	3.5 "Hg
10A	BW-1	Modified ASTM D-1946	3.0 "Hg
10AA	BW-1 Duplicate	Modified ASTM D-1946	3.0 "Hg
11A	Lab Blank	Modified ASTM D-1946	NA
12A	LCS	Modified ASTM D-1946	NA

CERTIFIED BY: Linda L. Fruman DATE: 01/29/04

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, 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: 07/01/03, Expiration date: 06/30/04
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified ASTM D-1946
Arcadis Geraghty & Miller
Workorder# 0401209B

Ten 1 Liter Summa Canister samples were received on January 16, 2004. The laboratory performed analysis via Modified ASTM Method D-1946 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. See the data sheets for the reporting limits for each compound.

Requirement	*ASTM D-1946*	*ATL Modifications*
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A 3-point calibration curve is performed. Quantitation is based on a daily calibration standard which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL (2.0 mL for He and H2) on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 30% RPD for detections > 5 X's the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

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: MW-C

ID#: 0401209B-01A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	3012604	Date of Collection:	1/12/04
Dil. Factor:	2.38	Date of Analysis:	1/26/04 10:45 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	1.6
Methane	0.00024	0.031
Carbon Dioxide	0.0024	12

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-D

ID#: 0401209B-02A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3012605**	**Date of Collection:**	**1/12/04**
Dil. Factor:	**2.38**	**Date of Analysis:**	**1/26/04 11:07 AM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	15
Methane	0.00024	Not Detected
Carbon Dioxide	0.0024	2.9

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-N

ID#: 0401209B-03A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3012606**	**Date of Collection: 1/12/04**	
Dil. Factor:	**2.42**	**Date of Analysis: 1/26/04 11:28 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	2.7
Methane	0.00024	0.0029
Carbon Dioxide	0.0024	14

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-I

ID#: 0401209B-04A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3012607**	**Date of Collection: 1/12/04**	
Dil. Factor:	**2.33**	**Date of Analysis: 1/26/04 12:08 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	6.7
Methane	0.00023	0.054
Carbon Dioxide	0.0023	9.2

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-H

ID#: 0401209B-05A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3012608**	**Date of Collection:**	**1/12/04**
Dil. Factor:	**2.33**	**Date of Analysis:**	**1/26/04 12:31 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	1.4
Methane	0.00023	0.44
Carbon Dioxide	0.0023	12

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-H Duplicate

ID#: 0401209B-05AA

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3012609**	**Date of Collection: 1/12/04**	
Dil. Factor:	**2.33**	**Date of Analysis: 1/26/04 12:56 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	1.4
Methane	0.00023	0.44
Carbon Dioxide	0.0023	12

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-B

ID#: 0401209B-06A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3012610**	**Date of Collection:**	**1/12/04**
Dil. Factor:	**2.33**	**Date of Analysis:**	**1/26/04 01:20 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	1.6
Methane	0.00023	0.16
Carbon Dioxide	0.0023	11

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-10

ID#: 0401209B-07A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3012611**	**Date of Collection: 1/12/04**	
Dil. Factor:	**2.33**	**Date of Analysis: 1/26/04 01:41 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	9.6
Methane	0.00023	0.23
Carbon Dioxide	0.0023	7.0

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-4

ID#: 0401209B-08A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3012612**	**Date of Collection:**	**1/12/04**
Dil. Factor:	**2.29**	**Date of Analysis:**	**1/26/04 02:02 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	2.5
Methane	0.00023	0.0071
Carbon Dioxide	0.0023	13

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-A

ID#: 0401209B-09A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3012613**	**Date of Collection: 1/12/04**	
Dil. Factor:	**2.29**	**Date of Analysis: 1/26/04 02:22 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	17
Methane	0.00023	0.016
Carbon Dioxide	0.0023	2.8

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: BW-1

ID#: 0401209B-10A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3012614**	**Date of Collection:**	**1/12/04**
Dil. Factor:	**2.24**	**Date of Analysis:**	**1/26/04 02:44 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	19
Methane	0.00022	0.00023
Carbon Dioxide	0.0022	0.055

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: BW-1 Duplicate

ID#: 0401209B-10AA

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3012615**	**Date of Collection:**	**1/12/04**
Dil. Factor:	**2.24**	**Date of Analysis:**	**1/26/04 03:05 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	19
Methane	0.00022	Not Detected
Carbon Dioxide	0.0022	0.055

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0401209B-11A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3012603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/26/04 09:51 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	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#: 0401209B-12A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3012619**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/26/04 06:48 PM**	

Compound	%Recovery
Oxygen	90
Methane	97
Carbon Dioxide	98

Container Type: NA - Not Applicable

ARCADIS

Laboratory Task Order No./P.O. No. 0401209.B

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name HT000803.0001.00012

Project Location Pure Resources

Laboratory Air Toxics

Project Manager Frank Kiefer

Sampler(s)/Affiliation ARCADIS

AW 11/7/04

	Sample ID/Location	Matrix	Date Sampled	Time	ANALYSIS / METHOD / SIZE: ASTM-1946 CH4, O2, CO2	TO-15 BTEX	Remarks	Total	
1A	MW-C	A	1-12-04	1415	✓	✓		1	4.5"Hg
2A	MW-D			1445	✓	✓		1	4.5"Hg
3A	MW-N			1515	✓	✓		1	5.0"Hg
4A	MW-I			1540	✓	✓		1	4.0"Hg
5A	MW-H			1610	✓	✓		1	4.0"Hg
6A	MW-B			1645	✓	✓		1	4.0"Hg
7A	MW-10			1700	✓	✓		1	4.0"Hg
8A	MW-4			1725	✓	✓		1	3.5"Hg
9A	MW-A			1740	✓	✓		1	3.5"Hg
10A	BW-1			1815	✓	✓		1	3.0"Hg

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 10

Relinquished by: Rosa A Mayfield	Organization: ARCADIS	Date 1/14/04	Time 16:30	Seal Intact?	
Received by:	Organization:	Date / /	Time	(Yes) No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by: Alexis Clements	Organization: ATL	Date 1/16/04	Time 945	(Yes) No N/A	

Special Instructions/Remarks: Returned 2 unused bags

Delivery Method: ☐ In Person ☒ Common Carrier Fed-Ex ☐ Lab Courier ☐ Other

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This electronic report includes the following:

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

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E-mail to:samplereceiving@airtoxics.com

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WORK ORDER #: 0401209A

Work Order Summary

CLIENT:	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701	**BILL TO:**	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701
PHONE:	(432) 687-5400	**P.O. #**	
FAX:		**PROJECT #**	MT000803.0001.00012 PURE RESOURCES
DATE RECEIVED:	1/16/04	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	1/29/04		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	MW-C	Mod. Method TO-15	4.5 "Hg
02A	MW-D	Mod. Method TO-15	4.5 "Hg
03A	MW-N	Mod. Method TO-15	5.0 "Hg
04A	MW-I	Mod. Method TO-15	4.0 "Hg
05A	MW-H	Mod. Method TO-15	4.0 "Hg
06A	MW-B	Mod. Method TO-15	4.0 "Hg
07A	MW-10	Mod. Method TO-15	4.0 "Hg
08A	MW-4	Mod. Method TO-15	3.5 "Hg
08AA	MW-4 Duplicate	Mod. Method TO-15	3.5 "Hg
09A	MW-A	Mod. Method TO-15	3.5 "Hg
09AA	MW-A Duplicate	Mod. Method TO-15	3.5 "Hg
10A	BW-1	Mod. Method TO-15	3.0 "Hg
11A	Lab Blank	Mod. Method TO-15	NA
12A	CCV	Mod. Method TO-15	NA
13A	LCS	Mod. Method TO-15	NA

CERTIFIED BY: Linda J. Truman DATE: 01/29/04

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, 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: 07/01/03, Expiration date: 06/30/04
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Mod. Method TO-15
Arcadis Geraghty & Miller
Workorder# 0401209A

Ten 1 Liter Summa Canister samples were received on January 16, 2004. The laboratory performed the analysis via Modified Method TO-15 using GC/MS in the full scan mode. The method involves direct injection of up to a 40 mL sample aliquot into a vapor management system. Following dehumidification the sample passes directly into the GC/MS for analysis. See the data sheets for the reporting limits of each compound.

Requirement	*TO-14A/TO-15*	*ATL Modifications*
Concentration of IS Spike	10 ppbv (TO-15)	500 ppbv
BFB Acceptance Criteria	CLP protocol (TO-15)	SW-846 protocol
Sampling Drying System	Nafion Dryer (TO-14A)	Multisorbent concentrator
Blank acceptance criteria	< 0.2 ppbv (TO-14A)	<RL.
IS Recovery	TO-15: Within 40 % of mean over ICAL for blanks, and w/in 40 % of daily CCV for samples	Within 40 % of CCV recovery for blank and samples.
Sample volume	Up to 400 mL (TO-14A)	Up to 40 mLs
ICAL RRF for quantitation	RRF for quantitation taken from daily CCV or midlevel of Initial Calibration	Average RRF from Initial Calibration is used for quantitation
Primary Ions for Quantification	Freon 114: 85, Carbon Tetrachloride: 117, Trichloroethene: 130, Ethyl Benzene, m,p- and o-Xylene: 91	Freon 114: 135, Carbon Tetrachloride: 119, Trichloroethene: 95, Ethyl Benzene, m,p- and o-Xylene: 106
Daily CCV	</= 30 % D	</= 30 % D with 2 allowed out up to 40%; flag associated sample results.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Dilution was performed on sample MW-N due to the presence of high level non-target species.

Definition of Data Qualifying Flags

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

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV.

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: MW-C

ID#: 0401209A-01A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012014**	**Date of Collection:**	**1/12/04**
Dil. Factor:	**238**	**Date of Analysis:**	**1/20/04 04:25 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	1200	740000
Toluene	1200	340000
Ethyl Benzene	1200	26000
m,p-Xylene	1200	72000
o-Xylene	1200	18000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-D

ID#: 0401209A-02A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012023**	**Date of Collection: 1/12/04**	
Dil. Factor:	**2.38**	**Date of Analysis: 1/20/04 08:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	12	67
Toluene	12	63
Ethyl Benzene	12	Not Detected
m,p-Xylene	12	23
o-Xylene	12	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-N

ID#: 0401209A-03A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012016**	**Date of Collection: 1/12/04**	
Dil. Factor:	**108**	**Date of Analysis: 1/20/04 05:31 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	540	Not Detected
Toluene	540	Not Detected
Ethyl Benzene	540	Not Detected
m,p-Xylene	540	Not Detected
o-Xylene	540	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-I

ID#: 0401209A-04A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012017**	**Date of Collection: 1/12/04**	
Dil. Factor:	**311**	**Date of Analysis: 1/20/04 06:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	1600	1200000
Toluene	1600	460000
Ethyl Benzene	1600	4800
m,p-Xylene	1600	63000
o-Xylene	1600	16000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-H

ID#: 0401209A-05A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012018**	**Date of Collection: 1/12/04**	
Dil. Factor:	**373**	**Date of Analysis: 1/20/04 06:29 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	1900	1600000
Toluene	1900	670000
Ethyl Benzene	1900	40000
m,p-Xylene	1900	94000
o-Xylene	1900	22000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-B

ID#: 0401209A-06A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012019**	**Date of Collection:**	**1/12/04**
Dil. Factor:	**311**	**Date of Analysis:**	**1/20/04 07:12 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	1600	1200000
Toluene	1600	400000
Ethyl Benzene	1600	19000
m,p-Xylene	1600	76000
o-Xylene	1600	17000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-10

ID#: 0401209A-07A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012020**	**Date of Collection:**	**1/12/04**
Dil. Factor:	**186**	**Date of Analysis:**	**1/20/04 07:37 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	930	720000
Toluene	930	250000
Ethyl Benzene	930	15000
m,p-Xylene	930	31000
o-Xylene	930	7800

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-4

ID#: 0401209A-08A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012021**	**Date of Collection:**	**1/12/04**
Dil. Factor:	**91.6**	**Date of Analysis:**	**1/20/04 08:00 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	460	400000
Toluene	460	230000
Ethyl Benzene	460	27000
m,p-Xylene	460	54000
o-Xylene	460	14000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-4 Duplicate

ID#: 0401209A-08AA

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012025**	**Date of Collection: 1/12/04**	
Dil. Factor:	**91.6**	**Date of Analysis: 1/20/04 09:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	460	410000
Toluene	460	230000
Ethyl Benzene	460	27000
m,p-Xylene	460	55000
o-Xylene	460	15000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-A

ID#: 0401209A-09A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012022**	**Date of Collection: 1/12/04**	
Dil. Factor:	**366**	**Date of Analysis: 1/20/04 08:31 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	1800	1500000
Toluene	1800	590000
Ethyl Benzene	1800	27000
m,p-Xylene	1800	92000
o-Xylene	1800	21000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-A Duplicate

ID#: 0401209A-09AA

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012026**	**Date of Collection:**	**1/12/04**
Dil. Factor:	**366**	**Date of Analysis:**	**1/20/04 10:27 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	1800	1400000
Toluene	1800	550000
Ethyl Benzene	1800	24000
m,p-Xylene	1800	84000
o-Xylene	1800	18000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

AIR TOXICS LTD.

SAMPLE NAME: BW-1

ID#: 0401209A-10A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012024**	**Date of Collection: 1/12/04**	
Dil. Factor:	**2.24**	**Date of Analysis: 1/20/04 09:21 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	11	130
Toluene	11	120
Ethyl Benzene	11	Not Detected
m,p-Xylene	11	35
o-Xylene	11	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0401209A-11A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012004**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/20/04 10:58 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	5.0	Not Detected
Toluene	5.0	Not Detected
Ethyl Benzene	5.0	Not Detected
m,p-Xylene	5.0	Not Detected
o-Xylene	5.0	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: CCV

ID#: 0401209A-12A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	3012002	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/20/04 10:06 AM	

Compound	%Recovery
Benzene	98
Toluene	102
Ethyl Benzene	111
m,p-Xylene	112
o-Xylene	105

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0401209A-13A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3012003**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 1/20/04 10:31 AM**	

Compound	%Recovery
Benzene	107
Toluene	107
Ethyl Benzene	113
m,p-Xylene	114
o-Xylene	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

ARCADIS

Laboratory Task Order No./P.O. No. _____

0401209 A

CHAIN-OF-CUSTODY RECORD Page ____ of ____

Project Number/Name MT000803.0001.00012

Project Location Pure Resources

Laboratory Air Toxics

Project Manager Frank Kieffer

Sampler(s)/Affiliation ARCADIS

360 1/17/04

	Sample ID/Location	Matrix	Date/~~XXXX~~ Sampled	Time ~~XXXX~~	ANALYSIS / METHOD / SIZE: ASTM-1946 CH4, O2, CO2	TO-15 BTEX				Remarks	Total	
01A	MW-C	A	1-12-04	1415	✓	✓					1	4.5"Hg
02A	MW-D			1445	✓	✓					1	4.5"Hg
03A	MW-N			1515	✓	✓					1	5.0"Hg
04A	MW-I			1540	✓	✓					1	4.0"Hg
05A	MW H			1610	✓	✓					1	4.0"Hg
06A	MW B			1640	✓	✓					1	4.0"Hg
07A	MW 10			1700	✓	✓					1	4.0"Hg
08A	MW 4			1725	✓	✓					1	3.5"Hg
09A	MW A			1740	✓	✓					1	3.5"Hg
10A	BW-1			1815	✓	✓					1	3.0"Hg
										CUSTODY SEAL INTACT? Y N NONE TEMP ✓		

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers 10

Relinquished by: Roger A Morgan	Organization: ARCADIS	Date 1/16/04	Time 1630	Seal Intact? (Yes) No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? (Yes) No N/A
Received by: Ted Arnold	Organization: ATL	Date 1/16/04	Time 945	

Special Instructions/Remarks: Returned 2 unused CANS

Delivery Method: ☐ In Person ☒ Common Carrier Fed-Ex (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AIR TOXICS LTD.

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).

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E-mail to:samplereceiving@airtoxics.com

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0311403A

Work Order Summary

CLIENT:	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701	**BILL TO:**	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701
PHONE:	(432) 687-5400	**P.O. #**	
FAX:		**PROJECT #**	Soil Gas Sampling
DATE RECEIVED:	11/21/03	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	12/6/03		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	BW-1	Mod. Method TO-15	4.0 "Hg
02A	MW-A	Mod. Method TO-15	4.0 "Hg
03A	MW-B	Mod. Method TO-15	4.0 "Hg
04A	MW-C	Mod. Method TO-15	3.5 "Hg
05A	MW-D	Mod. Method TO-15	0.5 "Hg
06A	MW-H	Mod. Method TO-15	3.5 "Hg
07A	MW-I	Mod. Method TO-15	4.0 "Hg
08A	MW-N	Mod. Method TO-15	3.5 "Hg
09A	MW-10	Mod. Method TO-15	4.0 "Hg
10A	VP10	Mod. Method TO-15	4.0 "Hg
11A	Lab Blank	Mod. Method TO-15	NA
12A	CCV	Mod. Method TO-15	NA
13A	LCS	Mod. Method TO-15	NA

CERTIFIED BY: Linda A. Truman DATE: 12/06/03

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, 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: 07/01/03, Expiration date: 06/30/04
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
Mod. Method TO-15
Arcadis Geraghty & Miller
Workorder# 0311403A

Ten 1 Liter Summa Canister samples were received on November 21, 2003. The laboratory performed the analysis via Modified Method TO-15 using GC/MS in the full scan mode. The method involves direct injection of up to a 40 mL sample aliquot into a vapor management system. Following dehumidification the sample passes directly into the GC/MS for analysis. See the data sheets for the reporting limits of each compound.

Requirement	*TO-14A/TO-15*	*ATL Modifications*
Concentration of IS Spike	10 ppbv (TO-15)	500 ppbv
BFB Acceptance Criteria	CLP protocol (TO-15)	SW-846 protocol
Sampling Drying System	Nafion Dryer (TO-14A)	Multisorbent concentrator
Blank acceptance criteria	< 0.2 ppbv (TO-14A)	< RL.
IS Recovery	TO-15: Within 40 % of mean over ICAL for blanks, and w/in 40 % of daily CCV for samples	Within 40 % of CCV recovery for blank and samples.
Sample volume	Up to 400 mL (TO-14A)	Up to 40 mLs
ICAL RRF for quantitation	RRF for quantitation taken from daily CCV or midlevel of Initial Calibration	Average RRF from Initial Calibration is used for quantitation
Primary Ions for Quantification	Freon 114: 85, Carbon Tetrachloride: 117, Trichloroethene: 130, Ethyl Benzene, m,p- and o-Xylene: 91	Freon 114: 135, Carbon Tetrachloride: 119, Trichloroethene: 95, Ethyl Benzene, m,p- and o-Xylene: 106
Daily CCV	</= 30 % D	</= 30 % D with 2 allowed out up to 40%; flag associated sample results.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

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

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV.

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: BW-1

ID#: 0311403A-01A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112523**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**71.7**	**Date of Analysis:**	**11/25/03 02:19 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	360	300000
Toluene	360	76000
Ethyl Benzene	360	2000
m,p-Xylene	360	8800
o-Xylene	360	4200

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-A

ID#: 0311403A-02A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112524**	**Date of Collection: 11/19/03**	
Dil. Factor:	**212**	**Date of Analysis: 11/25/03 02:51 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	1100	840000
Toluene	1100	210000
Ethyl Benzene	1100	3800
m,p-Xylene	1100	45000
o-Xylene	1100	12000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-B

ID#: 0311403A-03A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112525**	**Date of Collection: 11/19/03**	
Dil. Factor:	**129**	**Date of Analysis: 11/25/03 03:24 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	640	570000
Toluene	640	210000
Ethyl Benzene	640	8200
m,p-Xylene	640	27000
o-Xylene	640	6200

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-C

ID#: 0311403A-04A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112526**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**57.2**	**Date of Analysis:**	**11/25/03 03:51 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	290	160000
Toluene	290	74000
Ethyl Benzene	290	5100
m,p-Xylene	290	12000
o-Xylene	290	3800

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-D

ID#: 0311403A-05A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112527**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.05**	**Date of Analysis:**	**11/25/03 04:17 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	10	70
Toluene	10	77
Ethyl Benzene	10	Not Detected
m,p-Xylene	10	12
o-Xylene	10	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-H

ID#: 0311403A-06A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112528**	**Date of Collection:**	**11/20/03**
Dil. Factor:	**105**	**Date of Analysis:**	**11/25/03 04:45 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	520	520000
Toluene	520	200000
Ethyl Benzene	520	9900
m,p-Xylene	520	26000
o-Xylene	520	7600

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-I

ID#: 0311403A-07A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112531**	**Date of Collection:**	**11/20/03**
Dil. Factor:	**373**	**Date of Analysis:**	**11/25/03 06:32 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	1900	1600000
Toluene	1900	590000
Ethyl Benzene	1900	26000
m,p-Xylene	1900	87000
o-Xylene	1900	22000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-N

ID#: 0311403A-08A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112534**	**Date of Collection: 11/20/03**	
Dil. Factor:	**2.29**	**Date of Analysis: 11/25/03 07:53 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	11	1600
Toluene	11	530
Ethyl Benzene	11	39
m,p-Xylene	11	100
o-Xylene	11	28

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-10

ID#: 0311403A-09A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112533**	**Date of Collection:**	**11/20/03**
Dil. Factor:	**169**	**Date of Analysis:**	**11/25/03 07:26 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	840	840000
Toluene	840	350000
Ethyl Benzene	840	28000
m,p-Xylene	840	54000
o-Xylene	840	13000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: VP10

ID#: 0311403A-10A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112535**	**Date of Collection:**	**11/19/03**
Dil. Factor:	**2.33**	**Date of Analysis:**	**11/25/03 08:16 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	12	1300
Toluene	12	350
Ethyl Benzene	12	Not Detected
m,p-Xylene	12	29
o-Xylene	12	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0311403A-11A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112509**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/25/03 04:35 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Benzene	5.0	Not Detected
Toluene	5.0	Not Detected
Ethyl Benzene	5.0	Not Detected
m,p-Xylene	5.0	Not Detected
o-Xylene	5.0	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

AIR TOXICS LTD.

SAMPLE NAME: CCV

ID#: 0311403A-12A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**3112503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/25/03 01:46 AM**	

Compound	%Recovery
Benzene	100
Toluene	106
Ethyl Benzene	112
m,p-Xylene	114
o-Xylene	103

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0311403A-13A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	3112504	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 11/25/03 02:11 AM	

Compound	%Recovery
Benzene	106
Toluene	106
Ethyl Benzene	107
m,p-Xylene	110
o-Xylene	89

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

ARCADIS

Laboratory Task Order No./P.O. No. ATL #3988 — CHAIN-OF-CUSTODY RECORD — 031140 3A — Page 1 of 1

Project Number/Name: MT000803.0001
Project Location: LOVINGTON, NM
Laboratory: AIR TOXICS LTD
Project Manager: FRANK KIEFFER
Sampler(s)/Affiliation: R. MORGAN / ARCADIS, R LANG

	Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	BTEX TO-15	CH4, O2, CO2 ASTM 1946	Remarks	Total	MW (124)
01A	BW-1	AIR	11/19 1457		✓	✓	1 liter	1	40"Hg
02A	MW-A		11/19 1545		✓	✓			40"Hg
03A	MW-B		11/19 1605		✓	✓			40"Hg
04A	MW-C		11/19 1627		✓	✓			35"Hg
05A	MW-D		11/19 1705		✓	✓			0.5"Hg
06A	MW-H		11/20 930		✓	✓			3.5"Hg
07A	MW-I		11/20 1000		✓	✓			40"Hg
08A	MW-N		11/20 1050		✓	✓			35"Hg
09A	MW-10		11/20 1030		✓	✓			40"Hg
10A	VP10		11/19 1515		✓				40"Hg
	VP30 > DO NOT RUN								
	VP90								

CUSTODY SEAL INTACT? Y N NONE/TEMP

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 12

Relinquished by: R. Lang	Organization: Arcadis	Date 11/20/03	Time 1500	Seal Intact?		
Received by: F. Kieffer	Organization: Arcadis	Date 11/20/03	Time 1500	Yes	No	N/A
Relinquished by: F. Kieffer	Organization: Arcadis	Date / /	Time	Seal Intact?		
Received by: Laurie Thomas	Organization: ATL	Date 11/21/03	Time 945	Yes	No	(N/A)

Special Instructions/Remarks: QUOTE ATTACHED

*DO NOT RUN Samples VP30, VP90

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex ☐ Lab Courier ☐ Other

SPEC FY

AS 05/2001

MICROSEEPS

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300

Midland, TX 79701

Order #: P0401237
Report Date: 01/27/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Laboratory Results

Total pages in data package: 9

Lab Sample #	Client Sample ID
P0401237-01	MW-N
P0401237-02	MW-I
P0401237-03	MW-C
P0401237-04	MW-H
P0401237-05	MW-B
P0401237-06	MW-A
P0401237-07	BW-1

Microseeps test results meet all the requirements of the NELAC standards.

Approved By: Debbie Hallo

The analytical results reported here are reliable and usable to the precision expressed in this report. As required by some regulating authorities, a full discussion of the uncertainty in our analytical results can be obtained at our web site or through customer service. Unless otherwise specified, all results are reported on a wet weight basis.

NOTES:

ARCADIS

Laboratory Task Order No./P.O. No. P0401237

CHAIN-OF-CUSTODY RECORD

Page ● of 1

Project Number/Name MT000803.0001.00012

Project Location Pure Resources

Laboratory Microseeps

Project Manager Frank Kieffer

Sampler(s)/Affiliation ARCADIS

	Sample ID/Location	Matrix	Date Sampled	Time	ANALYSIS / METHOD / SIZE: (2) 40 mL special cap Permanent Gases (Nitrogen, Carbon Dioxide, Oxygen & methane)						Remarks	Total
01	MW-N	L	1-13-04	1020	2							2
02	MW I	L	1-13-04	1345	2							2
03	MW-C	L	1-13-04	1510	2							2
04	MW-H	L	1-13-04	1635	2							2
05	MW-B	L	1-13-04	1750	2							2
06	MW A	L	1-14-04	1640	2							2
07	BW 1	L	1-15-04	1040	2							2
	Trip Blank											0

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers 15

					Seal Intact?
Relinquished by:		Organization: ARCADIS	Date 1/15/04	Time 1620	
Received by:		Organization:	Date 1/16/04	Time 1035	(Yes) No N/A
Relinquished by:		Organization:	Date / /	Time	Seal Intact?
Received by:		Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier Fed-Ex (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

AG 05-12/01

Order #: P0401237
Report Date: 01/27/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0401237-01

Sample Description	Matrix	Sampled Date/Time	Received
MW-N	Water	13 Jan. 04 10:20	16 Jan. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	16	0.60	mg/L	AM20GAX	jl	1/23/04
Methane	0.68	0.015	ug/L	AM20GAX	jl	1/23/04
Nitrogen	14	0.40	mg/L	AM20GAX	jl	1/23/04
Oxygen	5.9	0.15	mg/L	AM20GAX	jl	1/23/04

Order #: P0401237
Report Date: 01/27/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0401237-02

Sample Description	Matrix	Sampled Date/Time	Received
MW-I	Water	13 Jan. 04 13:45	16 Jan. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	31	0.60	mg/L	AM20GAX	jl	1/23/04
Methane	2.5	0.015	ug/L	AM20GAX	jl	1/23/04
Nitrogen	13	0.40	mg/L	AM20GAX	jl	1/23/04
Oxygen	1.3	0.15	mg/L	AM20GAX	jl	1/23/04

Order #: P0401237
Report Date: 01/27/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0401237-03

Sample Description	Matrix	Sampled Date/Time	Received
MW-C	Water	13 Jan. 04 15:10	16 Jan. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	22	0.60	mg/L	AM20GAX	jl	1/23/04
Methane	0.30	0.015	ug/L	AM20GAX	jl	1/23/04
Nitrogen	13	0.40	mg/L	AM20GAX	jl	1/23/04
Oxygen	3.6	0.15	mg/L	AM20GAX	jl	1/23/04

Order #: P0401237
Report Date: 01/27/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0401237-04

Sample Description	Matrix	Sampled Date/Time	Received
MW-H	Water	13 Jan. 04 16:35	16 Jan. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	20	0.60	mg/L	AM20GAX	jl	1/23/04
Methane	2.3	0.015	ug/L	AM20GAX	jl	1/23/04
Nitrogen	14	0.40	mg/L	AM20GAX	jl	1/23/04
Oxygen	1.9	0.15	mg/L	AM20GAX	jl	1/23/04

Order #: P0401237
Report Date: 01/27/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0401237-05

Sample Description	Matrix	Sampled Date/Time	Received
MW-B	Water	13 Jan. 04 17:50	16 Jan. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	12	0.60	mg/L	AM20GAX	jl	1/23/04
Methane	0.54	0.015	ug/L	AM20GAX	jl	1/23/04
Nitrogen	14	0.40	mg/L	AM20GAX	jl	1/23/04
Oxygen	7.4	0.15	mg/L	AM20GAX	jl	1/23/04

Order #: P0401237
Report Date: 01/27/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0401237-06

Sample Description	Matrix	Sampled Date/Time	Received
MW-A	Water	14 Jan. 04 16:40	16 Jan. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	140	0.60	mg/L	AM20GAX	mm	1/26/04
Methane	62	0.015	ug/L	AM20GAX	mm	1/26/04
Nitrogen	15	0.40	mg/L	AM20GAX	mm	1/26/04
Oxygen	1.1	0.15	mg/L	AM20GAX	mm	1/26/04

ELAC certified analysis

Order #: P0401237
Report Date: 01/27/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0401237-07

Sample Description	Matrix	Sampled Date/Time	Received
BW-1	Water	15 Jan. 04 10:40	16 Jan. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Water						
Carbon dioxide	2.6	0.60	mg/L	AM20GAX	mm	1/26/04
Methane	0.61	0.015	ug/L	AM20GAX	mm	1/26/04
Nitrogen	15	0.40	mg/L	AM20GAX	mm	1/26/04
Oxygen	9.6	0.15	mg/L	AM20GAX	mm	1/26/04

ELAC certified analysis

ARCADIS

Laboratory Task Order No./P.O. No. 0401237 **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name MT000803.0001.00012

Project Location Pure Resources

Laboratory Microseeps

Project Manager Frank Kieffer

Sampler(s)/Affiliation ARCADIS

Sample ID/Location	Matrix	Date Sampled	Time	ANALYSIS / METHOD / SIZE: (2) 40 mL special cap Permanent Gases (Nitrogen, Carbon Dioxide, Oxygen & methane)							Remarks	Total
MW-N ✓	L ✓	1-13-04 ✓	1029 ✓	2 ✓								2
MW I ✓	L ✓	1-13-04 ✓	1345 ✓	2 ✓								2
MW-C ✓	L ✓	1-13-04 ✓	1510 ✓	2 ✓								2
MW-H ✓	L ✓	1-13-04 ✓	1635 ✓	2 ✓								2
MW-B ✓	L ✓	1-13-04 ✓	1755 ✓	2 ✓								2
MW A ✓	L ✓	1-14-04 ✓	1640 ✓	2 ✓								2
BW 1 ✓	L ✓	1-15-04 ✓	1040 ✓	2 ✓								2
Temp Blank												0

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers 15

Relinquished by: [signature]	Organization: ARCADIS	Date 1/15/04	Time 1620	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier Fed-Ex (SPECIFY) ☐ Lab Courier ☐ Other (SPECIFY)

AG 05-12/01

ARCADIS GERAGHTY & MILLER Laboratory Task Order No./P.O. No.: _____ **CHAIN-OF-CUSTODY RECORD** Page ___ of ___

Project Number/Name: MT000803.0001 Task 12
Project Location: Lovington NM
Laboratory: EA
Project Manager: Frank Lieffer
Sampler(s)/Affiliation: Arcadis

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: BTEX						Remarks	Total
VP 9C ✓	badge	in 12-12-03 out 1-12-04		X ✓							1
VP 10 ✓	badge	in 12-12-03 out 1-12-04		X ✓							1
VP 3C ✓	badge	in 12-12-03 out 1-12-04		X ✓							1

Sample Matrix: L = Liquid; S = Solid; A = Air badge

Total No. of Bottles/ Containers: 3

Relinquished by: [signature]	Organization: Arcadis	Date 1/15/04	Time 16:00	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes	No N/A
Relinquished by: _____	Organization: _____	Date / /	Time _____	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes	No N/A

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☐ Common Carrier _____ (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-0597

EA GROUP

Laboratory Analytical Report

Arcadis Geraghty & Miller

1004 N Big Spring St., #300

Midland, TX 79701

Attention:
Frank Kieffer

Project Identification

MT000803.0001 T0012,
LovingtonNM

Purchase Order:

EA Group
Order Number
0401-00165

Donald R. Richner, CIH

Laboratory Manager

January 26, 2004

EA GROUP

Project Summary

The following analytical report contains the results as requested for samples submitted to EA Group. The results included in this report have been reviewed for compliance with the analytical methods indicated in this report. All data have been found to be compliant with accepted laboratory protocol. Exceptions, if any, are noted below. Analytes appearing in bold type were analyzed at a subcontract facility. EA Group is VAP, AIHA and ELLAP accredited. For industrial hygiene reports, air and/or surface concentrations results are based upon field sampling information provided by the client. Unless otherwise noted the following apply: Sample condition was acceptable upon receipt and Industrial hygiene results will not be blank corrected.

Data Interpretation

For assistance with report interpretation or questions regarding regulatory limits, please contact Client Services at 440-951-3514 or customerservice@eagroup-ohio.com.

Sample Summary

Sample Receive Date: 1/16/2004

EAG Sample Identification	Client Sample Identification	EAG Sample Identification	Client Sample Identification
040100165 - 001	VP90	040100165 - 002	VP10
040100165 - 003	VP30		

Quality Control Narrative

****

 Unless noted, soil, sludge, and sediment results are reported on dry weight basis. The "Sample Reporting Limit" is based on the method used for analysis and does not refer to any regulatory limit. These results relate only to the items tested.

EA GROUP

EAG Workorder: 0401-00165
EAG ID: 0401-00165-002
Client ID: VP10
Client Project: MT000803.0001 T0012, LovingtonNM

Matrix: OVM
QC Batch / Analyst: 046320/JAH

Date Sampled:
Date Received: 01/16/2004

Parameter	Result	Reporting Limit	Units	Date Analyzed
Organics in Air: OSHA 7				1/22/2004
Benzene	2.4	0.058	ppm	1/22/2004
Ethylbenzene	0.18	0.045	ppm	1/22/2004
Toluene	0.057	0.057	ppm	1/22/2004
Xylenes	0.085	0.056	ppm	1/22/2004
Passive Badge Desorption	Complete			1/22/2004

EA GROUP

EAG Workorder: 0401-00165 **Matrix:** OVM **Date Sampled:**

EAG ID: 0401-00165-003 **QC Batch / Analyst:** 046320/JAH **Date Received:** 01/16/2004

Client ID: VP30

Client Project: MT000803.0001 T0012, LovingtonNM

Parameter	Result	Reporting Limit	Units	Date Analyzed
Organics in Air: OSHA 7				1/22/2004
Benzene	<0.058	0.058	ppm	1/22/2004
Ethylbenzene	<0.045	0.045	ppm	1/22/2004
Toluene	<0.057	0.057	ppm	1/22/2004
Xylenes	0.10	0.056	ppm	1/22/2004
Passive Badge Desorption	Complete			1/22/2004

EA GROUP

EAG Workorder: 0401-00165
EAG ID: 0401-00165-001
Client ID: VP90
Client Project: MT000803.0001 T0012, LovingtonNM

Matrix: OVM
QC Batch / Analyst: 046320/JAH

Date Sampled:
Date Received: 01/16/2004

Parameter	Result	Reporting Limit	Units	Date Analyzed
Organics in Air: OSHA 7				1/22/2004
Benzene	0.098	0.058	ppm	1/22/2004
Ethylbenzene	0.068	0.045	ppm	1/22/2004
Toluene	<0.057	0.057	ppm	1/22/2004
Xylenes	0.068	0.056	ppm	1/22/2004
Passive Badge Desorption	Complete			1/22/2004

ARCADIS GERAGHTY & MILLER

Laboratory Task Order No./P.O. No.: _____

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name: MT000803.0001 Task 12

Project Location: Lovington NM

Laboratory: EA

Project Manager: Frank Kieffer

Sampler(s)/Affiliation: Arcadis

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: BTEX (8021B)						Remarks	Total
VP 9G	badge	in 12-12-03 out 1-12-04		X							1
VP 10	badge	in 12-12-03 in 12-12-04		X							1
VP 30	badge	in 12-12-03 out 1-12-04		X							1

Sample Matrix: L = Liquid; S = Solid; A = Air badge

Total No. of Bottles/ Containers: 3

Relinquished by: [signature]	Organization: Arcadis	Date 1/15/04	Time 16:00	Seal Intact?	
Received by: [signature]	Organization: EAG	Date 1/16/04	Time 0900	(Yes) No N/A	
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☐ Common Carrier _____ (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-0597

Summary Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: April 27, 2004

Work Order: 4042204

Project Location: Pure Resources
Project Number: MT000803.0001.00012

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
32162	BW-1	water	2004-04-21	14:00	2004-04-22
32163	MW-A	water	2004-04-21	13:10	2004-04-22
32164	MW-B	water	2004-04-21	12:30	2004-04-22
32165	MW-C	water	2004-04-20	16:00	2004-04-22
32166	MW-H	water	2004-04-21	11:50	2004-04-22
32167	MW-I	water	2004-04-21	11:10	2004-04-22
32168	MW-N	water	2004-04-21	10:10	2004-04-22

	BTEX			
Sample - Field Code	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)
32162 - BW-1	<0.00100	<0.00100	<0.00100	<0.00100
32163 - MW-A	0.0881	<0.00100	<0.00100	0.00650
32164 - MW-B	0.0211	0.00890	<0.00100	0.00180
32165 - MW-C	0.147	0.0526	0.00160	0.00400
32166 - MW-H	1.53	0.0944	<0.0100	0.0374
32167 - MW-I	1.57	0.104	<0.0100	0.0301
32168 - MW-N	0.0338	0.0387	0.00210	0.00510

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
155 McCutcheon, Suite H El Paso, Texas 79932 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: April 27, 2004

Work Order: 4042204

Project Location: Pure Resources
Project Number: MT000803.0001.00012

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
32162	BW-1	water	2004-04-21	14:00	2004-04-22
32163	MW-A	water	2004-04-21	13:10	2004-04-22
32164	MW-B	water	2004-04-21	12:30	2004-04-22
32165	MW-C	water	2004-04-20	16:00	2004-04-22
32166	MW-H	water	2004-04-21	11:50	2004-04-22
32167	MW-I	water	2004-04-21	11:10	2004-04-22
32168	MW-N	water	2004-04-21	10:10	2004-04-22

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 32162 - BW-1

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9103	Date Analyzed:	2004-04-22	Analyzed By:	MS
Prep Batch:	8090	Date Prepared:	2004-04-22	Prepared By:	MS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[1]	0.0562	mg/L	1	0.100	56	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.0579	mg/L	1	0.100	58	53.1 - 149

Sample: 32163 - MW-A

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9103	Date Analyzed:	2004-04-22	Analyzed By:	MS
Prep Batch:	8090	Date Prepared:	2004-04-22	Prepared By:	MS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		0.0881	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		0.00650	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0885	mg/L	1	0.100	88	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.0840	mg/L	1	0.100	84	53.1 - 149

Sample: 32164 - MW-B

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9103	Date Analyzed:	2004-04-22	Analyzed By:	MS
Prep Batch:	8090	Date Prepared:	2004-04-22	Prepared By:	MS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		0.0211	mg/L	1	0.00100
Toluene		0.00890	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		0.00180	mg/L	1	0.00100

[1] Low TFT surrogate recovery due to matrix inteference. ICV/CCV surrogate recovery show the method to be in control.

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[2]	0.0629	mg/L	1	0.100	63	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.0625	mg/L	1	0.100	62	53.1 - 149

Sample: 32165 - MW-C

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9103	Date Analyzed:	2004-04-22	Analyzed By:	MS
Prep Batch:	8090	Date Prepared:	2004-04-22	Prepared By:	MS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		0.147	mg/L	1	0.00100
Toluene		0.0526	mg/L	1	0.00100
Ethylbenzene		0.00160	mg/L	1	0.00100
Xylene		0.00400	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[3]	0.0660	mg/L	1	0.100	66	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.0754	mg/L	1	0.100	75	53.1 - 149

Sample: 32166 - MW-H

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9122	Date Analyzed:	2004-04-23	Analyzed By:	MS
Prep Batch:	8108	Date Prepared:	2004-04-23	Prepared By:	MS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		1.53	mg/L	10	0.00100
Toluene		0.0944	mg/L	10	0.00100
Ethylbenzene		<0.0100	mg/L	10	0.00100
Xylene		0.0374	mg/L	10	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.963	mg/L	10	0.100	96	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.963	mg/L	10	0.100	96	53.1 - 149

Sample: 32167 - MW-I

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9122	Date Analyzed:	2004-04-23	Analyzed By:	MS
Prep Batch:	8108	Date Prepared:	2004-04-23	Prepared By:	MS

[2]Low TFT surrogate recovery due to matrix interference. BFB surrogate recovery shows the method to be in control.
[3]Low TFT surrogate recovery due to matrix interference. BFB surrogate recovery shows the method to be in control.

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		1.57	mg/L	10	0.00100
Toluene		0.104	mg/L	10	0.00100
Ethylbenzene		<0.0100	mg/L	10	0.00100
Xylene		0.0301	mg/L	10	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.965	mg/L	10	0.100	96	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.976	mg/L	10	0.100	98	53.1 - 149

Sample: 32168 - MW-N

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9103	Date Analyzed:	2004-04-22	Analyzed By:	MS
Prep Batch:	8090	Date Prepared:	2004-04-22	Prepared By:	MS

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		0.0338	mg/L	1	0.00100
Toluene		0.0387	mg/L	1	0.00100
Ethylbenzene		0.00210	mg/L	1	0.00100
Xylene		0.00510	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[4]	0.0719	mg/L	1	0.100	72	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.0841	mg/L	1	0.100	84	53.1 - 149

Method Blank (1) QC Batch: 9103

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0867	mg/L	1	0.100	87	79.3 - 117
4-Bromofluorobenzene (4-BFB)		0.0937	mg/L	1	0.100	94	43.7 - 132

Method Blank (1) QC Batch: 9122

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001

continued ...

[4]Low TFT surrogate recovery due to matrix interference. BFB surrogate recovery shows the method to be in control.

method blank continued . . .

Parameter	Flag	Result	Units	RL
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	[5]	0.0473	mg/L	1	0.100	47	79.3 - 117
4-Bromofluorobenzene (4-BFB)		0.0487	mg/L	1	0.100	49	43.7 - 132

Laboratory Control Spike (LCS-1) QC Batch: 9103

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0994	0.0952	mg/L	1	0.100	<0.000136	99	4	86.2 - 113	20
Toluene	0.0955	0.0939	mg/L	1	0.100	<0.000247	96	2	85 - 114	20
Ethylbenzene	0.0974	0.0935	mg/L	1	0.100	<0.000550	97	4	83.6 - 116	20
Xylene	0.296	0.289	mg/L	1	0.300	<0.00156	99	2	82 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0863	0.0923	mg/L	1	0.100	86	92	78.4 - 118
4-Bromofluorobenzene (4-BFB)	0.0962	0.0974	mg/L	1	0.100	96	97	53.1 - 149

Laboratory Control Spike (LCS-1) QC Batch: 9122

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.102	0.0989	mg/L	1	0.100	<0.000136	102	4	86.2 - 113	20
Toluene	0.0994	0.0961	mg/L	1	0.100	<0.000247	99	3	85 - 114	20
Ethylbenzene	0.102	0.0997	mg/L	1	0.100	<0.000550	102	3	83.6 - 116	20
Xylene	0.312	0.308	mg/L	1	0.300	<0.00156	104	1	82 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0979	0.0915	mg/L	1	0.100	98	92	78.4 - 118
4-Bromofluorobenzene (4-BFB)	0.105	0.101	mg/L	1	0.100	105	101	53.1 - 149

Standard (ICV-1) QC Batch: 9103

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0961	96	85 - 115	2004-04-22

continued . . .

[5]Low TFT surrogate recovery due to unknown anomaly. ICV/CCV and LCS/LCSD show the method to be in control.

standard continued . . .

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Toluene		mg/L	0.100	0.0937	94	85 - 115	2004-04-22
Ethylbenzene		mg/L	0.100	0.0982	98	85 - 115	2004-04-22
Xylene		mg/L	0.300	0.300	100	85 - 115	2004-04-22

Standard (CCV-1) QC Batch: 9103

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0993	99	85 - 115	2004-04-22
Toluene		mg/L	0.100	0.0961	96	85 - 115	2004-04-22
Ethylbenzene		mg/L	0.100	0.0976	98	85 - 115	2004-04-22
Xylene		mg/L	0.300	0.297	99	85 - 115	2004-04-22

Standard (CCV-2) QC Batch: 9103

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.104	104	85 - 115	2004-04-22
Toluene		mg/L	0.100	0.102	102	85 - 115	2004-04-22
Ethylbenzene		mg/L	0.100	0.103	103	85 - 115	2004-04-22
Xylene		mg/L	0.300	0.314	105	85 - 115	2004-04-22

Standard (ICV-1) QC Batch: 9122

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0894	89	85 - 115	2004-04-23
Toluene		mg/L	0.100	0.0915	92	85 - 115	2004-04-23
Ethylbenzene		mg/L	0.100	0.0937	94	85 - 115	2004-04-23
Xylene		mg/L	0.300	0.289	96	85 - 115	2004-04-23

Standard (CCV-1) QC Batch: 9122

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.103	103	85 - 115	2004-04-23
Toluene		mg/L	0.100	0.0997	100	85 - 115	2004-04-23
Ethylbenzene		mg/L	0.100	0.103	103	85 - 115	2004-04-23
Xylene		mg/L	0.300	0.313	104	85 - 115	2004-04-23

4042204

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name: MT000803.0001.00012
Project Location: Pure Resources
Laboratory: Trace Analysis
Project Manager: Frank Kieffer
Sampler(s)/Affiliation: ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Time	(2) 40 ml vial BTEX HCl	(4) 1L plastic Total Alk, TDS, SO4, Cl Neat	(1) 250 ml plastic Total Iron HNO3	(1) 250 ml Dissolved Iron (field filtered) HNO3	(3) 40 ml VOC TOC HCl		Remarks	Total
BW-1	L	4/21/04	1400	2	3216	2					2
MW-A		4/21/04	1310	2	63						2
MW-B		4/21/04	1230	2	64						2
MW-C		4/20/04	1600	2	65						2
MW-H		4/21/04	1150	2	66						2
MW-I		4/21/04	1110	2	67						2
MW-J	L	4/21/04	1010	2	68						2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 14 (HS)

Relinquished by: Helen Shelton	Organization: ARCADIS	Date 4/21/04	Time 1630	Seal Intact?	
Received by: Trace Analysis	Organization: Trace Analysis	Date 4/21/04	Time 1630	(Yes) No N/A	
Relinquished by: Helen Shelton	Organization: Trace Analysis	Date 4/21/04	Time 1730	Seal Intact?	
Received by:	Organization: Trace Analysis	Date 4/22/04	Time 10:45	Yes No N/A	

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier Gray Mountain SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

4°

Lone Star PS24116

AG 05-12/01

4042204

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name: MT000803.0001.00012

Project Location: Pure Resources

Laboratory: Trace Analysis

Project Manager: Frank Kieffer

Sampler(s)/Affiliation: ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Time Lab ID	ANALYSIS / METHOD / SIZE: (2) 40 ml vial BTEX HCl	(2) 1L plastic Total Alk, TDS, SO4, Cl, Neat	(1) 250 ml plastic Total Iron HNO3	(1) 250 ml Dissolved Iron (field filtered) HNO3	(3) 40 ml VOC TOC HCl	Remarks	Total
BW-1	L	4/21/04	1400	2	3216	2				2
BW-A		4/21/04	1310	2	63					2
MW-B		4/21/04	1230	2	64					2
MW-C		4/20/04	1600	2	65					2
MW-H		4/21/04	1150	2	66					2
MW-I		4/21/04	1110	2	67					2
MW-J	L	4/21/04	1010	2	68					2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 14 (HS)

Relinquished by: Ellen Shelton	Organization: ARCADIS	Date 4/21/04	Time 1630	Seal Intact?	
Received by: Ellen Shelton	Organization: Trace Analysis	Date 4/21/04	Time 1630	(Yes) No N/A	
Relinquished by: Ellen Shelton	Organization: Trace Analysis	Date 4/21/04	Time 1730	Seal Intact?	
Received by: Vicki Chan	Organization: Trace Analysis	Date 4/22/04	Time 10:45	Yes No N/A	

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier Gray Hound SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

4°

AG 05-12/01 4/22/04

ARCADIS

Laboratory Task Order No./P.O. No. 042204 **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name: MT000803.0001.00012

Project Location: Pure Resources

Laboratory: Trace Analysis

Project Manager: Frank Kieffer

Sampler(s)/Affiliation: ARCADIS

Sample ID/Location	Matrix	Date Sampled	Time	Lab ID	(2) 40 ml vial BTEX HCl	(1) 1L plastic Total Alk; TDS, SO4, Cl Neat	(1) 250 ml plastic Total Iron HNO3	(1) 250 ml Dissolved Iron (field filtered) HNO3	(3) 40 ml VOC TOC HCl	Remarks	Total
BW-1	L	4/21/04	1400		2						2
BW-A	L	4/21/04	1310		2						2
MW-B	L	4/21/04	1230		2						2
MW-C	L	4/20/04	1600		2						2
MW-H	L	4/21/04	1150		2						2
MW-I	L	4/21/04	1110		2						2
MW-J	L	4/21/04	1010		2						2

ANALYSIS / METHOD / SIZE

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 14 (11)

Relinquished by:	Organization: ARCADIS	Date 4/21/04	Time	Seal Intact?	
Received by:	Organization:	Date 4/21/04	Time	Yes	No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?	
Received by:	Organization:	Date / /	Time	Yes	No N/A

Special Instructions/Remarks:

Delivery Method: ☐ In Person ☒ Common Carrier GLX ☐ Lab Courier ☐ Other

SPECIFY SPECIFY

AC 05 12/01

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This electronic report includes the following:

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

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E-mail to:samplereceiving@airtoxics.com

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0404431A

Work Order Summary

CLIENT:	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701	**BILL TO:**	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701
PHONE:	(432) 687-5400	**P.O. #**	MT000803.0001.00012
FAX:		**PROJECT #**	Pure Resources
DATE RECEIVED:	4/22/04	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	5/6/04		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	MW-A	Mod. Method TO-15	6.0 "Hg
02A	MW-B	Mod. Method TO-15	5.5 "Hg
03A	MW-C	Mod. Method TO-15	6.0 "Hg
04A	MW-D	Mod. Method TO-15	5.5 "Hg
05A	MW-H	Mod. Method TO-15	5.5 "Hg
06A	MW-I	Mod. Method TO-15	5.5 "Hg
07A	MW-N	Mod. Method TO-15	5.5 "Hg
08A	MW-4	Mod. Method TO-15	5.5 "Hg
09A	MW-10	Mod. Method TO-15	5.0 "Hg
09AA	MW-10 Duplicate	Mod. Method TO-15	5.0 "Hg
10A	Lab Blank	Mod. Method TO-15	NA
11A	CCV	Mod. Method TO-15	NA
12A	LCS	Mod. Method TO-15	NA

CERTIFIED BY: Linda J. Fruman DATE: 05/06/04

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, 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: 07/01/03, Expiration date: 06/30/04
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Mod. Method TO-15
Arcadis Geraghty & Miller
Workorder# 0404431A

Nine 1 Liter Summa Canister samples were received on April 22, 2004. The laboratory performed the analysis via Modified Method TO-15 using GC/MS in the full scan mode. The method involves direct injection of up to a 40 mL sample aliquot into a vapor management system. Following dehumidification the sample passes directly into the GC/MS for analysis. See the data sheets for the reporting limits of each compound.

Requirement	*TO-14A/TO-15*	*ATL Modifications*
Concentration of IS Spike	10 ppbv (TO-15)	500 ppbv
BFB Acceptance Criteria	CLP protocol (TO-15)	SW-846 protocol
Sampling Drying System	Nafion Dryer (TO-14A)	Multisorbent concentrator
Blank acceptance criteria	< 0.2 ppbv (TO-14A)	< RL.
IS Recovery	TO-15: Within 40 % of mean over ICAL for blanks, and w/in 40 % of daily CCV for samples	Within 40 % of CCV recovery for blank and samples.
Sample volume	Up to 400 mL (TO-14A)	Up to 40 mLs
Initial Calibration	</= 30 % RSD (TO-14A)	</= 30 % RSD with 2 compounds allowed out to < 40 % RSD.
Primary Ions for Quantification	Freon 114: 85, Carbon Tetrachloride: 117, Trichloroethene: 130, Ethyl Benzene, m,p- and o-Xylene: 91	Freon 114: 135, Carbon Tetrachloride: 119, Trichloroethene: 95, Ethyl Benzene, m,p- and o-Xylene: 106
Daily CCV	</= 30 % D	</= 30 % D with 2 allowed out up to 40%; flag associated sample results.
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request
Dilutions for Initial Calibration	Dynamic dilutions or static using canisters.	Syringe dilutions, bag dilutions.
BFB Tune Absolute Abundance Criteria	Within 10% of that from the previous day.	CCV Internal Standard area counts are compared to ICAL, corrective action for > 40 %D.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

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

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

performed).

J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV.

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: MW-A

ID#: 0404431A-01A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	e043018	Date of Collection:	4/20/04
Dil. Factor:	5.95	Date of Analysis:	4/30/04 03:05 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	30	14000	97	47000
Toluene	30	18000	110	68000
Ethyl Benzene	30	2600	130	11000
m,p-Xylene	30	8800	130	39000
o-Xylene	30	2700	130	12000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	103	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-B

ID#: 0404431A-02A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e043020**	**Date of Collection: 4/20/04**	
Dil. Factor:	**137**	**Date of Analysis: 4/30/04 04:00 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	680	460000	2200	1500000
Toluene	680	120000	2600	460000
Ethyl Benzene	680	1300	3000	5700
m,p-Xylene	680	2500	3000	11000
o-Xylene	680	Not Detected	3000	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-C

ID#: 0404431A-03A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e043022**	**Date of Collection: 4/20/04**	
Dil. Factor:	**33.7**	**Date of Analysis: 4/30/04 05:07 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	170	160000	550	530000
Toluene	170	39000	640	150000
Ethyl Benzene	170	290	740	1300
m,p-Xylene	170	260	740	1200
o-Xylene	170	Not Detected	740	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-D

ID#: 0404431A-04A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	e043021	Date of Collection:	4/20/04
Dil. Factor:	2.47	Date of Analysis:	4/30/04 04:27 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	12	190	40	610
Toluene	12	33	47	130
Ethyl Benzene	12	Not Detected	54	Not Detected
m,p-Xylene	12	Not Detected	54	Not Detected
o-Xylene	12	Not Detected	54	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-H

ID#: 0404431A-05A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e043027**	**Date of Collection: 4/20/04**	
Dil. Factor:	**282**	**Date of Analysis: 4/30/04 07:56 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	1400	950000	4600	3100000
Toluene	1400	290000	5400	1100000
Ethyl Benzene	1400	3100	6200	14000
m,p-Xylene	1400	8100	6200	36000
o-Xylene	1400	Not Detected	6200	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-I

ID#: 0404431A-06A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e043028**	**Date of Collection: 4/20/04**	
Dil. Factor:	**282**	**Date of Analysis: 4/30/04 08:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	1400	850000	4600	2800000
Toluene	1400	180000	5400	700000
Ethyl Benzene	1400	Not Detected	6200	Not Detected
m,p-Xylene	1400	2100	6200	9500
o-Xylene	1400	Not Detected	6200	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-N

ID#: 0404431A-07A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e043025**	**Date of Collection: 4/20/04**	
Dil. Factor:	**2.47**	**Date of Analysis: 4/30/04 06:58 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	12	Not Detected	40	Not Detected
Toluene	12	70	47	270
Ethyl Benzene	12	Not Detected	54	Not Detected
m,p-Xylene	12	Not Detected	54	Not Detected
o-Xylene	12	Not Detected	54	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-4

ID#: 0404431A-08A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	e043023	Date of Collection:	4/20/04
Dil Factor:	49.4	Date of Analysis:	4/30/04 05:36 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	250	180000	800	580000
Toluene	250	41000	950	160000
Ethyl Benzene	250	320	1100	1400
m,p-Xylene	250	330	1100	1500
o-Xylene	250	Not Detected	1100	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-10

ID#: 0404431A-09A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e043029**	**Date of Collection: 4/20/04**	
Dil. Factor:	**276**	**Date of Analysis: 4/30/04 09:08 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	1400	1100000	4500	3500000
Toluene	1400	420000	5300	1600000
Ethyl Benzene	1400	24000	6100	110000
m,p-Xylene	1400	52000	6100	230000
o-Xylene	1400	12000	6100	55000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-10 Duplicate

ID#: 0404431A-09AA

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	e043030	Date of Collection:	4/20/04
Dil. Factor:	276	Date of Analysis:	4/30/04 09:36 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	1400	1000000	4500	3400000
Toluene	1400	410000	5300	1600000
Ethyl Benzene	1400	23000	6100	100000
m,p-Xylene	1400	47000	6100	210000
o-Xylene	1400	11000	6100	49000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0404431A-10A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	e043005	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 4/30/04 08:42 AM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	5.0	Not Detected	16	Not Detected
Toluene	5.0	Not Detected	19	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130

AIR TOXICS LTD.

SAMPLE NAME: CCV

ID#: 0404431A-11A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e043003**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/04 07:42 AM**	

Compound	%Recovery
Benzene	100
Toluene	106
Ethyl Benzene	101
m,p-Xylene	118
o-Xylene	97

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0404431A-12A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e043004**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/30/04 08:09 AM**	

Compound	%Recovery
Benzene	111
Toluene	122
Ethyl Benzene	116
m,p-Xylene	123
o-Xylene	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130

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

Contact Person: Frank Kieffer
Company: ARCADIS
Address: 1004 N. Big Spring Ste 300 City: Midland State: TX Zip: 79701
Phone: (432) 687-5400 FAX: (432) 687-5401
Collected By: Signature: Darelin Griffin

Project Info:
P.O. #: MT000803-0001.0007
Project #:
Project Name: Pure Resources

Turn Around Time:
☑ Normal
☐ Rush _____ Specify

MW 4-23-04

Lab ID	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
01A	MW-A	4/20/04 1120	BTEX, O_2, N_2, CO_2	0	6	6.0"Hg
02A	MW-B	1140	BTEX, O_2, N_2, CO_2	0	0	5.5"Hg
03A	MW-C	1330	BTEX, O_2, N_2, CO_2	0	0	6.0"Hg
04A	MW-D	1400	BTEX, O_2, N_2, CO_2	0	0	5.5"Hg
05A	MW-H	1200	BTEX, O_2, N_2, CO_2	0	0	5.5"Hg
06A	MW-I	1235	BTEX, O_2, N_2, CO_2	0	0	5.5"Hg
07A	MW-N	1305	BTEX, O_2, N_2, CO_2	0	0	5.5"Hg
08A	MW-4	1250	BTEX, O_2, N_2, CO_2	0	0	5.5"Hg
09A	MW-10	4/20/04 1220	BTEX, O_2, N_2, CO_2	0	0	5.0"Hg
				0	0	

Relinquished By: (Signature) Date/Time: Darelin Griffin 1700/4/21/04
Received By: (Signature) Date/Time:
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time: Nicole Lathrop 4/22/04 1025
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time:

Notes:

Lab Use Only

Shipper Name	Air Bill #	Opened By:	Temp: (°C)	Condition	Custody Seals Intact?	Work Order #
FedEx	8432 0024 5527	Nico	n/a	GOOD	(Yes) No None	0404431A

Form 1238 rev. 09

√COC
5-4-04
tr

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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).

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E-mail to:samplereceiving@airtoxics.com

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WORK ORDER #: 0404431B

Work Order Summary

CLIENT:	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701	**BILL TO:**	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701
PHONE:	(432) 687-5400	**P.O. #**	MT000803.0001.00012
FAX:		**PROJECT #**	Pure Resources
DATE RECEIVED:	4/22/04	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	4/30/04		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	MW-A ✓	Modified ASTM D-1946	6.0 "Hg
02A	MW-B ✓	Modified ASTM D-1946	5.5 "Hg
03A	MW-C ✓	Modified ASTM D-1946	6.0 "Hg
04A	MW-D ✓	Modified ASTM D-1946	5.5 "Hg
05A	MW-H ✓	Modified ASTM D-1946	5.5 "Hg
06A	MW-I ✓	Modified ASTM D-1946	5.5 "Hg
07A	MW-N ✓	Modified ASTM D-1946	5.5 "Hg
08A	MW-4 ✓	Modified ASTM D-1946	5.5 "Hg
09A	MW-10 ✓	Modified ASTM D-1946	5.0 "Hg
09AA	MW-10 Duplicate	Modified ASTM D-1946	5.0 "Hg
10A	Lab Blank	Modified ASTM D-1946	NA
11A	LCS	Modified ASTM D-1946	NA

CERTIFIED BY: Linda D. Fruman DATE: 05/03/04

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, 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: 07/01/03, Expiration date: 06/30/04
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified ASTM D-1946
Arcadis Geraghty & Miller
Workorder# 0404431B

Nine 1 Liter Summa Canister samples were received on April 22, 2004. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample. See the data sheets for the reporting limits for each compound.

Requirement	*ASTM D-1946*	*ATL Modifications*
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A 3-point calibration curve is performed. Quantitation is based on a daily calibration standard which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL (2.0 mL for He and H2) on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 30% RPD for detections > 5 X's the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

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: MW-A ✓

ID#: 0404431B-01A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3042914**	**Date of Collection: 4/20/04 ✓**	
Dil. Factor:	**2.53**	**Date of Analysis: 4/29/04 04:20 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	22
Methane	0.00025	Not Detected
Carbon Dioxide	0.0025	0.061

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-B ✓

ID#: 0404431B-02A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3042915**	**Date of Collection: 4/20/04 ✓**	
Dil. Factor:	**2.47**	**Date of Analysis: 4/29/04 04:51 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	14
Methane	0.00025	0.082
Carbon Dioxide	0.0025	5.2

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-C

ID#: 0404431B-03A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3042916**	**Date of Collection:**	**4/20/04**
Dil. Factor:	**2.53**	**Date of Analysis:**	**4/29/04 05:14 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	17
Methane	0.00025	0.0069
Carbon Dioxide	0.0025	3.7

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-D ✓

ID#: 0404431B-04A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3042917**	**Date of Collection: 4/20/04 ✓**	
Dil. Factor:	**2.47**	**Date of Analysis: 4/29/04 05:36 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	21
Methane	0.00025	Not Detected
Carbon Dioxide	0.0025	0.31

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-H ✓

ID#: 0404431B-05A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	3042918	Date of Collection:	4/20/04 ✓
Dil. Factor:	2.47	Date of Analysis:	4/29/04 06:11 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	11
Methane	0.00025	0.21
Carbon Dioxide	0.0025	6.8

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-I ✓

ID#: 0404431B-06A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3042919**	**Date of Collection: 4/20/04 ✓**	
Dil. Factor:	**2.47**	**Date of Analysis: 4/29/04 06:33 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	9.4
Methane	0.00025	0.061
Carbon Dioxide	0.0025	6.9

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-N ✓

ID#: 0404431B-07A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	3042920	Date of Collection:	4/20/04 ✓
Dil. Factor:	2.47	Date of Analysis:	4/29/04 06:55 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	13
Methane	0.00025	0.0012
Carbon Dioxide	0.0025	6.0

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-4 ✓

ID#: 0404431B-08A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	3042921	Date of Collection:	4/20/04 ✓
Dil. Factor:	2.47	Date of Analysis:	4/29/04 07:17 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	9.2
Methane	0.00025	0.010
Carbon Dioxide	0.0025	9.1

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-10 ✓

ID#: 0404431B-09A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	3042922	Date of Collection:	4/20/04 ✓
Dil. Factor:	2.42	Date of Analysis:	4/29/04 07:41 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	5.7
Methane	0.00024	0.28
Carbon Dioxide	0.0024	10

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-10 Duplicate

ID#: 0404431B-09AA

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3042923**	**Date of Collection: 4/20/04**	
Dil. Factor:	**2.42**	**Date of Analysis: 4/29/04 08:05 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	5.7
Methane	0.00024	0.29
Carbon Dioxide	0.0024	10

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0404431B-10A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3042905**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/29/04 12:08 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	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#: 0404431B-11A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3042924**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 4/29/04 08:25 PM**	

Compound	%Recovery
Oxygen	99
Methane	99
Carbon Dioxide	99

Container Type: NA - Not Applicable

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

Contact Person: Frank Kieffer
Company: ARCADIS
Address: 1004 N Big Spring Ste 300 City: Midland State: TX Zip: 79701
Phone: (432) 687-5400 FAX: (432) 687-5401
Collected By: (Signature) [signature]

Project info:
P.O. # MT000803-Goal Seek
Project #
Project Name: Bu...

Turn Around Time:
☐ Normal
☐ Rush ____ Specify

MW 4-21-04

Lab I.D.	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
01A	MW-A	4/7/04	1120 BTEX, O2, N2, CO2	0	0	0 of 4
02A	MW-B		1140 BTEX O2 N2 CO2	0	0	5.5" Hg
03A	MW-C		1330 BTEX O2 N2 CO2	0	0	6.0" Hg
04A	MW-D		1400 BTEX O2 N2 CO2	0	0	5.5" Hg
05A	MW-H		1200 BTEX O2 N2 CO2	0	0	5.5" Hg
06A	MW-I		1235 BTEX O2 N2 CO2	0	0	5.5" Hg
07A	MW-N		1305 BTEX O2 N2 CO2	0	0	5.5" Hg
08A	MW-4		1250 BTEX O2 N2 CO2	0	0	5.5" Hg
09A	MW-16	4/7/04	1220 BTEX O2 N2 CO2	0	0	5.5" Hg
				0	0	

Relinquished By: (Signature) Date/Time: [signature] 4/8/04 1025
Received By: (Signature) Date/Time:
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time: Jacob Laboratories 4/8/04 1025
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time:

Notes:

Lab Use Only	Shipper Name	Air Bill #	Opened By	Temp. (°C)	Condition	Custody Seals Intact?	Apex Order #
	Fed Ex	8432 0074 5587	MW	n/a	Good	(Yes) No None	0404481

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

Contact Person: Frank Kieffer
Company: ARCADIS
Address: 1100 N. Big Spring Ste 300 City: Midland State: Tx Zip: 79701
Phone: (432) 687-5400 FAX: (432) 687-5401
Collected By: Signature: [signature]

Project info:
P.O. #: MTC008803.0001.0012
Project #:
Project Name: Rule Resource

Turn Around Time:
☑ Normal
☐ Rush _____ Specify

Lab I.D.	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
	MW-A	4/7/09 1120	BTEX, O_2, N_2, CO_2	-6	-5	
	MW-B	1140	BTEX, O_2, N_2, CO_2	-6	-5	
	MW-C	1330	BTEX, O_2, N_2, CO_2	-6	-5	
	MW-D	1400	BTEX, O_2, N_2, CO_2	-6	-5	
	MW-H	1200	BTEX, O_2, N_2, CO_2	-6	-5	
	MW-I	1235	BTEX, O_2, N_2, CO_2	-6	-5	
	MW-N	1305	BTEX, O_2, N_2, CO_2	-6	-5	
	MW-4	1250	BTEX, O_2, N_2, CO_2	-6	-5	
	MW-10	4/7/09 1220	BTEX, O_2, N_2, CO_2	-6	-5	
				-6	-5	

Relinquished By: (Signature) Date/Time: [signature] 4/7/09 1700 — Received By: (Signature) Date/Time: [signature] 4/7/09 1700
Relinquished By: (Signature) Date/Time — Received By: (Signature) Date/Time
Relinquished By: (Signature) Date/Time — Received By: (Signature) Date/Time

Notes:

Lab Use Only

Shipper Name	Air Bill #	Opened By:	Temp. (°C)	Condition	Custody Seals Intact?	Work Order #
					Yes No None	

EA GROUP

Laboratory Analytical Report

Arcadis Geraghty & Miller

1004 N Big Spring St., #300

Midland, TX 79701

Attention:

Frank Kieffer

Project Identification

MT000803.0001.00012 Pure Rescources

Purchase Order:

EA Group

Order Number

0404-00297

Donald R. Richner, CIH

Laboratory Manager

April 30, 2004

EA GROUP

Project Summary

The following analytical report contains the results as requested for samples submitted to EA Group. The results included in this report have been reviewed for compliance with the analytical methods indicated in this report. All data have been found to be compliant with accepted laboratory protocol. Exceptions, if any, are noted below. Analytes appearing in bold type were analyzed at a subcontract facility. EA Group is VAP, AIHA and ELLAP accredited. For industrial hygiene reports, air and/or surface concentrations results are based upon field sampling information provided by the client. Unless otherwise noted the following apply: Sample condition was acceptable upon receipt and Industrial hygiene results will not be blank corrected.

Data Interpretation

For assistance with report interpretation or questions regarding regulatory limits, please contact Client Services at 440-951-3514 or customerservice@eagroup-ohio.com.

Sample Summary

Sample Receive Date: 4/22/04

EAG Sample Identification	Client Sample Identification	EAG Sample Identification	Client Sample Identification
040400297 - 001	VP90	040400297 - 002	VP30
040400297 - 003	VP10		

Quality Control Narrative

****

 Unless noted, soil, sludge, and sediment results are reported on dry weight basis. The "Sample Reporting Limit" is based on the method used for analysis and does not refer to any regulatory limit. These results relate only to the items tested.

EA GROUP

EAG Workorder: 0404-00297 **Matrix:** OVM **Date Sampled:** 04/20/2004

EAG ID: 0404-00297-001 **QC Batch / Analyst:** 048193 / JAH **Date Received:** 04/22/2004

Client ID: VP90

Client Project: MT000803.0001.00012 Pure Rescources

Parameter	Result	Reporting Limit	Units	Date Analyzed
Organics in Air: OSHA 7				
Benzene	1.2	0.99	ppm	4/23/2004
Ethylbenzene	<0.84	0.84	ppm	4/23/2004
Toluene	<0.89	0.89	ppm	4/23/2004
Xylenes	1.1	0.96	ppm	4/23/2004
Passive Badge Desorption	Complete			4/23/2004

EA GROUP

EAG Workorder: 0404-00297
EAG ID: 0404-00297-002
Client ID: VP30
Client Project: MT000803.0001.00012 Pure Rescources

Matrix: OVM
QC Batch / Analyst: 048193 / JAH

Date Sampled: 04/20/2004
Date Received: 04/22/2004

Parameter	Result	Reporting Limit	Units	Date Analyzed
Organics in Air: OSHA 7				
Benzene	<0.99	0.99	ppm	4/23/2004
Ethylbenzene	<0.84	0.84	ppm	4/23/2004
Toluene	<0.89	0.89	ppm	4/23/2004
Xylenes	<0.96	0.96	ppm	4/23/2004
Passive Badge Desorption	Complete			4/23/2004

EA GROUP

EAG Workorder: 0404-00297
EAG ID: 0404-00297-003
Client ID: VP10
Client Project: MT000803.0001.00012 Pure Rescources

Matrix: OVM
QC Batch / Analyst: 048193/JAH

Date Sampled: 04/20/2004
Date Received: 04/22/2004

Parameter	Result	Reporting Limit	Units	Date Analyzed
Organics in Air: OSHA 7				4/23/2004
Benzene	<0.99	0.99	ppm	4/23/2004
Ethylbenzene	<0.84	0.84	ppm	4/23/2004
Toluene	<0.89	0.89	ppm	4/23/2004
Xylenes	<0.96	0.96	ppm	4/23/2004
Passive Badge Desorption	Complete			

Summary Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: June 2, 2004
Work Order: 4051909

Project Location: Pure Resources
Project Number: MT000803.0001.00012

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
34509	MW-C	water	2004-05-17	15:30	2004-05-19
34510	MW-N	water	2004-05-17	16:30	2004-05-19
34511	MW-I	water	2004-05-18	09:30	2004-05-19
34512	MW-H	water	2004-05-18	10:30	2004-05-19
34513	MW-B	water	2004-05-18	11:30	2004-05-19
34514	MW-A	water	2004-05-18	12:30	2004-05-19
34515	BW-1	water	2004-05-18	13:30	2004-05-19
34516	Dup-1	water	2004-05-18	00:00	2004-05-19
34517	Trip Blank	water	2004-05-18	00:00	2004-05-19

	BTEX			
Sample - Field Code	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)
34509 - MW-C	0.0225	0.0103	<0.00100	0.00120
34510 - MW-N	<0.00100	<0.00100	<0.00100	<0.00100
34511 - MW-I	2.14	<0.0500	<0.0500	<0.0500
34512 - MW-H	1.79	<0.0500	<0.0500	<0.0500
34513 - MW-B	0.368	0.0228	<0.0100	<0.0100
34514 - MW-A	0.0292	<0.00500	<0.00500	0.00860
34515 - BW-1	<0.00100	<0.00100	<0.00100	<0.00100
34516 - Dup-1	0.0495	0.00690	<0.00100	0.0166
34517 - Trip Blank	<0.00100	<0.00100	<0.00100	<0.00100

Sample: 34509 - MW-C

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		604	mg/L as CaCo3	4.00
Total Alkalinity		604	mg/L as CaCo3	4.00
Chloride		62.3	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		14.3	mg/L	0.0500
Sulfate		38.5	mg/L	0.500
Total Dissolved Solids		886.0	mg/L	10.00

continued ...

sample 34509 continued ...

Param	Flag	Result	Units	RL
Total Organic Carbon		<1.00	mg/L	1.00

Sample: 34510 - MW-N

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		182	mg/L as CaCo3	4.00
Total Alkalinity		182	mg/L as CaCo3	4.00
Chloride		77.5	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		<0.0500	mg/L	0.0500
Sulfate		40.7	mg/L	0.500
Total Dissolved Solids		474.0	mg/L	10.00
Total Organic Carbon		<1.00	mg/L	1.00

Sample: 34511 - MW-I

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		250	mg/L as CaCo3	4.00
Total Alkalinity		250	mg/L as CaCo3	4.00
Chloride		51.0	mg/L	0.500
Dissolved Iron		0.0820	mg/L	0.0500
Total Iron		0.919	mg/L	0.0500
Sulfate		37.3	mg/L	0.500
Total Dissolved Solids		466.0	mg/L	10.00
Total Organic Carbon		1.82	mg/L	1.00

Sample: 34512 - MW-H

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		252	mg/L as CaCo3	4.00
Total Alkalinity		252	mg/L as CaCo3	4.00
Chloride		42.1	mg/L	0.500
Dissolved Iron		0.0920	mg/L	0.0500
Total Iron		0.112	mg/L	0.0500
Sulfate		38.4	mg/L	0.500
Total Dissolved Solids		452.0	mg/L	10.00
Total Organic Carbon		1.47	mg/L	1.00

Sample: 34513 - MW-B

continued ...

sample 34513 continued ...

Param	Flag	Result	Units	RL
Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		248	mg/L as CaCo3	4.00
Total Alkalinity		248	mg/L as CaCo3	4.00
Chloride		44.1	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		0.123	mg/L	0.0500
Sulfate		36.7	mg/L	0.500
Total Dissolved Solids		449.0	mg/L	10.00
Total Organic Carbon		3.47	mg/L	1.00

Sample: 34514 - MW-A

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		180	mg/L as CaCo3	4.00
Total Alkalinity		180	mg/L as CaCo3	4.00
Chloride		44.2	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		0.120	mg/L	0.0500
Sulfate		26.1	mg/L	0.500
Total Dissolved Solids		360.0	mg/L	10.00
Total Organic Carbon		8.16	mg/L	1.00

Sample: 34515 - BW-1

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		204	mg/L as CaCo3	4.00
Total Alkalinity		204	mg/L as CaCo3	4.00
Chloride		19.7	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		6.06	mg/L	0.0500
Sulfate		45.1	mg/L	0.500
Total Dissolved Solids		257.0	mg/L	10.00
Total Organic Carbon		1.45	mg/L	1.00

Sample: 34516 - Dup-1

Param	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		154	mg/L as CaCo3	4.00
Total Alkalinity		154	mg/L as CaCo3	4.00

continued ...

sample 34516 continued ...

Param	Flag	Result	Units	RL
Chloride		44.2	mg/L	0.500
Dissolved Iron		<0.0500	mg/L	0.0500
Total Iron		0.155	mg/L	0.0500
Sulfate		25.7	mg/L	0.500
Total Dissolved Solids		378.0	mg/L	10.00
Total Organic Carbon		8.54	mg/L	1.00

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
155 McCutcheon, Suite H El Paso, Texas 79932 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail: lab@traceanalysis.com

Analytical and Quality Control Report

Frank Kieffer
Arcadis Geraghty & Miller
1004 N. Big Spring St.
Suite 300
Midland, TX 79701

Report Date: June 2, 2004

Work Order: 4051909

Project Location: Pure Resources
Project Number: MT000803.0001.00012

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
34509	MW-C	water	2004-05-17	15:30	2004-05-19
34510	MW-N	water	2004-05-17	16:30	2004-05-19
34511	MW-I	water	2004-05-18	09:30	2004-05-19
34512	MW-H	water	2004-05-18	10:30	2004-05-19
34513	MW-B	water	2004-05-18	11:30	2004-05-19
34514	MW-A	water	2004-05-18	12:30	2004-05-19
34515	BW-1	water	2004-05-18	13:30	2004-05-19
34516	Dup-1	water	2004-05-18	00:00	2004-05-19
34517	Trip Blank	water	2004-05-18	00:00	2004-05-19

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 29 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director

Analytical Report

Sample: 34509 - MW-C

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	10033	Date Analyzed:	2004-05-27	Analyzed By:	RS
Prep Batch:	8887	Date Prepared:	2004-05-27	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		604	mg/L as CaCo3	1	4.00
Total Alkalinity		604	mg/L as CaCo3	1	4.00

Sample: 34509 - MW-C

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9886	Date Analyzed:	2004-05-21	Analyzed By:	MT
Prep Batch:	8761	Date Prepared:	2004-05-21	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		0.0225	mg/L	1	0.00100
Toluene		0.0103	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		0.00120	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.104	mg/L	1	0.100	104	79.7 - 119
4-Bromofluorobenzene (4-BFB)		0.0889	mg/L	1	0.100	89	65.6 - 141

Sample: 34509 - MW-C

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9791	Date Analyzed:	2004-05-20	Analyzed By:	JSW
Prep Batch:	8692	Date Prepared:	2004-05-19	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		62.3	mg/L	10	0.500

Sample: 34509 - MW-C

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	9947	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8733	Date Prepared:	2004-05-21	Prepared By:	TP

continued ...

sample 34509 continued...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 34509 - MW-C

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	9944	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8708	Date Prepared:	2004-05-20	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Iron		14.3	mg/L	1	0.0500

Sample: 34509 - MW-C

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9791	Date Analyzed:	2004-05-20	Analyzed By:	JSW
Prep Batch:	8692	Date Prepared:	2004-05-19	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		38.5	mg/L	10	0.500

Sample: 34509 - MW-C

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	9915	Date Analyzed:	2004-05-24	Analyzed By:	RS
Prep Batch:	8788	Date Prepared:	2004-05-20	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		886.0	mg/L	2	10.00

Sample: 34509 - MW-C

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	10128	Date Analyzed:	2004-06-01	Analyzed By:	RC
Prep Batch:	8975	Date Prepared:	2004-06-01	Prepared By:	RC

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		<1.00	mg/L	1	1.00

Sample: 34510 - MW-N

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	10033	Date Analyzed:	2004-05-27	Analyzed By:	RS
Prep Batch:	8887	Date Prepared:	2004-05-27	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		182	mg/L as CaCo3	1	4.00
Total Alkalinity		182	mg/L as CaCo3	1	4.00

Sample: 34510 - MW-N

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9886	Date Analyzed:	2004-05-21	Analyzed By:	MT
Prep Batch:	8761	Date Prepared:	2004-05-21	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.108	mg/L	1	0.100	108	79.7 - 119
4-Bromofluorobenzene (4-BFB)		0.0910	mg/L	1	0.100	91	65.6 - 141

Sample: 34510 - MW-N

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9791	Date Analyzed:	2004-05-20	Analyzed By:	JSW
Prep Batch:	8692	Date Prepared:	2004-05-19	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		77.5	mg/L	5	0.500

Sample: 34510 - MW-N

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	9947	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8733	Date Prepared:	2004-05-21	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 34510 - MW-N

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	9944	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8708	Date Prepared:	2004-05-20	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Iron		<0.0500		mg/L	1	0.0500

Sample: 34510 - MW-N

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9791	Date Analyzed:	2004-05-20	Analyzed By:	JSW
Prep Batch:	8692	Date Prepared:	2004-05-19	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Sulfate		40.7		mg/L	5	0.500

Sample: 34510 - MW-N

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	9916	Date Analyzed:	2004-05-24	Analyzed By:	RS
Prep Batch:	8789	Date Prepared:	2004-05-20	Prepared By:	RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Dissolved Solids		474.0		mg/L	1	10.00

Sample: 34510 - MW-N

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	10128	Date Analyzed:	2004-06-01	Analyzed By:	RC
Prep Batch:	8975	Date Prepared:	2004-06-01	Prepared By:	RC

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Organic Carbon		<1.00		mg/L	1	1.00

Sample: 34511 - MW-I

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	10033	Date Analyzed:	2004-05-27	Analyzed By:	RS
Prep Batch:	8887	Date Prepared:	2004-05-27	Prepared By:	RS

Parameter	Flag	Result	RL	Units	Dilution	RL
Hydroxide Alkalinity		<1.00		mg/L as CaCo3	1	1.00

continued . . .

sample 34511 continued...

Parameter	Flag	RL Result	Units	Dilution	RL
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		250	mg/L as CaCo3	1	4.00
Total Alkalinity		250	mg/L as CaCo3	1	4.00

Sample: 34511 - MW-I

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9996	Date Analyzed:	2004-05-25	Analyzed By:	MT
Prep Batch:	8856	Date Prepared:	2004-05-25	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		2.14	mg/L	50	0.00100
Toluene		<0.0500	mg/L	50	0.00100
Ethylbenzene		<0.0500	mg/L	50	0.00100
Xylene		<0.0500	mg/L	50	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		4.99	mg/L	50	0.100	100	78.4 - 118
4-Bromofluorobenzene (4-BFB)		3.51	mg/L	50	0.100	70	53.1 - 149

Sample: 34511 - MW-I

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9791	Date Analyzed:	2004-05-20	Analyzed By:	JSW
Prep Batch:	8692	Date Prepared:	2004-05-19	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		51.0	mg/L	5	0.500

Sample: 34511 - MW-I

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	9947	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8733	Date Prepared:	2004-05-21	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		0.0820	mg/L	1	0.0500

Sample: 34511 - MW-I

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	9944	Date Analyzed:	2004-05-25	Analyzed By:	RR

Prep Batch: 8708 Date Prepared: 2004-05-20 Prepared By: TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Iron		0.919	mg/L	1	0.0500

Sample: 34511 - MW-I

Analysis: SO4 (IC) Analytical Method: E 300.0 Prep Method: N/A
QC Batch: 9791 Date Analyzed: 2004-05-20 Analyzed By: JSW
Prep Batch: 8692 Date Prepared: 2004-05-19 Prepared By: JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		37.3	mg/L	5	0.500

Sample: 34511 - MW-I

Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 9916 Date Analyzed: 2004-05-24 Analyzed By: RS
Prep Batch: 8789 Date Prepared: 2004-05-20 Prepared By: RS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		466.0	mg/L	1	10.00

Sample: 34511 - MW-I

Analysis: TOC Analytical Method: E 415.1 Prep Method: N/A
QC Batch: 10128 Date Analyzed: 2004-06-01 Analyzed By: RC
Prep Batch: 8975 Date Prepared: 2004-06-01 Prepared By: RC

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		1.82	mg/L	1	1.00

Sample: 34512 - MW-H

Analysis: Alkalinity Analytical Method: SM 2320B Prep Method: N/A
QC Batch: 10033 Date Analyzed: 2004-05-27 Analyzed By: RS
Prep Batch: 8887 Date Prepared: 2004-05-27 Prepared By: RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		252	mg/L as CaCo3	1	4.00
Total Alkalinity		252	mg/L as CaCo3	1	4.00

Sample: 34512 - MW-H

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9996	Date Analyzed:	2004-05-25	Analyzed By:	MT
Prep Batch:	8856	Date Prepared:	2004-05-25	Prepared By:	MT

Parameter	Flag	Result	RL Units	Dilution	RL
Benzene		1.79	mg/L	50	0.00100
Toluene		<0.0500	mg/L	50	0.00100
Ethylbenzene		<0.0500	mg/L	50	0.00100
Xylene		<0.0500	mg/L	50	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		4.93	mg/L	50	0.100	99	78.4 - 118
4-Bromofluorobenzene (4-BFB)		3.59	mg/L	50	0.100	72	53.1 - 149

Sample: 34512 - MW-H

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9791	Date Analyzed:	2004-05-20	Analyzed By:	JSW
Prep Batch:	8692	Date Prepared:	2004-05-19	Prepared By:	JSW

Parameter	Flag	Result	RL Units	Dilution	RL
Chloride		42.1	mg/L	5	0.500

Sample: 34512 - MW-H

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	9947	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8733	Date Prepared:	2004-05-21	Prepared By:	TP

Parameter	Flag	Result	RL Units	Dilution	RL
Dissolved Iron		0.0920	mg/L	1	0.0500

Sample: 34512 - MW-H

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	9944	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8708	Date Prepared:	2004-05-20	Prepared By:	TP

Parameter	Flag	Result	RL Units	Dilution	RL
Total Iron		0.112	mg/L	1	0.0500

Sample: 34512 - MW-H

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9791	Date Analyzed:	2004-05-20	Analyzed By:	JSW
Prep Batch:	8692	Date Prepared:	2004-05-19	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		38.4	mg/L	5	0.500

Sample: 34512 - MW-H

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	9916	Date Analyzed:	2004-05-24	Analyzed By:	RS
Prep Batch:	8789	Date Prepared:	2004-05-20	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		452.0	mg/L	1	10.00

Sample: 34512 - MW-H

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	10128	Date Analyzed:	2004-06-01	Analyzed By:	RC
Prep Batch:	8975	Date Prepared:	2004-06-01	Prepared By:	RC

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		1.47	mg/L	1	1.00

Sample: 34513 - MW-B

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	10033	Date Analyzed:	2004-05-27	Analyzed By:	RS
Prep Batch:	8887	Date Prepared:	2004-05-27	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		248	mg/L as CaCo3	1	4.00
Total Alkalinity		248	mg/L as CaCo3	1	4.00

Sample: 34513 - MW-B

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9996	Date Analyzed:	2004-05-25	Analyzed By:	MT
Prep Batch:	8856	Date Prepared:	2004-05-25	Prepared By:	MT

continued ...

sample 34513 continued ...

Parameter	Flag	RL Result	Units	Dilution	RL

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		0.368	mg/L	10	0.00100
Toluene		0.0228	mg/L	10	0.00100
Ethylbenzene		<0.0100	mg/L	10	0.00100
Xylene		<0.0100	mg/L	10	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.05	mg/L	10	0.100	105	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.722	mg/L	10	0.100	72	53.1 - 149

Sample: 34513 - MW-B

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9791	Date Analyzed:	2004-05-20	Analyzed By:	JSW
Prep Batch:	8692	Date Prepared:	2004-05-19	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		44.1	mg/L	5	0.500

Sample: 34513 - MW-B

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	9947	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8733	Date Prepared:	2004-05-21	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 34513 - MW-B

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	9944	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8708	Date Prepared:	2004-05-20	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Iron		0.123	mg/L	1	0.0500

Sample: 34513 - MW-B

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A

QC Batch: 9791 Date Analyzed: 2004-05-20 Analyzed By: JSW
Prep Batch: 8692 Date Prepared: 2004-05-19 Prepared By: JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		36.7	mg/L	5	0.500

Sample: 34513 - MW-B

Analysis: TDS Analytical Method: SM 2540C Prep Method: N/A
QC Batch: 9916 Date Analyzed: 2004-05-24 Analyzed By: RS
Prep Batch: 8789 Date Prepared: 2004-05-20 Prepared By: RS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		449.0	mg/L	1	10.00

Sample: 34513 - MW-B

Analysis: TOC Analytical Method: E 415.1 Prep Method: N/A
QC Batch: 10128 Date Analyzed: 2004-06-01 Analyzed By: RC
Prep Batch: 8975 Date Prepared: 2004-06-01 Prepared By: RC

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		3.47	mg/L	1	1.00

Sample: 34514 - MW-A

Analysis: Alkalinity Analytical Method: SM 2320B Prep Method: N/A
QC Batch: 10033 Date Analyzed: 2004-05-27 Analyzed By: RS
Prep Batch: 8887 Date Prepared: 2004-05-27 Prepared By: RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		180	mg/L as CaCo3	1	4.00
Total Alkalinity		180	mg/L as CaCo3	1	4.00

Sample: 34514 - MW-A

Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5030B
QC Batch: 9996 Date Analyzed: 2004-05-25 Analyzed By: MT
Prep Batch: 8856 Date Prepared: 2004-05-25 Prepared By: MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		0.0292	mg/L	5	0.00100

continued...

sample 34514 continued . . .

Parameter	Flag	RL Result	Units	Dilution	RL
Toluene		<0.00500	mg/L	5	0.00100
Ethylbenzene		<0.00500	mg/L	5	0.00100
Xylene		0.00860	mg/L	5	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.540	mg/L	5	0.100	108	78.4 - 118
4-Bromofluorobenzene (4-BFB)		0.403	mg/L	5	0.100	81	53.1 - 149

Sample: 34514 - MW-A

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9818	Date Analyzed:	2004-05-21	Analyzed By:	JSW
Prep Batch:	8712	Date Prepared:	2004-05-20	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		44.2	mg/L	5	0.500

Sample: 34514 - MW-A

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	9947	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8733	Date Prepared:	2004-05-21	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 34514 - MW-A

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	9944	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8708	Date Prepared:	2004-05-20	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Iron		0.120	mg/L	1	0.0500

Sample: 34514 - MW-A

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9818	Date Analyzed:	2004-05-21	Analyzed By:	JSW
Prep Batch:	8712	Date Prepared:	2004-05-20	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		26.1	mg/L	5	0.500

Sample: 34514 - MW-A

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	9916	Date Analyzed:	2004-05-24	Analyzed By:	RS
Prep Batch:	8789	Date Prepared:	2004-05-20	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		360.0	mg/L	1	10.00

Sample: 34514 - MW-A

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	10128	Date Analyzed:	2004-06-01	Analyzed By:	RC
Prep Batch:	8975	Date Prepared:	2004-06-01	Prepared By:	RC

Parameter	Flag	RL Result	Units	Dilution	RL
Total Organic Carbon		8.16	mg/L	1	1.00

Sample: 34515 - BW-1

Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	10033	Date Analyzed:	2004-05-27	Analyzed By:	RS
Prep Batch:	8887	Date Prepared:	2004-05-27	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		204	mg/L as CaCo3	1	4.00
Total Alkalinity		204	mg/L as CaCo3	1	4.00

Sample: 34515 - BW-1

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9886	Date Analyzed:	2004-05-21	Analyzed By:	MT
Prep Batch:	8761	Date Prepared:	2004-05-21	Prepared By:	MT

Parameter	Flag	RL Result	Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.104	mg/L	1	0.100	104	79.7 - 119
4-Bromofluorobenzene (4-BFB)		0.0898	mg/L	1	0.100	90	65.6 - 141

Sample: 34515 - BW-1

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9818	Date Analyzed:	2004-05-21	Analyzed By:	JSW
Prep Batch:	8712	Date Prepared:	2004-05-20	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Chloride		19.7		mg/L	5	0.500

Sample: 34515 - BW-1

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	9947	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8733	Date Prepared:	2004-05-21	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Dissolved Iron		<0.0500		mg/L	1	0.0500

Sample: 34515 - BW-1

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	9944	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8708	Date Prepared:	2004-05-20	Prepared By:	TP

Parameter	Flag	Result	RL	Units	Dilution	RL
Total Iron		6.06		mg/L	1	0.0500

Sample: 34515 - BW-1

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9818	Date Analyzed:	2004-05-21	Analyzed By:	JSW
Prep Batch:	8712	Date Prepared:	2004-05-20	Prepared By:	JSW

Parameter	Flag	Result	RL	Units	Dilution	RL
Sulfate		45.1		mg/L	5	0.500

Sample: 34515 - BW-1

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A

QC Batch: 9916 Date Analyzed: 2004-05-24 Analyzed By: RS
Prep Batch: 8789 Date Prepared: 2004-05-20 Prepared By: RS

Parameter	Flag	Result	RL Units	Dilution	RL
Total Dissolved Solids		257.0	mg/L	1	10.00

Sample: 34515 - BW-1

Analysis: TOC Analytical Method: E 415.1 Prep Method: N/A
QC Batch: 10128 Date Analyzed: 2004-06-01 Analyzed By: RC
Prep Batch: 8975 Date Prepared: 2004-06-01 Prepared By: RC

Parameter	Flag	Result	RL Units	Dilution	RL
Total Organic Carbon		1.45	mg/L	1	1.00

Sample: 34516 - Dup-1

Analysis: Alkalinity Analytical Method: SM 2320B Prep Method: N/A
QC Batch: 10033 Date Analyzed: 2004-05-27 Analyzed By: RS
Prep Batch: 8887 Date Prepared: 2004-05-27 Prepared By: RS

Parameter	Flag	Result	RL Units	Dilution	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1	1.00
Bicarbonate Alkalinity		154	mg/L as CaCo3	1	4.00
Total Alkalinity		154	mg/L as CaCo3	1	4.00

Sample: 34516 - Dup-1

Analysis: BTEX Analytical Method: S 8021B Prep Method: S 5030B
QC Batch: 9886 Date Analyzed: 2004-05-21 Analyzed By: MT
Prep Batch: 8761 Date Prepared: 2004-05-21 Prepared By: MT

Parameter	Flag	Result	RL Units	Dilution	RL
Benzene		0.0495	mg/L	1	0.00100
Toluene		0.00690	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		0.0166	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.102	mg/L	1	0.100	102	79.7 - 119
4-Bromofluorobenzene (4-BFB)		0.0911	mg/L	1	0.100	91	65.6 - 141

Sample: 34516 - Dup-1

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9818	Date Analyzed:	2004-05-21	Analyzed By:	JSW
Prep Batch:	8712	Date Prepared:	2004-05-20	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		44.2	mg/L	5	0.500

Sample: 34516 - Dup-1

Analysis:	Fe, Dissolved	Analytical Method:	S 6010B	Prep Method:	S 3005A
QC Batch:	9947	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8733	Date Prepared:	2004-05-21	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Dissolved Iron		<0.0500	mg/L	1	0.0500

Sample: 34516 - Dup-1

Analysis:	Fe, Total	Analytical Method:	S 6010B	Prep Method:	S 3010A
QC Batch:	9944	Date Analyzed:	2004-05-25	Analyzed By:	RR
Prep Batch:	8708	Date Prepared:	2004-05-20	Prepared By:	TP

Parameter	Flag	RL Result	Units	Dilution	RL
Total Iron		0.155	mg/L	1	0.0500

Sample: 34516 - Dup-1

Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	9818	Date Analyzed:	2004-05-21	Analyzed By:	JSW
Prep Batch:	8712	Date Prepared:	2004-05-20	Prepared By:	JSW

Parameter	Flag	RL Result	Units	Dilution	RL
Sulfate		25.7	mg/L	5	0.500

Sample: 34516 - Dup-1

Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	9916	Date Analyzed:	2004-05-24	Analyzed By:	RS
Prep Batch:	8789	Date Prepared:	2004-05-20	Prepared By:	RS

Parameter	Flag	RL Result	Units	Dilution	RL
Total Dissolved Solids		378.0	mg/L	1	10.00

Sample: 34516 - Dup-1

Analysis:	TOC	Analytical Method:	E 415.1	Prep Method:	N/A
QC Batch:	10130	Date Analyzed:	2004-06-01	Analyzed By:	RC
Prep Batch:	8975	Date Prepared:	2004-06-01	Prepared By:	RC

Parameter	Flag	Result	RL Units	Dilution	RL
Total Organic Carbon		8.54	mg/L	1	1.00

Sample: 34517 - Trip Blank

Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	9891	Date Analyzed:	2004-05-21	Analyzed By:	MT
Prep Batch:	8765	Date Prepared:	2004-05-21	Prepared By:	MT

Parameter	Flag	Result	RL Units	Dilution	RL
Benzene		<0.00100	mg/L	1	0.00100
Toluene		<0.00100	mg/L	1	0.00100
Ethylbenzene		<0.00100	mg/L	1	0.00100
Xylene		<0.00100	mg/L	1	0.00100

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.0996	mg/L	1	0.100	100	79.7 - 119
4-Bromofluorobenzene (4-BFB)		0.0870	mg/L	1	0.100	87	65.6 - 141

Method Blank (1) QC Batch: 10033

Parameter	Flag	Result	Units	RL
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1
Bicarbonate Alkalinity		<4.00	mg/L as CaCo3	4
Total Alkalinity		<4.00	mg/L as CaCo3	4

Method Blank (1) QC Batch: 10128

Parameter	Flag	Result	Units	RL
Total Organic Carbon		<1.00	mg/L	1

Method Blank (1) QC Batch: 10130

Parameter	Flag	Result	Units	RL
Total Organic Carbon		<1.00	mg/L	1

Method Blank (1) QC Batch: 9791

Parameter	Flag	Result	Units	RL
Chloride		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 9791

Parameter	Flag	Result	Units	RL
Sulfate		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 9818

Parameter	Flag	Result	Units	RL
Chloride		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 9818

Parameter	Flag	Result	Units	RL
Sulfate		<0.500	mg/L	0.5

Method Blank (1) QC Batch: 9886

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.108	mg/L	1	0.100	108	76.2 - 119
4-Bromofluorobenzene (4-BFB)		0.0964	mg/L	1	0.100	96	58.5 - 136

Method Blank (1) QC Batch: 9891

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.102	mg/L	1	0.100	102	76.2 - 119
4-Bromofluorobenzene (4-BFB)		0.0885	mg/L	1	0.100	88	58.5 - 136

Method Blank (1) QC Batch: 9915

Parameter	Flag	Result	Units	RL
Total Dissolved Solids		<10.00	mg/L	10

Method Blank (1) QC Batch: 9916

Parameter	Flag	Result	Units	RL
Total Dissolved Solids		<10.00	mg/L	10

Method Blank (1) QC Batch: 9944

Parameter	Flag	Result	Units	RL
Total Iron		<0.0500	mg/L	0.05

Method Blank (1) QC Batch: 9947

Parameter	Flag	Result	Units	RL
Dissolved Iron		<0.0500	mg/L	0.05

Method Blank (1) QC Batch: 9996

Parameter	Flag	Result	Units	RL
Benzene		<0.00100	mg/L	0.001
Toluene		<0.00100	mg/L	0.001
Ethylbenzene		<0.00100	mg/L	0.001
Xylene		<0.00100	mg/L	0.001

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.101	mg/L	1	0.100	101	70 - 130
4-Bromofluorobenzene (4-BFB)		0.0730	mg/L	1	0.100	73	70 - 130

Duplicate (1) QC Batch: 10033

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	<1.00	<1.00	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	158	154	mg/L as CaCo3	1	2	20
Total Alkalinity	158	154	mg/L as CaCo3	1	2	4.8

Duplicate (1) QC Batch: 9915

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	1994	1992	mg/L	2	0	8.7

Duplicate (1) QC Batch: 9916

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	16000	16600	mg/L	20	4	8.7

Laboratory Control Spike (LCS-1) QC Batch: 10128

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	4.91	5.04	mg/L	1	5.00	<0.382	98	3	77 - 122	13

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 10130

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	4.88	4.91	mg/L	1	5.00	<0.382	98	1	77 - 122	13

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 9791

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	11.4	11.3	mg/L	1	12.5	<0.337	91	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 9791

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Sulfate	11.6	11.8	mg/L	1	12.5	<0.409	93	2	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 9818

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	11.6	11.5	mg/L	1	12.5	<0.337	93	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 9818

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Sulfate	11.9	11.9	mg/L	1	12.5	<0.409	95	0	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 9886

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0976	0.0949	mg/L	1	0.100	<0.000338	98	3	84.6 - 117	20
Toluene	0.0918	0.0888	mg/L	1	0.100	<0.000299	92	3	80.9 - 115	20
Ethylbenzene	0.0909	0.0882	mg/L	1	0.100	<0.000469	91	3	77.6 - 119	20
Xylene	0.271	0.263	mg/L	1	0.300	<0.000787	90	3	76.2 - 122	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.104	0.102	mg/L	1	0.100	104	102	79.7 - 119
4-Bromofluorobenzene (4-BFB)	0.0953	0.0929	mg/L	1	0.100	95	93	65.6 - 141

Laboratory Control Spike (LCS-1) QC Batch: 9891

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0969	0.0962	mg/L	1	0.100	<0.000338	97	1	84.6 - 117	20
Toluene	0.0901	0.0895	mg/L	1	0.100	<0.000299	90	1	80.9 - 115	20
Ethylbenzene	0.0891	0.0884	mg/L	1	0.100	<0.000469	89	1	77.6 - 119	20
Xylene	0.266	0.264	mg/L	1	0.300	<0.000787	89	1	76.2 - 122	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.102	0.0994	mg/L	1	0.100	102	99	79.7 - 119
4-Bromofluorobenzene (4-BFB)	0.0925	0.0906	mg/L	1	0.100	92	91	65.6 - 141

Laboratory Control Spike (LCS-1) QC Batch: 9944

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Iron	0.482	0.483	mg/L	1	0.500	<0.00220	96	0	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 9947

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Iron	0.450	0.453	mg/L	1	0.500	<0.0103	90	1	85 - 115	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 9996

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Benzene	0.0877	0.0880	mg/L	1	0.100	<0.000136	88	0	70 - 130	20
Toluene	0.0882	0.0894	mg/L	1	0.100	<0.000247	88	1	70 - 130	20
Ethylbenzene	0.0896	0.0910	mg/L	1	0.100	<0.000550	90	2	70 - 130	20
Xylene	0.275	0.278	mg/L	1	0.300	<0.00156	92	1	70 - 130	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0921	0.0951	mg/L	1	0.100	92	95	70 - 130
4-Bromofluorobenzene (4-BFB)	0.0968	0.101	mg/L	1	0.100	97	101	70 - 130

Matrix Spike (MS-1) QC Batch: 10128

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	6.55	8.28	mg/L	1	5.00	1.45	102	23	24 - 207	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 10130

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Organic Carbon	3.08	2.83	mg/L	1	5.00	<0.382	62	8	24 - 207	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 9791

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	689	687	mg/L	50	12.5	145	87	0	74.3 - 118	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 9791

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Sulfate	2160	2150	mg/L	50	12.5	1600	90	0	77.8 - 112	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 9818

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	11000	10900	mg/L	500	12.5	5700	85	1	74.3 - 118	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 9818

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Sulfate	10200	10200	mg/L	500	12.5	4550	90	0	77.8 - 112	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 9944

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Total Iron	14.7	14.7	mg/L	1	0.500	14.3	80	0	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 9947

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Dissolved Iron	0.480	0.486	mg/L	1	0.500	<0.0103	96	1	75 - 125	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1) QC Batch: 10033

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Alkalinity		mg/L as CaCo3	250	242	97	90 - 110	2004-05-27

Standard (CCV-1) QC Batch: 10033

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Alkalinity		mg/L as CaCo3	250	240	96	90 - 110	2004-05-27

Standard (ICV-1) QC Batch: 10128

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	5.06	101	85 - 115	2004-06-01

Standard (CCV-1) QC Batch: 10128

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	4.82	96	85 - 115	2004-06-01

Standard (ICV-1) QC Batch: 10130

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	4.89	98	85 - 115	2004-06-01

Standard (CCV-1) QC Batch: 10130

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Organic Carbon		mg/L	5.00	5.13	103	85 - 115	2004-06-01

Standard (ICV-1) QC Batch: 9791

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	11.4	91	90 - 110	2004-05-20

Standard (ICV-1) QC Batch: 9791

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	12.5	11.8	94	90 - 110	2004-05-20

Standard (CCV-1) QC Batch: 9791

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	11.3	90	90 - 110	2004-05-20

Standard (CCV-1) QC Batch: 9791

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	12.5	11.7	94	90 - 110	2004-05-20

Standard (ICV-1) QC Batch: 9818

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	11.5	92	90 - 110	2004-05-21

Standard (ICV-1) QC Batch: 9818

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	12.5	12.0	96	90 - 110	2004-05-21

Standard (CCV-1) QC Batch: 9818

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	11.5	92	90 - 110	2004-05-21

Standard (CCV-1) QC Batch: 9818

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		mg/L	12.5	12.0	96	90 - 110	2004-05-21

Standard (ICV-1) QC Batch: 9886

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0985	98	85 - 115	2004-05-21
Toluene		mg/L	0.100	0.0925	92	85 - 115	2004-05-21
Ethylbenzene		mg/L	0.100	0.0917	92	85 - 115	2004-05-21
Xylene		mg/L	0.300	0.272	91	85 - 115	2004-05-21

Standard (CCV-1) QC Batch: 9886

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0971	97	85 - 115	2004-05-21
Toluene		mg/L	0.100	0.0907	91	85 - 115	2004-05-21
Ethylbenzene		mg/L	0.100	0.0891	89	85 - 115	2004-05-21
Xylene		mg/L	0.300	0.265	88	85 - 115	2004-05-21

Standard (CCV-2) QC Batch: 9886

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0968	97	85 - 115	2004-05-21
Toluene		mg/L	0.100	0.0901	90	85 - 115	2004-05-21
Ethylbenzene		mg/L	0.100	0.0893	89	85 - 115	2004-05-21
Xylene		mg/L	0.300	0.265	88	85 - 115	2004-05-21

Standard (ICV-1) QC Batch: 9891

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0959	96	85 - 115	2004-05-21
Toluene		mg/L	0.100	0.0894	89	85 - 115	2004-05-21
Ethylbenzene		mg/L	0.100	0.0887	89	85 - 115	2004-05-21
Xylene		mg/L	0.300	0.263	88	85 - 115	2004-05-21

Standard (CCV-1) QC Batch: 9891

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0983	98	85 - 115	2004-05-21
Toluene		mg/L	0.100	0.0912	91	85 - 115	2004-05-21
Ethylbenzene		mg/L	0.100	0.0901	90	85 - 115	2004-05-21
Xylene		mg/L	0.300	0.268	89	85 - 115	2004-05-21

Standard (ICV-1) QC Batch: 9915

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	1003	100	90 - 110	2004-05-24

Standard (CCV-1) QC Batch: 9915

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	1023	102	90 - 110	2004-05-24

Standard (ICV-1) QC Batch: 9916

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	1023	102	90 - 110	2004-05-24

Standard (CCV-1) QC Batch: 9916

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Dissolved Solids		mg/L	1000	1035	104	90 - 110	2004-05-24

Standard (ICV-1) QC Batch: 9944

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Iron		mg/L	1.00	1.02	102	90 - 110	2004-05-25

Standard (CCV-1) QC Batch: 9944

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Iron		mg/L	1.00	1.01	101	90 - 110	2004-05-25

Standard (ICV-1) QC Batch: 9947

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Iron		mg/L	1.00	1.02	102	90 - 110	2004-05-25

Standard (CCV-1) QC Batch: 9947

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Iron		mg/L	1.00	0.995	100	90 - 110	2004-05-25

Standard (CCV-1) QC Batch: 9996

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0946	95	85 - 115	2004-05-25
Toluene		mg/L	0.100	0.0951	95	85 - 115	2004-05-25
Ethylbenzene		mg/L	0.100	0.0961	96	85 - 115	2004-05-25
Xylene		mg/L	0.300	0.294	98	85 - 115	2004-05-25

Standard (CCV-2) QC Batch: 9996

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/L	0.100	0.0945	94	85 - 115	2004-05-25
Toluene		mg/L	0.100	0.0954	95	85 - 115	2004-05-25
Ethylbenzene		mg/L	0.100	0.0972	97	85 - 115	2004-05-25
Xylene		mg/L	0.300	0.296	99	85 - 115	2004-05-25

ARCADIS

4051909

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name MT000803.0001.00012
Project Location Pure Resources
Laboratory Trace Analysis
Project Manager Frank Kieffer
Sampler(s)/Affiliation ARCADIS

Sample ID/Location	Matrix	Date Sampled	Time	ANALYSIS / METHOD / SIZE: (2) 40 mL vial BTEX HCl	(1) Sterile plastic Total Alkalinity, TDS, SO4, Cl Neat	(1) 250 mL plastic Total Iron	(1) 250 mL Dissolved Iron (field filtered)	(2) 250 mL glass TOC	250 mL plastic	Remarks	Total
MW-C	L	5/17/04	1530	2	1	1	1	2	34509		7
MW-D	L	5/17/04	1630	2	1	1	1	2	10		7
MW-T	L	5/18/04	930	2	1	1	1	2	11		7
MW-H	L	5/18/04	1030	2	1	1	1	2	12		7
MW-B	L	5/18/04	1130	2	1	1	1	2	13		7
MW-A	L	5/18/04	1230	2	1	1	1	2	14		7
BW-1	L	5/18/04	1330	2	1	1	1	2	15		7
Dup-1	L	5/18/04	—	2	1	1	1	2	16		7
Trip Blank	L	—		2					17		2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 58 (HS)

Relinquished by: Frank Kieffer	Organization: ARCADIS	Date 5/18/04	Time 1645	Seal Intact?	
Received by: Helen Shelton	Organization: Trace Analysis	Date 05/18/04	Time 1645	(Yes) No N/A	
Relinquished by: Helen Shelton	Organization: Trace Analysis	Date 05/18/04	Time 1830	Seal Intact?	
Received by: Dicti Crowley	Organization: Trace Analysis	Date 5/19/04	Time 9:22	Yes No N/A	

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier Greyhound SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

4°C Lonestar P9214288 MS 58 samples - HS

AG 05-12/01

4051409

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name MT000803.0001.00012

Project Location Pure Resources

Laboratory Trace Analysis

Project Manager Frank Kieffer

Sampler(s)/Affiliation ARCADIS

Sample ID/Location	Matrix	Date Sampled	Time	(2) 40 mL vial BTEX HCl	(1) 500 mL plastic Total Alkalinity, TDS, SO_4, Cl Neat	(1) 250 mL plastic Total Iron	(1) 250 mL Dissolved Iron (field filtered)	(2) 40 mL vial TOC	250 mL plastic	Remarks	Total
MW-C	L	5/17/04	1530	2.	1	1.	1.	2.	34509		7
MW-N	L	5/17/04	1630	2.	1	1.	1.	2.	10		7
MW-I	L	5/18/04	930	2.	1	1.	1.	2.	11		7
MW-H	L	5/18/04	1030	2.	1	1.	1.	2.	12		7
MW-B	L	5/18/04	1130	2.	1	1.	1.	2.	13		7
MW-A	L	5/18/04	1230	2.	1	1.	1.	2.	14		7
BW-1	L	5/18/04	1330	2.	1	1.	1.	2.	15		7
Dup-1	L	5/18/04	—	2.	1	1.	1.	2.	16		7
Trip Blank	L	—	—	2.					17		2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 58 (HS)

Relinquished by: Sandra Hoffman	Organization: ARCADIS	Date 5/18/04	Time 1645	Seal Intact?	
Received by: Helen Sheldon	Organization: Trace Analysis	Date 05/18/04	Time 1645	(Yes) No N/A	
Relinquished by: Helen Sheldon	Organization: Trace Analysis	Date 05/18/04	Time 1830	Seal Intact?	
Received by: Vicki Crowley	Organization: TRACE Analysis	Date 5/19/04	Time 9:27	Yes No N/A	

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier Greyhound ☐ Lab Courier ☐ Other _____

4°C, Lonestar P97H288 — SPECIFY — MS — 58 samples-HS — SPECIFY

AG 05-12/01

4/26/04

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

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0405303A

Work Order Summary

CLIENT:	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701	**BILL TO:**	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701
PHONE:	(432) 687-5400	**P.O. #**	
FAX:		**PROJECT #**	MT000803.0001.00012 Pure Resources
DATE RECEIVED:	5/19/04	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	6/1/04		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	BW-1	Mod. Method TO-15	5.0 "Hg
02A	MW-A	Mod. Method TO-15	6.5 "Hg
03A	MW-B	Mod. Method TO-15	5.0 "Hg
04A	MW-C	Mod. Method TO-15	6.5 "Hg
05A	MW-D	Mod. Method TO-15	5.0 "Hg
06A	MW-H	Mod. Method TO-15	5.5 "Hg
07A	MW-I	Mod. Method TO-15	5.0 "Hg
08A	MW-N	Mod. Method TO-15	7.0 "Hg
09A	MW-4	Mod. Method TO-15	7.0 "Hg
10A	MW-10	Mod. Method TO-15	7.0 "Hg
10AA	MW-10 Duplicate	Mod. Method TO-15	7.0 "Hg
11A	Lab Blank	Mod. Method TO-15	NA
12A	CCV	Mod. Method TO-15	NA
13A	LCS	Mod. Method TO-15	NA

CERTIFIED BY: Linda A. Freeman DATE: 06/02/04

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, 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: 07/01/04, Expiration date: 06/30/05
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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

LABORATORY NARRATIVE
Mod. Method TO-15
Arcadis Geraghty & Miller
Workorder# 0405303A

Ten 1 Liter Summa Canister samples were received on May 19, 2004. The laboratory performed the analysis via Modified Method TO-15 using GC/MS in the full scan mode. The method involves direct injection of up to a 40 mL sample aliquot into a vapor management system. Following dehumidification the sample passes directly into the GC/MS for analysis. See the data sheets for the reporting limits of each compound.

Requirement	*TO-14A/TO-15*	*ATL Modifications*
Concentration of IS Spike	10 ppbv (TO-15)	500 ppbv
BFB Acceptance Criteria	CLP protocol (TO-15)	SW-846 protocol
Sampling Drying System	Nafion Dryer (TO-14A)	Multisorbent concentrator
Blank acceptance criteria	< 0.2 ppbv (TO-14A)	<RL.
IS Recovery	TO-15: Within 40 % of mean over ICAL for blanks, and w/in 40 % of daily CCV for samples	Within 40 % of CCV recovery for blank and samples.
Sample volume	Up to 400 mL (TO-14A)	Up to 40 mLs
Initial Calibration	</= 30 % RSD (TO-14A)	</= 30 % RSD with 2 compounds allowed out to < 40 % RSD.
Primary Ions for Quantification	Freon 114: 85, Carbon Tetrachloride: 117, Trichloroethene: 130, Ethyl Benzene, m,p- and o-Xylene: 91	Freon 114: 135, Carbon Tetrachloride: 119, Trichloroethene: 95, Ethyl Benzene, m,p- and o-Xylene: 106
Daily CCV	</= 30 % D	</= 30 % D with 2 allowed out up to 40%; flag associated sample results.
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request
Dilutions for Initial Calibration	Dynamic dilutions or static using canisters.	Syringe dilutions, bag dilutions.
BFB Tune Absolute Abundance Criteria	Within 10% of that from the previous day.	CCV Internal Standard area counts are compared to ICAL, corrective action for > 40 %D.

Receiving Notes

Sample collection date was not provided on the chain of custody. The sampling date was taken from the tags and the discrepancy was noted in the Sample Receipt Confirmation email/fax.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

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

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

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

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

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

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: BW-1

ID#: 0405303A-01A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052605**	**Date of Collection: 5/17/04**	
Dil. Factor:	**2.42**	**Date of Analysis: 5/26/04 08:48 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	12	67	39	220
Toluene	12	100	46	390
Ethyl Benzene	12	Not Detected	53	Not Detected
m,p-Xylene	12	27	53	120
o-Xylene	12	23	53	100

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-A

ID#: 0405303A-02A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052606**	**Date of Collection: 5/17/04**	
Dil. Factor:	**64.5**	**Date of Analysis: 5/26/04 09:16 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	320	160000	1000	530000
Toluene	320	92000	1200	350000
Ethyl Benzene	320	6700	1400	29000
m,p-Xylene	320	14000	1400	63000
o-Xylene	320	4200	1400	18000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-B

ID#: 0405303A-03A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052611**	**Date of Collection: 5/17/04**	
Dil. Factor:	**179**	**Date of Analysis: 5/26/04 11:31 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	900	730000	2900	2400000
Toluene	900	300000	3400	1200000
Ethyl Benzene	900	11000	3900	48000
m,p-Xylene	900	25000	4000	110000
o-Xylene	900	6200	4000	27000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	114	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-C

ID#: 0405303A-04A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052612**	**Date of Collection: 5/17/04**	
Dil. Factor:	**172**	**Date of Analysis: 5/26/04 11:57 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	860	690000	2800	2200000
Toluene	860	350000	3300	1300000
Ethyl Benzene	860	20000	3800	89000
m,p-Xylene	860	31000	3800	140000
o-Xylene	860	10000	3800	45000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	116	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-D

ID#: 0405303A-05A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052613**	**Date of Collection: 5/17/04**	
Dil. Factor:	**2.42**	**Date of Analysis: 5/26/04 12:25 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	12	410	39	1300
Toluene	12	120	46	440
Ethyl Benzene	12	Not Detected	53	Not Detected
m,p-Xylene	12	Not Detected	53	Not Detected
o-Xylene	12	Not Detected	53	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	107	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-H

ID#: 0405303A-06A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052616**	**Date of Collection: 5/17/04**	
Dil. Factor:	**380**	**Date of Analysis: 5/26/04 01:48 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	1900	1600000	6200	5200000
Toluene	1900	700000	7300	2700000
Ethyl Benzene	1900	33000	8400	140000
m,p-Xylene	1900	63000	8400	280000
o-Xylene	1900	17000	8400	76000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	111	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-I

ID#: 0405303A-07A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052617**	**Date of Collection: 5/17/04**	
Dil. Factor:	**161**	**Date of Analysis: 5/26/04 02:18 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	800	770000	2600	2500000
Toluene	800	280000	3100	1100000
Ethyl Benzene	800	1800	3600	8000
m,p-Xylene	800	20000	3600	86000
o-Xylene	800	5100	3600	22000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-N

ID#: 0405303A-08A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052619**	**Date of Collection: 5/17/04**	
Dil. Factor:	**2.64**	**Date of Analysis: 5/26/04 03:11 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	13	4200	43	14000
Toluene	13	92	50	350
Ethyl Benzene	13	14	58	64
m,p-Xylene	13	48	58	210
o-Xylene	13	Not Detected	58	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	117	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-4

ID#: 0405303A-09A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052620**	**Date of Collection: 5/17/04**	
Dil. Factor:	**106**	**Date of Analysis: 5/26/04 03:45 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	530	360000	1700	1200000
Toluene	530	220000	2000	850000
Ethyl Benzene	530	18000	2300	78000
m,p-Xylene	530	30000	2300	130000
o-Xylene	530	7800	2300	34000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	120	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-10

ID#: 0405303A-10A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052622**	**Date of Collection: 5/17/04**	
Dil. Factor:	**352**	**Date of Analysis: 5/26/04 04:42 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	1800	1600000	5700	5100000
Toluene	1800	670000	6700	2600000
Ethyl Benzene	1800	35000	7800	160000
m,p-Xylene	1800	57000	7800	250000
o-Xylene	1800	14000	7800	60000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	111	70-130

AIR TOXICS LTD.

SAMPLE NAME: MW-10 Duplicate

ID#: 0405303A-10AA

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052623**	**Date of Collection: 5/17/04**	
Dil. Factor:	**352**	**Date of Analysis: 5/26/04 05:14 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	1800	1600000	5700	5300000
Toluene	1800	710000	6700	2700000
Ethyl Benzene	1800	40000	7800	180000
m,p-Xylene	1800	65000	7800	290000
o-Xylene	1800	16000	7800	72000

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0405303A-11A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/26/04 08:19 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	5.0	Not Detected	16	Not Detected
Toluene	5.0	Not Detected	19	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: CCV

ID#: 0405303A-12A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052602**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/26/04 07:12 AM**	

Compound	%Recovery
Benzene	98
Toluene	100
Ethyl Benzene	111
m,p-Xylene	113
o-Xylene	108

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130

AIR TOXICS LTD.

SAMPLE NAME: LCS

ID#: 0405303A-13A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**e052603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/26/04 07:51 AM**	

Compound	%Recovery
Benzene	104
Toluene	104
Ethyl Benzene	110
m,p-Xylene	99
o-Xylene	102

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130

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CHAIN-OF-CUSTODY RECORD

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Contact Person: Frank Kieffer
Company: ARCADIS
Address: 10205 N. Big Spring Ste 300 City: Midland State: TX Zip: 79701
Phone: (432) 687-5400 FAX: (432) 687-5401
Collected By: Signature: [signature]

Project info:
P.O. #:
Project #: MT000803.0601.0002
Project Name: Pure Resources

Turn Around Time:
☑ Normal
☐ Rush ____ Specify

MW 5/17/04

Lab I.D.	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
01A	BW-1		CH_4, O_2, CO_2, BTEX	0	0	5.0" Hg
02A	MW-A		CH_4, O_2, CO_2, BTEX	0	0	6.5" Hg
03A	MW-B		CH_4, O_2, CO_2, BTEX	0	0	5.0" Hg
04A	MW-C		CH_4, O_2, CO_2, BTEX	0	0	6.5" Hg
05A	MW-D		CH_4, O_2, CO_2, BTEX	0	0	5.0" Hg
06A	MW-H		CH_4, O_2, CO_2, BTEX	0	0	5.5" Hg
07A	MW-I		CH_4, O_2, CO_2, BTEX	0	0	5.0" Hg
08A	MW-N		CH_4, O_2, CO_2, BTEX	0	0	7.0" Hg
09A	MW-4		CH_4, O_2, CO_2, BTEX	0	0	7.0" Hg
10A	MW-10		CH_4, O_2, CO_2, BTEX	0	0	7.0" Hg

Relinquished By: (Signature) Date/Time: [signature] 5/18/04 1700
Received By: (Signature) Date/Time:
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time: [signature] ATL 5/19/04 940
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time:

Notes:

Lab Use Only	Shipper Name	Air Bill #	Opened By	Temp. (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx	8797 0284 9724	[signature]	—	Good	(Yes) No None	04053038

Form 1295 rev. 09

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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.

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

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E-mail to:samplereceiving@airtoxics.com

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0405303B

Work Order Summary

CLIENT:	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701	**BILL TO:**	Ms. Trudi Rodriquez Arcadis Geraghty & Miller DiNero Plaza 1004 N. Big Spring Street, Suite 300 Midland, TX 79701
PHONE:	(432) 687-5400	**P.O. #**	
FAX:		**PROJECT #**	MT000803.0001.00012 Pure Resources
DATE RECEIVED:	5/19/04	**CONTACT:**	DeDe Dodge
DATE COMPLETED:	6/2/04		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	BW-1	Modified ASTM D-1946	5.0 "Hg
02A	MW-A	Modified ASTM D-1946	6.5 "Hg
03A	MW-B	Modified ASTM D-1946	5.0 "Hg
04A	MW-C	Modified ASTM D-1946	6.5 "Hg
05A	MW-D	Modified ASTM D-1946	5.0 "Hg
06A	MW-H	Modified ASTM D-1946	5.5 "Hg
07A	MW-I	Modified ASTM D-1946	5.0 "Hg
08A	MW-N	Modified ASTM D-1946	7.0 "Hg
09A	MW-4	Modified ASTM D-1946	7.0 "Hg
10A	MW-10	Modified ASTM D-1946	7.0 "Hg
10AA	MW-10 Duplicate	Modified ASTM D-1946	7.0 "Hg
11A	Lab Blank	Modified ASTM D-1946	NA
12A	LCS	Modified ASTM D-1946	NA

CERTIFIED BY: Linda A. Freeman DATE: 06/02/04

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, 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: 07/01/04, Expiration date: 06/30/05
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified ASTM D-1946
Arcadis Geraghty & Miller
Workorder# 0405303B

Ten 1 Liter Summa Canister samples were received on May 19, 2004. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample. See the data sheets for the reporting limits for each compound.

Requirement	*ASTM D-1946*	*ATL Modifications*
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A 3-point calibration curve is performed. Quantitation is based on a daily calibration standard which may or may not resemble the composition of the associated samples.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL (2.0 mL for He and H2) on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 30% RPD for detections > 5 X's the RL.

Receiving Notes

Sample collection date was not provided on the chain of custody. The sampling date was taken from the tags and the discrepancy was noted in the Sample Receipt Confirmation email/fax.

Analytical Notes

There were no analytical discrepancies.

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: BW-1

ID#: 0405303B-01A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3052104**	**Date of Collection: 5/17/04**	
Dil. Factor:	**2.42**	**Date of Analysis: 5/21/04 10:22 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	20
Methane	0.00024	Not Detected
Carbon Dioxide	0.0024	0.041

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-A

ID#: 0405303B-02A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3052105**	**Date of Collection:**	**5/17/04**
Dil. Factor:	**2.58**	**Date of Analysis:**	**5/21/04 10:45 AM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	21
Methane	0.00026	Not Detected
Carbon Dioxide	0.0026	0.061

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-B

ID#: 0405303B-03A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3052106**	**Date of Collection: 5/17/04**	
Dil. Factor:	**2.42**	**Date of Analysis: 5/21/04 11:08 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	8.8
Methane	0.00024	0.12
Carbon Dioxide	0.0024	7.6

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-C

ID#: 0405303B-04A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3052107**	**Date of Collection:**	**5/17/04**
Dil. Factor:	**2.58**	**Date of Analysis:**	**5/21/04 11:32 AM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	6.8
Methane	0.00026	0.015
Carbon Dioxide	0.0026	12

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-D

ID#: 0405303B-05A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3052108**	**Date of Collection: 5/17/04**	
Dil. Factor:	**2.42**	**Date of Analysis: 5/21/04 12:16 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	18
Methane	0.00024	Not Detected
Carbon Dioxide	0.0024	2.6

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-H

ID#: 0405303B-06A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3052109**	**Date of Collection:**	**5/17/04**
Dil. Factor:	**2.47**	**Date of Analysis:**	**5/21/04 12:37 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.25	2.4
Methane	0.00025	0.34
Carbon Dioxide	0.0025	12

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-I

ID#: 0405303B-07A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3052110**	**Date of Collection: 5/17/04**	
Dil. Factor:	**2.42**	**Date of Analysis: 5/21/04 01:00 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	12
Methane	0.00024	0.050
Carbon Dioxide	0.0024	5.8

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-N

ID#: 0405303B-08A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3052111**	**Date of Collection: 5/17/04**	
Dil. Factor:	**2.64**	**Date of Analysis: 5/21/04 01:21 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	4.1
Methane	0.00026	0.0020
Carbon Dioxide	0.0026	13

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-4

ID#: 0405303B-09A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3052112**	**Date of Collection: 5/17/04**	
Dil. Factor:	**2.64**	**Date of Analysis: 5/21/04 01:48 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	3.8
Methane	0.00026	0.013
Carbon Dioxide	0.0026	12

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-10

ID#: 0405303B-10A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3052113**	**Date of Collection: 5/17/04**	
Dil. Factor:	**2.64**	**Date of Analysis: 5/21/04 02:09 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	5.7
Methane	0.00026	0.18
Carbon Dioxide	0.0026	12

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: MW-10 Duplicate

ID#: 0405303B-10AA

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3052114**	**Date of Collection:**	**5/17/04**
Dil. Factor:	**2.64**	**Date of Analysis:**	**5/21/04 02:36 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.26	5.8
Methane	0.00026	0.18
Carbon Dioxide	0.0026	12

Container Type: 1 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank

ID#: 0405303B-11A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3052103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/21/04 09:55 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	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#: 0405303B-12A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**3052120**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/21/04 05:20 PM**	

Compound	%Recovery
Oxygen	98
Methane	98
Carbon Dioxide	98

Container Type: NA - Not Applicable

@ AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

CHAIN-OF-CUSTODY RECORD

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

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

Page 1 of 1

Contact Person: Frank Kieffer
Company: ARCADIS
Address: 1004 N. Big Spring STE 300 City: Midland State: TX Zip: 79701
Phone: (432) 687-5100 FAX: (432) 687-5401
Collected By: Signature: Sandra Duff

Project info:
P.O. #:
Project #: MS000803 0001.0002
Project Name: Pure Resources

Turn Around Time:
☑ Normal
☐ Rush ____ Specify

MW 5/19/04

Lab I.D.	Field Sample I.D.	Date & Time	Analyses Requested	Canister Pressure / Vacuum Initial	Final	Receipt
01A	BW-1		CH_4, O_2, CO_2, BTEX	0	0	5.0" Hg
02A	MW-A		CH_4, O_2, CO_2, BTEX	0	0	6.5" Hg
03A	MW-B		CH_4, O_2, CO_2, BTEX	0	0	5.0" Hg
04A	MW-C		CH_4, O_2, CO_2, BTEX	0	0	6.5" Hg
05A	MW-D		CH_4, O_2, CO_2, BTEX	0	0	5.0" Hg
06A	MW-H		CH_4, O_2, CO_2, BTEX	0	0	5.5" Hg
07A	MW-I		CH_4, O_2, CO_2, BTEX	0	0	5.0" Hg
08A	MW-N		CH_4, O_2, CO_2, BTEX	0	0	7.0" Hg
09A	MW-4		CH_4, O_2, CO_2, BTEX	0	0	7.0" Hg
10A	MW-10		CH_4, O_2, CO_2, BTEX	0	0	7.0" Hg

Relinquished By: (Signature) Date/Time: Sandra Duff 5/18/04 1700
Received By: (Signature) Date/Time:
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time: James P. Thomas ATL 5/19/04 940
Relinquished By: (Signature) Date/Time:
Received By: (Signature) Date/Time:

Notes:

Lab Use Only	Shipper Name	Air Bill #	Opened By:	Temp. (°C)	Condition	Custody Seals Intact?	Work Order #
	FedEx	8977 0274 9420	JP	—	Good	(Yes) No None	04053080

Form 1283 rev. 7/

MICROSEEPS

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Order #: P0405364
Report Date: 06/03/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Laboratory Results

Total pages in data package: 9

Lab Sample #	Client Sample ID
P0405364-01	MW-A
P0405364-02	MW-B
P0405364-03	MW-C
P0405364-04	MW-H
P0405364-05	MW-I
P0405364-06	MW-N
P0405364-07	BW-1

Microseeps test results meet all the requirements of the NELAC standards.

Approved By: Debbie Hall

The analytical results reported here are reliable and usable to the precision expressed in this report. As required by some regulating authorities, a full discussion of the uncertainty in our analytical results can be obtained at our web site or through customer service. Unless otherwise specified, all results are reported on a wet weight basis.

NOTES:

ARCADIS

P04055364

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name: MT000803.0001.00012

Project Location: Pure Resources

Laboratory: Microseeps

Project Manager: Frank Kieffer

Sampler(s)/Affiliation: ARCADIS

	Sample ID/Location	Matrix	Date Sampled	Time	ANALYSIS / METHOD / SIZE: (2) 40 ml vial Permanent Gases Neat						Remarks	Total
01	MW-A	L	5/18/04	1230	2							2
02	MW-B	L	5/18/04	1130	2							2
03	MW-C	L	5/17/04	1530	2							2
04	MW-H	L	5/18/04	1030	2							2
05	MW-I	L	5/18/04	930	2							2
06	MW-N	L	5/17/04	1630	2							2
07	BW-1	L	5/18/04	1330	2							2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 14

				Seal Intact?
Relinquished by:	Organization: ARCADIS	Date 5/18/04	Time 1700	
Received by:	Organization: Microseeps	Date 5/19/04	Time 1140	Yes / No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier Fed-Ex (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

Order #: P0405364
Report Date: 06/03/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0405364-01

Sample Description	Matrix	Sampled Date/Time	Received
MW-A	Water	18 May. 04 12:30	19 May. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	16	0.60	mg/L	AM20GAX	jl	6/2/04
Nitrogen	15	0.40	mg/L	AM20GAX	jl	6/2/04
Oxygen	3.3	0.15	mg/L	AM20GAX	jl	6/2/04
Methane	0.56	0.015	ug/L	AM20GAX	jl	6/2/04

N - NELAC certified analysis

Order #: P0405364
Report Date: 06/03/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0405364-02

Sample Description	Matrix	Sampled Date/Time	Received
MW-B	Water	18 May. 04 11:30	19 May. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	39	0.60	mg/L	AM20GAX	jl	6/2/04
Nitrogen	19	0.40	mg/L	AM20GAX	jl	6/2/04
Oxygen	2.4	0.15	mg/L	AM20GAX	jl	6/2/04
Methane	9.4	0.015	ug/L	AM20GAX	jl	6/2/04

N - NELAC certified analysis

Order #: P0405364
Report Date: 06/03/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0405364-03

Sample Description	Matrix	Sampled Date/Time	Received
MW-C	Water	17 May. 04 15:30	19 May. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	990	0.60	mg/L	AM20GAX	jl	6/2/04
Nitrogen	4.6	0.40	mg/L	AM20GAX	jl	6/2/04
Oxygen	1.8	0.15	mg/L	AM20GAX	jl	6/2/04
Methane	0.31	0.015	ug/L	AM20GAX	jl	6/2/04

N - NELAC certified analysis

Order #: P0405364
Report Date: 06/03/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0405364-04

Sample Description	Matrix	Sampled Date/Time	Received
MW-H	Water	18 May. 04 10:30	19 May. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	44	0.60	mg/L	AM20GAX	jl	6/2/04
Nitrogen	15	0.40	mg/L	AM20GAX	jl	6/2/04
Oxygen	0.65	0.15	mg/L	AM20GAX	jl	6/2/04
Methane	8.0	0.015	ug/L	AM20GAX	jl	6/2/04

N - NELAC certified analysis

Order #: P0405364
Report Date: 06/03/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0405364-05

Sample Description	Matrix	Sampled Date/Time	Received
MW-I	Water	18 May. 04 9:30	19 May. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	52	0.60	mg/L	AM20GAX	jl	6/2/04
Nitrogen	15	0.40	mg/L	AM20GAX	jl	6/2/04
Oxygen	0.65	0.15	mg/L	AM20GAX	jl	6/2/04
Methane	3.4	0.015	ug/L	AM20GAX	jl	6/2/04

N - NELAC certified analysis

Order #: P0405364
Report Date: 06/03/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0405364-06

Sample Description	Matrix	Sampled Date/Time	Received
MW-N	Water	17 May. 04 16:30	19 May. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	19	0.60	mg/L	AM20GAX	jl	6/2/04
Nitrogen	12	0.40	mg/L	AM20GAX	jl	6/2/04
Oxygen	5.2	0.15	mg/L	AM20GAX	jl	6/2/04
Methane	0.43	0.015	ug/L	AM20GAX	jl	6/2/04

N - NELAC certified analysis

Order #: P0405364
Report Date: 06/03/04
Client Proj Name: Pure Resources Lovington
Client Proj #: MT000803.0001

Client Name: Arcadis G&M
Contact: Frank Kieffer
Address: 1004 North Big Spring
Suite 300
Midland, TX 79701

Lab Sample #: P0405364-07

Sample Description	Matrix	Sampled Date/Time	Received
BW-1	Water	18 May. 04 13:30	19 May. 04

Analyte(s)	Result	PQL	Units	Method #	Analyst	Analysis Date
RiskAnalysis						
Carbon dioxide	1.6	0.60	mg/L	AM20GAX	jl	6/2/04
Nitrogen	14	0.40	mg/L	AM20GAX	jl	6/2/04
Oxygen	7.9	0.15	mg/L	AM20GAX	jl	6/2/04
Methane	0.29	0.015	ug/L	AM20GAX	jl	6/2/04

N - NELAC certified analysis

EA GROUP

Laboratory Analytical Report

Arcadis Geraghty & Miller
1004 N Big Spring St., #300
Midland, TX 79701

Attention:
Frank Kieffer

Project Identification

MT000803.0001.00012 Pure Rescources

Purchase Order:

EA Group
Order Number
0405-00241

Donald R. Richner, CIH
Laboratory Manager

May 25, 2004

EA GROUP

Project Summary

The following analytical report contains the results as requested for samples submitted to EA Group. The results included in this report have been reviewed for compliance with the analytical methods indicated in this report. All data have been found to be compliant with accepted laboratory protocol. Exceptions, if any, are noted below. Analytes appearing in bold type were analyzed at a subcontract facility. EA Group is VAP, AIHA and ELLAP accredited. For industrial hygiene reports, air and/or surface concentrations results are based upon field sampling information provided by the client. Unless otherwise noted the following apply: Sample condition was acceptable upon receipt and Industrial hygiene results will not be blank corrected.

Data Interpretation

For assistance with report interpretation or questions regarding regulatory limits, please contact Client Services at 440-951-3514 or customerservice@eagroup-ohio.com.

Sample Summary

Sample Receive Date: 5/19/2004

EAG Sample Identification	Client Sample Identification	EAG Sample Identification	Client Sample Identification
040500241 - 001	VP90	040500241 - 002	VP30
040500241 - 003	VP10		

Quality Control Narrative

****

 Unless noted, soil, sludge, and sediment results are reported on dry weight basis. The "Sample Reporting Limit" is based on the method used for analysis and does not refer to any regulatory limit. These results relate only to the items tested.

EA GROUP

EAG Workorder: 0405-00241 **Matrix:** OVM **Date Sampled:** 05/18/2004

EAG ID: 0405-00241-001 **QC Batch / Analyst:** 048747 / JAH **Date Received:** 05/19/2004

Client ID: VP90

Client Project: MT000803.0001.00012 Pure Rescources

Parameter	Result	Reporting Limit	Units	Date Analyzed
Organics in Air: OSHA 7				
Benzene	3.8	0.87	ppm	5/24/2004
Ethylbenzene	<0.74	0.74	ppm	5/24/2004
Toluene	<0.78	0.78	ppm	5/24/2004
Xylenes	<0.84	0.84	ppm	5/24/2004
Passive Badge Desorption	Complete			5/24/2004

EA GROUP

EAG Workorder: 0405-00241 **Matrix:** OVM **Date Sampled:** 05/18/2004

EAG ID: 0405-00241-002 **QC Batch / Analyst:** 048747/JAH **Date Received:** 05/19/2004

Client ID: VP30

Client Project: MT000803.0001.00012 Pure Rescources

Parameter	Result	Reporting Limit	Units	Date Analyzed
Organics in Air: OSHA 7				
Benzene	<0.87	0.87	ppm	5/24/2004
Ethylbenzene	<0.74	0.74	ppm	5/24/2004
Toluene	<0.78	0.78	ppm	5/24/2004
Xylenes	<0.84	0.84	ppm	5/24/2004
Passive Badge Desorption	Complete			5/24/2004

EA GROUP

EAG Workorder: 0405-00241 **Matrix:** OVM **Date Sampled:** 05/18/2004

EAG ID: 0405-00241-003 **QC Batch / Analyst:** 048747 / JAH **Date Received:** 05/19/2004

Client ID: VP10

Client Project: MT000803.0001.00012 Pure Rescources

Parameter	Result	Reporting Limit	Units	Date Analyzed
Organics in Air: OSHA 7				
Benzene	<0.87	0.87	ppm	5/24/2004
Ethylbenzene	<0.74	0.74	ppm	5/24/2004
Toluene	<0.78	0.78	ppm	5/24/2004
Xylenes	<0.84	0.84	ppm	5/24/2004
Passive Badge Desorption	Complete			5/24/2004

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 241

Project Number/Name: MT000803.0001.00012

Project Location: Pure Resources

Laboratory: EA Lab

Project Manager: Frank Kieffer

Sampler(s)/Affiliation: ARCADIS

Sample ID/Location	Matrix	Date Sampled	Time	ANALYSIS / METHOD / SIZE: BTEX (badges)						Remarks	Total
VP-90	A	5/18/04	830	1							1
VP-30	A	5/18/04	833	1							1
VP-10	A	5/18/04	835	1							1

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers

Relinquished by:		Organization: ARCADIS	Date 5/18/04	Time 1700	Seal Intact?	
Received by:		Organization: EAG	Date 5/19/04	Time 1000	Yes (No)	N/A
Relinquished by:		Organization:	Date / /	Time	Seal Intact?	
Received by:		Organization:	Date / /	Time	Yes No	N/A

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier Fed-Ex (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01