

100.38.194

2092 Jackson Street
North Pole, Alaska
Groundwater Monitoring Well Report
Fairbanks, Alaska

January 2008

ALASKA RESOURCES & ENVIRONMENTAL SERVICES, LLC

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SUBMITTED TO:
Alaska Department of Environmental Conservation
Northern Regional Office
Contaminated Sites Program
610 University Avenue
Fairbanks, Alaska 99709-3643

BY:
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**2092 Jackson Street Residence
Groundwater Monitoring Well Report
January 2008**

INTRODUCTION

This report was prepared on behalf of Ms. Andrea Neville, owner of the subject property, who has contracted with Alaska Resources & Environmental Services (ARES) to perform groundwater sampling associated with a historical petroleum release (ADEC file # 100.38.194).

The objective of our work was to obtain groundwater sample data near the site of a former petroleum release in order to determine if groundwater contamination exist on the property and/or is migrating off-site. Monitoring wells MW-1, MW-2, MW-3 and the recovery well were sampled in November 2007 in general accordance with ADEC Oil and Other Hazardous Substances Pollution Control Regulations (18 AAC 75 – amended December 30, 2006).

SITE BACKGROUND

Site Description

The subject property is situated on an approximate 1.64-acre site located at 2092 Jackson Street, North Pole, Alaska. The legal description for the property is as follows: Lots 8A and 9A Block 1 Woodland Replat 86-95 7/16/86 out of Tax lots 8 and 9 Block 1 Woodland.

History

The ADEC file number for the subject property is 100.38.194. In September of 2004 the property manager of the subject property dug a trench to insulate the water line from the well to the apartment building. Badger Fuel filled the nearby, 1,000-gallon above ground home heating oil tank (HHOT) which subsequently fell over into the excavation trench. It was estimated that 125 gallons of #1 diesel was released into the excavation pit. The bottom of the trench consisted of silty gravels and due to the proximity of the adjacent building (< 4' away from excavation pit), it is assumed that some of the fuel ran under the building. Approximately 20 cubic yards of contaminated soil was removed and transported to OIT for thermal remediation. Alaska Resources and Environmental Services installed a recovery well with a belt skimmer in September 2004 to recover free product. Approximately 50-gallons of product were recovered from the recovery well. The three monitoring wells MW-1, MW-2 and MW-3 were installed in August 2005.

Topography

The United States Geological Survey (USGS) Fairbanks Quadrangle (D-2) SW provides topographic map coverage of the site (Figure 1). Fairbanks is located in the northern part of the Tanana Basin, which is a relatively flat floodplain of the Tanana River. The subject property is situated approximately 1.7 miles northeast of the Tanana River and approximately 4 miles south of the Chena River. Pile driver Slough is approximately 200 feet to the east of the subject property.

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Regional Soils/Geology

Soils in the area are derived from the alluvial-plain deposits and generally consist of alternating layers and lenses of unconsolidated sandy gravels and gravelly sands, overlain by silt. The well-drained Salchaket soils border the principle rivers in the area and are the most extensive soils of the alluvial plains. The site is underlain by Minto silt loam. The Minto soils consist of moderately well drained soils that have developed into micaceous silty material with many areas underlain at a depth of 6 feet or more by irregular, discontinuous masses of ice. Discontinuous permafrost underlies the floodplain area and can extend to depths of 200 feet or more. The hills to the north of the site area are part of a metamorphic system that forms the Yukon – Tanana Upland. The basin uplands consist of fractured schist. Areas of discontinuous permafrost underlie north-facing slopes. Eolian silts of the Fairbanks Loess and reworked silt deposits cover the flanks of bedrock uplands in the proximity of the Tanana River. These deposits vary in thickness and grade into alluvial-fan deposits and the Chena Alluvium.

Site Hydrology

The groundwater table at the time of sampling was approximately 7' bgs. Based on groundwater elevation measurements, it was determined that groundwater flow direction is to the northwest which is consistent with other data obtained in the area with a relatively flat gradient.

GROUNDWATER SAMPLING

Scope of Work

To achieve the stated objectives, ARES performed the following tasks:

- Collected groundwater elevations and water quality parameter measurements to include temperature, pH, conductivity, turbidity, dissolved oxygen, and salinity;
- Collection of groundwater sample and duplicate sample. Samples were analyzed for diesel range organics (DRO) by method AK 102 and benzene, toluene, ethylbenzene and xylenes (BTEX) constituents by method EPA 8021B; and
- Data review and report preparation.

Sampling Method

The monitoring well was developed, purged and sampled in accordance with the UST Procedures Manual and standard procedures. A peristaltic pump, with new polyethylene tubing and new nitrile gloves were used during the sampling event. Before sampling, the groundwater elevation was measured to 0.010 feet using a Heron Model D-T Interface Meter. Well volume was then calculated, and at least three times the well volume was purged prior to sampling. Recharge rates were observed during purging, and water levels measurements taken following sampling. Water parameters were recorded to include temperature, pH, conductivity, turbidity, dissolved oxygen, and salinity using a Horiba Water Meter Model U-10.

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Once well was sufficiently recharged and groundwater parameters stabilized, samples were collected in order of decreasing volatility. The tubing was carefully lowered in to the well to avoid loss of volatiles and water collected from the peristaltic pump was placed directly into lab supplied sample bottles. Volatile samples were collected to avoid any headspace in the bottle. All bottles were labeled and placed in a pre-chilled cooler (at approximately 4°C) and submitted to ADEC approved laboratory following chain of custody (COC) procedures. Purge water was placed in drums and stored at an off-site location pending laboratory results.

Groundwater samples were collected from MW-1, MW-2, MW-3 (Figure 1), and the recovery well on November 29, 2007. A blind duplicate sample was collected from monitoring well MW-2 for quality assurance/quality control purposes.

Analytical Results

There was no petroleum odor or sheen detected from monitoring well or purge water during sampling activities from MW-1, MW-2 or MW-3. Purge water was almost clear in appearance. A light non-aqueous phase liquid (LNAPL) was observed in the purge water from the recovery well and is assumed to be fuel oil. The recovery well also had a slight diesel fuel odor. No other unusual odors were detected. Groundwater was approximately 7' below ground surface at the time of sampling.

All monitoring wells and the recovery well were sampled and analyzed for DRO by method AK102 and BTEX by method EPA 8021B. A summary of current and past sample results are shown in Table 1. Complete laboratory results are included in Appendix B.

A summary of analytical results are shown in Table 1.

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Table 1
Groundwater Analytical Results Summary
(Results shown as mg/L)

| Summary of Constituents Detected in Groundwater | | | | | | |
|---|--------------|-------------|--------------|---------|--------------|---------------|
| Location | Date Sampled | DRO | Benzene | Toluene | Ethylbenzene | Total Xylenes |
| MW-1 (NJMW1-1107) | 8/2005 | .12 | ND | ND | ND | ND |
| | 11/2007 | .425 | ND | ND | ND | ND |
| MW-2 (NJMW2-1107) | 8/2005 | .15 | .0055 | ND | .0013 | .0051 |
| | 11/2007 | .574 | ND | ND | ND | ND |
| MW-3 (NJMW3-1107) | 8/2005 | ND | ND | ND | .0018 | ND |
| | 11/2007 | .766 | ND | .00631 | ND | ND |
| Recovery Well (NJRW-1107) | 11/2007 | 7.54 | ND | ND | ND | .00370 |
| Field Duplicate Sample to MW- 2 (NJDUP-1107) | 11/2007 | .630 | ND | ND | ND | ND |
| ADEC Cleanup Level | | 1.5 | 0.005 | 1.0 | 0.7 | 10.0 |

mg/L – Milligrams/Liter (Equivalent to ppm)

ND - Compound was not detected (less than the practical quantitation limit)

Results above ADEC Regulatory Limit in **Bold**.

N/A – Not Applicable

Dup – Duplicate field blank sample

Quality Assurance / Quality Control

Field quality control (QC) procedures for this project included the collection and analysis of a field duplicate and trip blank, which accompanied the samples in the field. One field duplicate (NJDUP-1107) was collected for quality control purposes. Sample ID NJDUP-1107 was a blind duplicate to NJMW2-1107. The QC sample was analyzed to assess the quality of sample collection and handling, as well as the accuracy and precision of the laboratory's analytical procedures.

Precision, expressed as the relative percent difference (RPD) between field duplicate sample results, is an indication of the consistency of sampling, sample handling, preservation, and laboratory analysis. As required by the 18AAC 78 and the UST Procedures Manual, field quality control sampling consisted of 10% field duplicates and 5% trip blanks. The RPD's for duplicates collected as part of this investigation fell within our acceptable range or were not calculable. Analysis of the trip blanks showed no analytes above the practical quantitation limit (PQL). Thus, there is no indication that cross-contamination among samples occurred.

The following blind field duplicates and associated RFD calculations are as follows:

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NJMW1-1107 and NJDUP-1107 (Field Duplicate)

DRO (AK102) $(.630-.574)/[(.630+.574)/2] \times 100 = 9.30\%$

BTEX compounds - not calculable due to non-detect value from one or both samples

The recommended range for RPD for water analysis is < 30%. The RPD fell within the recommended range for all analytes.

Laboratory quality assurance included the procedures outlined in the laboratory's ADEC-approved standard operating procedures documentation. As presented in the laboratory report's QC summary sheet, the laboratory QC parameters fell within the acceptable limits.

Conclusions and Recommendations

Groundwater samples collected from all monitoring wells (MW-1, MW-2, and MW-3) were found to be below ADEC cleanup standards for groundwater for all analytes. The recovery well was found to be above ADEC target groundwater cleanup levels for DRO. Since the last sampling event in August 2005, the DRO levels in the monitoring wells have increased although remaining below cleanup levels. Based on this information it appears the plume is expanding slightly.

ARES recommends the following:

- Schedule an annual sampling event of wells MW-1, MW-2, and MW-3 and recovery well during period of high seasonal groundwater conditions in August 2008 for DRO and BTEX analysis. Groundwater results will be used for trend analysis to determine if the plume has stabilized or is in a decreasing or increasing trend.

Limitations

This report presents the analytical results from a limited number of groundwater samples, and should not be construed as a comprehensive study of groundwater quality at the site. The samples were intended to evaluate the presence or absence of contaminants at the locations selected. Detectable levels of petroleum hydrocarbons may be present at other locations. It was also not the intent of our sampling and testing to detect the presence of groundwater affected by contaminants other than those for which laboratory analysis were performed. No conclusions can be drawn on the presence or absence of other contaminants. This is not a geotechnical study.

The data presented in this report should be considered representative of the time of our site observations and sample collection. Changes in site conditions can occur with time because of natural forces or human activity. ARES reserves the right to modify or alter conclusions and recommendations should additional data become available.

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This report was prepared for the exclusive use of Ms. Andrea Neville, and her representatives. If it is made available to others, it should be for information on factual data only and not as a warranty of subsurface conditions.

Qualifications & Signature of Environmental Professional

Lyle Gresehover is an ADEC 'Qualified Person' and has extensive field experience as an environmental project manager and has worked on all aspects of environmental assessments, investigations, and clean-up efforts.

Lyle Gresehover
Project Manager

Sincerely,

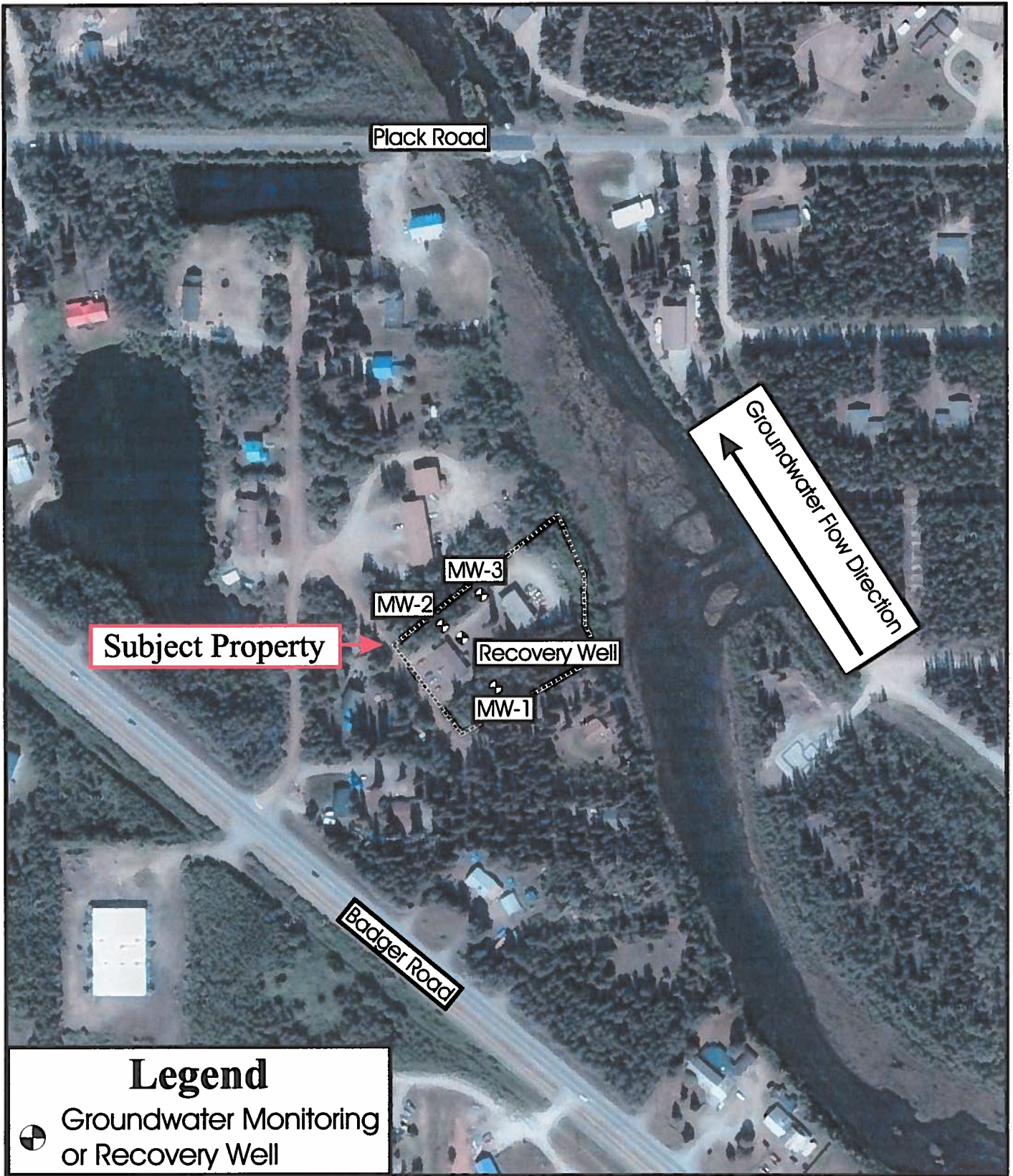


Lyle Gresehover
Alaska Resources and Environmental Services, LLC

Enclosure: Appendix A – Figure 1 Monitor Well Locations
 Appendix B – Test America Laboratory Results

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APPENDIX A



Subject Property →

Groundwater Flow Direction ↖

Legend
 ● Groundwater Monitoring or Recovery Well

Well Location Map/
 Aerial Photograph
 North Pole, Alaska

Scale in Feet:
 0 100 200 300 400 500

Groundwater Monitoring Report
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North Pole, AK
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FIGURE 1
ARES
 Alaska Resources and
 Environmental Services, LLC
 284 Topside
 Fairbanks AK 99701

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APPENDIX B

December 10, 2007

Lyle Gresehover
Alaska Resources & Environmental Services
P.O. Box 83050
Fairbanks, AK 99708

RE: North Jackson

Enclosed are the results of analyses for samples received by the laboratory on 11/30/07 08:45.
The following list is a summary of the Work Orders contained in this report, generated on 12/10/07
15:20.

If you have any questions concerning this report, please feel free to contact me.

| <u>Work Order</u> | <u>Project</u> | <u>ProjectNumber</u> |
|-------------------|----------------|----------------------|
| AQK0070 | North Jackson | [none] |



Alaska Resources & Environmental Services

P.O. Box 83050
Fairbanks, AK 99708

Project Name: **North Jackson**
Project Number: [none]
Project Manager: Lyle Greschover

Report Created:
12/10/07 15:20

ANALYTICAL REPORT FOR SAMPLES

| Sample ID | Laboratory ID | Matrix | Date Sampled | Date Received |
|------------|---------------|--------|----------------|----------------|
| NJ1-1107 | AQK0070-01 | Water | 11/29/07 12:54 | 11/30/07 08:45 |
| NJ2-1107 | AQK0070-02 | Water | 11/29/07 13:27 | 11/30/07 08:45 |
| NJ3-1107 | AQK0070-03 | Water | 11/29/07 13:59 | 11/30/07 08:45 |
| NJRW-1107 | AQK0070-04 | Water | 11/29/07 14:36 | 11/30/07 08:45 |
| NJDUP-1107 | AQK0070-05 | Water | 11/29/07 15:07 | 11/30/07 08:45 |
| Trip Blank | AQK0070-06 | Water | 11/29/07 08:00 | 11/30/07 08:45 |

TestAmerica Anchorage

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.


Rachel J James For Troy J. Engstrom, Manager





TestAmerica



ANCHORAGE, AK 2000 W. INTERNATIONAL AIRPORT ROAD, SUITE A-10
ANCHORAGE, AK 99502-1119
ph: (907) 563.9200 fax: (907) 563.9210

| | | |
|--|--|---------------------------------------|
| Alaska Resources & Environmental Services | Project Name: North Jackson | Report Created: 12/10/07 15:20 |
| P.O. Box 83050 | Project Number: [none] | |
| Fairbanks, AK 99708 | Project Manager: Lyle Greshover | |

Diesel Range Organics (C10-C25) per AK102
 TestAmerica Anchorage

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|---|--------|--------------|------|-------|--------------------------------|-----|---------|----------------|----------------|-------|
| AQK0070-01 (NJ1-1107) | | Water | | | Sampled: 11/29/07 12:54 | | | | | |
| Diesel Range Organics | AK 102 | 0.425 | — | 0.391 | mg/l | 1x | 7120007 | 12/04/07 09:01 | 12/07/07 12:42 | |
| <i>Surrogate(s): 1-Chlorooctadecane</i> | | 92.3% | | | 50 - 150 % | " | | | | " |
| AQK0070-02 (NJ2-1107) | | Water | | | Sampled: 11/29/07 13:27 | | | | | |
| Diesel Range Organics | AK 102 | 0.574 | — | 0.391 | mg/l | 1x | 7120007 | 12/04/07 09:01 | 12/07/07 13:22 | |
| <i>Surrogate(s): 1-Chlorooctadecane</i> | | 94.0% | | | 50 - 150 % | " | | | | " |
| AQK0070-03 (NJ3-1107) | | Water | | | Sampled: 11/29/07 13:59 | | | | | |
| Diesel Range Organics | AK 102 | 0.766 | — | 0.391 | mg/l | 1x | 7120007 | 12/04/07 09:01 | 12/07/07 14:02 | |
| <i>Surrogate(s): 1-Chlorooctadecane</i> | | 96.0% | | | 50 - 150 % | " | | | | " |
| AQK0070-04 (NJRW-1107) | | Water | | | Sampled: 11/29/07 14:36 | | | | | |
| Diesel Range Organics | AK 102 | 7.54 | — | 0.391 | mg/l | 1x | 7120007 | 12/04/07 09:01 | 12/07/07 14:43 | |
| <i>Surrogate(s): 1-Chlorooctadecane</i> | | 93.7% | | | 50 - 150 % | " | | | | " |
| AQK0070-05 (NJDUP-1107) | | Water | | | Sampled: 11/29/07 15:07 | | | | | |
| Diesel Range Organics | AK 102 | 0.630 | — | 0.391 | mg/l | 1x | 7120007 | 12/04/07 09:01 | 12/07/07 15:24 | |
| <i>Surrogate(s): 1-Chlorooctadecane</i> | | 89.5% | | | 50 - 150 % | " | | | | " |



| | | |
|--|------------------------------------|-----------------|
| Alaska Resources & Environmental Services | Project Name: North Jackson | Report Created: |
| P.O. Box 83050 | Project Number: [none] | 12/10/07 15:20 |
| Fairbanks, AK 99708 | Project Manager: Lyle Gresehover | |

BTEX by EPA Method 8021B
 TestAmerica Anchorage

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|--------------------------------|-----------|--------------|------|------------|-------|--------------------------------|---------|----------------|----------------|-------|
| AQK0070-01 (NJ1-1107) | | Water | | | | Sampled: 11/29/07 12:54 | | | | |
| Benzene | EPA 8021B | ND | — | 0.500 | ug/l | 1x | 7120001 | 12/03/07 09:16 | 12/03/07 14:36 | |
| Toluene | " | ND | — | 0.500 | " | " | " | " | " | |
| Ethylbenzene | " | ND | — | 0.500 | " | " | " | " | " | |
| Xylenes (total) | " | ND | — | 1.50 | " | " | " | " | " | |
| Surrogate(s): a,a,a-TFT (PID) | | 94.2% | | 50 - 150 % | | " | | | | |
| AQK0070-02 (NJ2-1107) | | Water | | | | Sampled: 11/29/07 13:27 | | | | |
| Benzene | EPA 8021B | ND | — | 0.500 | ug/l | 1x | 7120001 | 12/03/07 09:16 | 12/03/07 15:09 | |
| Toluene | " | ND | — | 0.500 | " | " | " | " | " | |
| Ethylbenzene | " | ND | — | 0.500 | " | " | " | " | " | |
| Xylenes (total) | " | ND | — | 1.50 | " | " | " | " | " | |
| Surrogate(s): a,a,a-TFT (PID) | | 95.8% | | 50 - 150 % | | " | | | | |
| AQK0070-03 (NJ3-1107) | | Water | | | | Sampled: 11/29/07 13:59 | | | | |
| Benzene | EPA 8021B | ND | — | 0.500 | ug/l | 1x | 7120001 | 12/03/07 09:16 | 12/03/07 15:43 | |
| Toluene | " | 6.31 | — | 0.500 | " | " | " | " | " | |
| Ethylbenzene | " | ND | — | 0.500 | " | " | " | " | " | |
| Xylenes (total) | " | ND | — | 1.50 | " | " | " | " | " | |
| Surrogate(s): a,a,a-TFT (PID) | | 95.4% | | 50 - 150 % | | " | | | | |
| AQK0070-04 (NJRW-1107) | | Water | | | | Sampled: 11/29/07 14:36 | | | | |
| Benzene | EPA 8021B | ND | — | 0.500 | ug/l | 1x | 7120001 | 12/03/07 09:16 | 12/06/07 11:34 | |
| Toluene | " | ND | — | 0.500 | " | " | " | " | " | |
| Ethylbenzene | " | ND | — | 0.500 | " | " | " | " | " | |
| Xylenes (total) | " | 3.70 | — | 1.50 | " | " | " | " | " | |
| Surrogate(s): a,a,a-TFT (PID) | | 89.6% | | 50 - 150 % | | " | | | | |
| AQK0070-05 (NJDUP-1107) | | Water | | | | Sampled: 11/29/07 15:07 | | | | |
| Benzene | EPA 8021B | ND | — | 0.500 | ug/l | 1x | 7120001 | 12/03/07 09:16 | 12/03/07 16:49 | |
| Toluene | " | ND | — | 0.500 | " | " | " | " | " | |
| Ethylbenzene | " | ND | — | 0.500 | " | " | " | " | " | |
| Xylenes (total) | " | ND | — | 1.50 | " | " | " | " | " | |
| Surrogate(s): a,a,a-TFT (PID) | | 93.9% | | 50 - 150 % | | " | | | | |

TestAmerica Anchorage

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RJ
 Rachel J James For Troy J. Engstrom, Manager




| | | |
|--|------------------------------------|-----------------|
| Alaska Resources & Environmental Services | Project Name: North Jackson | Report Created: |
| P.O. Box 83050 | Project Number: [none] | 12/10/07 15:20 |
| Fairbanks, AK 99708 | Project Manager: Lyle Gresehover | |

BTEX by EPA Method 8021B
TestAmerica Anchorage

| Analyte | Method | Result | MDL* | MRL | Units | Dil | Batch | Prepared | Analyzed | Notes |
|--------------------------------------|-----------|--------------|-------|-------|--------------------------------|-----|---------|----------------|----------------|-------|
| AQK0070-06 (Trip Blank) | | Water | | | Sampled: 11/29/07 08:00 | | | | | |
| Benzene | EPA 8021B | ND | — | 0.500 | ug/l | 1x | 7120001 | 12/03/07 09:16 | 12/03/07 14:03 | |
| Toluene | " | ND | — | 0.500 | " | " | " | " | " | |
| Ethylbenzene | " | ND | — | 0.500 | " | " | " | " | " | |
| Xylenes (total) | " | ND | — | 1.50 | " | " | " | " | " | |
| Surrogate(s): <i>a,a,a-TFT (PID)</i> | | | 94.0% | | 50 - 150 % | " | | | | " |

TestAmerica Anchorage

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Rachel J James For Troy J. Engstrom, Manager



| | | |
|--|------------------------------------|-----------------|
| Alaska Resources & Environmental Services | Project Name: North Jackson | Report Created: |
| P.O. Box 83050 | Project Number: [none] | 12/10/07 15:20 |
| Fairbanks, AK 99708 | Project Manager: Lyle Greschover | |

Diesel Range Organics (C10-C25) per AK102 - Laboratory Quality Control Results
 TestAmerica Anchorage

QC Batch: 7120007 Water Preparation Method: EPA 3510

| Analyte | Method | Result | MDL ^A | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---|--------|-----------------------|------------------|------------------------|-------|-----|---------------|---------------------------|-------|---------------------------|-------|----------------|----------------|-------|
| Blank (7120007-BLK1) | | | | | | | | | | Extracted: 12/04/07 09:01 | | | | |
| Diesel Range Organics | AK 102 | ND | --- | 0.500 | mg/l | 1x | -- | -- | -- | -- | -- | -- | 12/05/07 20:07 | |
| <i>Surrogate(s): 1-Chlorooctadecane</i> | | <i>Recovery: 102%</i> | | <i>Limits: 50-150%</i> | | " | | | | | | 12/05/07 20:07 | | |
| LCS (7120007-BS1) | | | | | | | | | | Extracted: 12/04/07 09:01 | | | | |
| Diesel Range Organics | AK 102 | 11.7 | --- | 0.500 | mg/l | 1x | -- | 10.3 | 113% | (75-125) | -- | -- | 12/05/07 20:44 | |
| <i>Surrogate(s): 1-Chlorooctadecane</i> | | <i>Recovery: 106%</i> | | <i>Limits: 60-120%</i> | | " | | | | | | 12/05/07 20:44 | | |
| LCS Dup (7120007-BSD1) | | | | | | | | | | Extracted: 12/04/07 09:01 | | | | |
| Diesel Range Organics | AK 102 | 12.4 | --- | 0.500 | mg/l | 1x | -- | 10.3 | 120% | (75-125) | 5.87% | (20) | 12/05/07 21:22 | |
| <i>Surrogate(s): 1-Chlorooctadecane</i> | | <i>Recovery: 108%</i> | | <i>Limits: 60-120%</i> | | " | | | | | | 12/05/07 21:22 | | |
| Duplicate (7120007-DUP1) | | | | QC Source: AQK0060-07 | | | | Extracted: 12/04/07 09:01 | | | | | | |
| Diesel Range Organics | AK 102 | 2.24 | --- | 0.400 | mg/l | 1x | 2.39 | -- | -- | -- | 6.36% | (20) | 12/06/07 04:49 | |
| <i>Surrogate(s): 1-Chlorooctadecane</i> | | <i>Recovery: 101%</i> | | <i>Limits: 50-150%</i> | | " | | | | | | 12/06/07 04:49 | | |



| | | |
|--|------------------------------------|--|
| Alaska Resources & Environmental Services | Project Name: North Jackson | Report Created: 12/10/07 15:20 |
| P.O. Box 83050 | Project Number: [none] | |
| Fairbanks, AK 99708 | Project Manager: Lyle Greschover | |

BTEX by EPA Method 8021B - Laboratory Quality Control Results
 TestAmerica Anchorage

QC Batch: 7120001 Water Preparation Method: EPA 5030B

| Analyte | Method | Result | MDL ^A | MRL | Units | Dil | Source Result | Spike Amt | % REC | (Limits) | % RPD | (Limits) | Analyzed | Notes |
|---------|--------|--------|------------------|-----|-------|-----|---------------|-----------|-------|----------|-------|----------|----------|-------|
|---------|--------|--------|------------------|-----|-------|-----|---------------|-----------|-------|----------|-------|----------|----------|-------|

Blank (7120001-BLK1) Extracted: 12/03/07 09:16

| | | | | | | | | | | | | | | |
|-------------------------------|-----------|-----------------|-----|-----------------|------|----|----|----|----|----|----|----|----------------|--|
| Benzene | EPA 8021B | ND | --- | 0.500 | ug/l | 1x | -- | -- | -- | -- | -- | -- | 12/03/07 12:10 | |
| Toluene | " | ND | --- | 0.500 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Ethylbenzene | " | ND | --- | 0.500 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Xylenes (total) | " | ND | --- | 1.50 | " | " | -- | -- | -- | -- | -- | -- | " | |
| Surrogate(s): a,a,a-TFT (PID) | | Recovery: 91.4% | | Limits: 50-150% | | " | | | | | | | 12/03/07 12:10 | |

LCS (7120001-BS1) Extracted: 12/03/07 09:16

| | | | | | | | | | | | | | | |
|-------------------------------|-----------|-----------------|-----|-----------------|------|----|----|------|-------|----------|----|----|----------------|--|
| Benzene | EPA 8021B | 20.0 | --- | 0.500 | ug/l | 1x | -- | 20.6 | 97.0% | (80-120) | -- | -- | 12/03/07 11:03 | |
| Toluene | " | 20.1 | --- | 0.500 | " | " | -- | 19.7 | 102% | " | -- | -- | " | |
| Ethylbenzene | " | 21.4 | --- | 0.500 | " | " | -- | 19.8 | 108% | (80-126) | -- | -- | " | |
| Xylenes (total) | " | 60.5 | --- | 1.50 | " | " | -- | 59.6 | 102% | (80-127) | -- | -- | " | |
| Surrogate(s): a,a,a-TFT (PID) | | Recovery: 90.2% | | Limits: 60-120% | | " | | | | | | | 12/03/07 11:03 | |

LCS Dup (7120001-BS1) Extracted: 12/03/07 09:16

| | | | | | | | | | | | | | | |
|-------------------------------|-----------|-----------------|-----|-----------------|------|----|----|------|------|----------|--------------|--|----------------|--|
| Benzene | EPA 8021B | 21.6 | --- | 0.500 | ug/l | 1x | -- | 20.6 | 105% | (80-120) | 7.72% (13.8) | | 12/03/07 19:01 | |
| Toluene | " | 21.7 | --- | 0.500 | " | " | -- | 19.7 | 110% | " | 7.51% (10.4) | | " | |
| Ethylbenzene | " | 22.8 | --- | 0.500 | " | " | -- | 19.8 | 115% | (80-126) | 6.45% (11.8) | | " | |
| Xylenes (total) | " | 65.4 | --- | 1.50 | " | " | -- | 59.6 | 110% | (80-127) | 7.73% (11.2) | | " | |
| Surrogate(s): a,a,a-TFT (PID) | | Recovery: 95.9% | | Limits: 60-120% | | " | | | | | | | 12/03/07 19:01 | |

Matrix Spike (7120001-MS1) QC Source: AQK0070-02 Extracted: 12/03/07 09:16

| | | | | | | | | | | | | | | |
|-------------------------------|-----------|-----------------|-----|-----------------|------|----|-------|------|------|------------|----|----|----------------|--|
| Benzene | EPA 8021B | 20.9 | --- | 0.500 | ug/l | 1x | 0.129 | 20.6 | 101% | (69-124) | -- | -- | 12/03/07 20:40 | |
| Toluene | " | 21.1 | --- | 0.500 | " | " | 0.172 | 19.7 | 106% | (80-126) | -- | -- | " | |
| Ethylbenzene | " | 22.5 | --- | 0.500 | " | " | ND | 19.8 | 114% | (77.3-143) | -- | -- | " | |
| Xylenes (total) | " | 63.3 | --- | 1.50 | " | " | 0.787 | 59.6 | 105% | (67.5-140) | -- | -- | " | |
| Surrogate(s): a,a,a-TFT (PID) | | Recovery: 93.8% | | Limits: 50-150% | | " | | | | | | | 12/03/07 20:40 | |

Matrix Spike Dup (7120001-MSD1) QC Source: AQK0070-02 Extracted: 12/03/07 09:16

| | | | | | | | | | | | | | | |
|-------------------------------|-----------|-----------------|-----|-----------------|------|----|-------|------|------|------------|-------------|--|----------------|--|
| Benzene | EPA 8021B | 20.8 | --- | 0.500 | ug/l | 1x | 0.129 | 20.6 | 100% | (69-124) | 0.586% (10) | | 12/03/07 21:13 | |
| Toluene | " | 21.2 | --- | 0.500 | " | " | 0.172 | 19.7 | 107% | (80-126) | 0.180% | | " | |
| Ethylbenzene | " | 23.0 | --- | 0.500 | " | " | ND | 19.8 | 116% | (77.3-143) | 2.06% | | " | |
| Xylenes (total) | " | 63.3 | --- | 1.50 | " | " | 0.787 | 59.6 | 105% | (67.5-140) | 0.0221% | | " | |
| Surrogate(s): a,a,a-TFT (PID) | | Recovery: 94.6% | | Limits: 50-150% | | " | | | | | | | 12/03/07 21:13 | |



Alaska Resources & Environmental Services

P.O. Box 83050
Fairbanks, AK 99708

Project Name: **North Jackson**

Project Number: [none]

Project Manager: Lyle Greschover

Report Created:
12/10/07 15:20

Notes and Definitions

Report Specific Notes:

None

Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.



Test America Cooler Receipt Form

(Army Corps. Compliant)

WORK ORDER # AQK0070 CLIENT: ARES PROJECT: North Jackson

Date/Time Cooler Arrived 11/30/07 08:45 Cooler signed for by: Johanna Dreher
(Print name)

Preliminary Examination Phase:

Date cooler opened: same as date received or / /

Cooler opened by (print) Johanna Dreher (sign) Johanna Dreher

1. Delivered by ALASKA AIRLINES Fed-Ex UPS NAC LYNDEN CLIENT Other:

Shipment Tracking # if applicable 3472 4362 (include copy of shipping papers in file)

2. Number of Custody Seals 0 Signed by Date / /

Were custody seals unbroken and intact on arrival? N/A Yes No

3. Were custody papers sealed in a plastic bag? Yes No

4. Were custody papers filled out properly (ink, signed, etc.)? Yes No

5. Did you sign the custody papers in the appropriate place? Yes No

6. Was ice used? Yes No Type of ice: blue ice gel ice real ice dry ice Condition of Ice: Solid

Temperature by Digi-Thermo Probe 2.5 °C Thermometer # rect#3

7. Packing in Cooler: bubble wrap styrofoam cardboard Other: foam

8. Did samples arrive in plastic bags? Yes No

9. Did all bottles arrive unbroken, and with labels in good condition? Yes No

10. Are all bottle labels complete (ID, date, time, etc.) Yes No

11. Do bottle labels and Chain of Custody agree? Yes No

12. Are the containers and preservatives correct for the tests indicated? Yes No

13. Is there adequate volume for the tests requested? Yes No

14. Were VOA vials free of bubbles? N/A Yes No

If "NO" which containers contained "head space" or bubbles? 01C

Log-in Phase:

Date of sample log-in 11/30/07

Samples logged in by (print) Rose Burton (sign) Rose Burton

1. Was project identifiable from custody papers? Yes No

2. Do Turn Around Times and Due Dates agree? Yes No

3. Was the Project Manager notified of status? Yes No

4. Was the Lab notified of status? Yes No

5. Was the COC scanned and copied? Yes No

TestAmerica

ANALYTICAL TESTING CORPORATION

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-4244
 425-420-9200 FAX 425-9210
 11922 E. First Ave, Spokane, WA 99206-5302
 509-924-9200 FAX 924-9290
 9405 SW Nimbus Ave, Beaverton, OR 97008-7145
 503-906-9200 FAX 906-9210
 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119
 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

CLIENT: Alaska Resources and Environmental Services

REPORT TO: email: lye@ak-res.com
 ADDRESS: Mail: P.O. Box 83050
 Fairbanks, Alaska 99708

PHONE: (907) 374-3226 FAX: (907) 374-3219

PROJECT NAME: North Jackson

PROJECT NUMBER:

SAMPLED BY: Lyle Gresehover

CLIENT SAMPLE IDENTIFICATION

SAMPLING DATE/TIME

| | | | | | |
|---|------------|-----------------|---|---|---------|
| 1 | NJ1-1107 | 11/29/2007 1254 | X | X | DR |
| 2 | NJ2-1107 | 11/29/2007 1327 | X | X | BTEX |
| 3 | NJ3-1107 | 11/29/2007 1359 | X | X | PA 821B |
| 4 | NJRW-1107 | 11/29/2007 1436 | X | X | |
| 5 | NJDUP-1107 | 11/29/2007 1507 | X | X | |
| 6 | Trip Blank | 11/29/2007 | | | |

INVOICE TO:
 Alaska Resources and Environmental Services
 P.O. Box 83050
 Fairbanks, Alaska 99708

PRESERVATIVE

REQUESTED ANALYSES

TURNAROUND REQUEST
 in Business Days *

Organic & Inorganic Analyses
 Petroleum Hydrocarbon Analyses

00 01 02 03 04 05 06 07 08 09 10 11 12

00 01 02 03 04 05 06 07 08 09 10 11 12

OTHER Specify:

* Turnaround Requested less than standard may incur Rush Charges.

| MATRIX (W, S, O) | # OF CONT. | LOCATION / COMMENTS | TA WO ID |
|------------------|------------|---------------------|----------|
| W | 4 | | 01 |
| W | 5 | | 02 |
| W | 5 | | 03 |
| W | 5 | | 04 |
| W | 4 | | 05 |
| W | 2 | | 06 |

RECEIVED BY: *Lyle Gresehover* DATE: 11/30/07
 PRINT NAME: Lyle Gresehover TIME: 1500
 RECEIVED BY: *Johanna Decker* DATE: 11/30/07
 PRINT NAME: Johanna Decker TIME: 0845

ADDITIONAL REMARKS:
Level II Reporting Requested

DATE: 11/30/07
 TIME: 0845

2.54 PAGE 1 OF 1

Note: By relinquishing samples to TestAmerica, client agrees to pay for the services requested on this chain of custody form and for any additional analyses performed on this project. Payment for services is due within 30 days from the date of invoice unless otherwise contracted. Sample(s) will be disposed of after 30 days unless otherwise contracted.