



September 2, 1997  
Project AA11

0004

Mr. Robert S. Gondek  
Chevron USA Products Company  
P.O. Box 5004  
San Ramon, California 94583-0804

Re: *Results of Soil and Groundwater Assessment Program*  
Chevron Service Station 9-6489  
1304 Airport Heights Drive  
Anchorage, Alaska

RECEIVED  
SEP 08 1997  
DEPT. OF ENVIRONMENTAL  
CONSERVATION  
NRO

Dear Mr. Gondek:

This letter, prepared by RRM, Inc. (RRM) on behalf of Mr. Robert Gondek, Chevron USA Products Company, presents the results of a soil and groundwater assessment program performed at the referenced site (Figures 1 and 2). The purpose of the assessment program was to investigate site soil and groundwater beneath the site. Provided in this letter are site description, scope of work, findings, and conclusions.

### **SITE DESCRIPTION**

The site is located at 1304 Airport Heights Drive at De Barr Avenue in Anchorage, Alaska. The site is an active gasoline fueling facility with three underground gasoline storage tanks (USTs), one used oil vault, associated product piping, and two product islands with dispensers. The gasoline USTs are located in the northern portion of the site, and the used oil vault is located in the southwest corner of the site. The product islands are located in the northern portion of the site, and the station building is located in the central portion of the site. Facility improvements are shown on Figure 1.

### **SCOPE OF WORK**

To investigate soil and groundwater beneath the site, RRM performed the following scope of work:

- Drilled and installed three groundwater monitoring wells on-site, each to the maximum depth of approximately 40 feet below ground surface (bgs). One well (MW-1) was drilled and installed adjacent to the eastern most UST and two wells (MW-2 and MW-3) were drilled and installed adjacent to the western property boundary, near the

two other USTs. Soil samples were collected primarily at 5 foot depth intervals from the borings for each well.

- Performed field analysis for organic vapor concentrations on soil samples collected during drilling using a photo-ionization detector.
- Submitted soil samples collected from Well MW-1 at the 25 and 30 foot depth intervals, from Well MW-2 at the 20 and 30 foot depth intervals, and from Well MW-3 at 10, 20, and 30 foot depth intervals for chemical analysis. Soil samples were analyzed for the presence of total petroleum hydrocarbons as gasoline (TPHg), and benzene, toluene, ethylbenzene, xylenes (BTEX compounds) according to EPA Method 8015 (modified) and 8020. In addition, a soil sample collected at 10 feet, bgs from Well MW-3 was analyzed for fractional organic carbon according to ASTM Method D2940.
- Surveyed Wells MW-1, MW-2, and MW-3 to site datum using Well MW-2 as the 100 foot mark (top of casing).
- Developed and sampled the newly installed wells. Groundwater samples were analyzed for TPHg and BTEX compounds.
- Prepared this report.

Well locations are shown on Figures 1 and 2. Field and laboratory procedures, boring logs, and field data sheets are provided in Attachment A. Certified analytical reports and chain-of-custody documentation are provided in Attachment B.

## **FINDINGS**

RRM performed the soil and groundwater assessment program at the site on August 27, 1997.

### **Subsurface Soil Conditions**

Soils encountered during drilling consisted primarily of coarse grain material consisting of sandy gravel to gravely sand from the ground surface to the maximum depth explored of approximately 40 feet bgs. Descriptions of the subsurface lithology are provided on the attached logs in Attachment A.

During drilling, groundwater was first encountered and stabilized at the approximate depth of 29 feet bgs. Based on groundwater elevation data, groundwater was calculated to flow towards the northwest at an approximate gradient of 0.02 feet/feet.

### **Organic Vapor Concentrations**

Organic vapor concentrations, as measured with a photo-ionization detector in the field, ranged from 10 to 500 parts per million (ppm). The highest concentrations, greater than

100 ppm, were noted in soils collected from Well MW-1 between the depths of 20 and 40 feet bgs. Concentrations of organic vapors are provided on the attached boring logs. Organic vapor analysis performed in the field are useful in determining the relative hydrocarbon impact to site soils. The field analysis does not give the confidence of laboratory analysis of soil samples.

#### **Soil Analytical Data**

Soil analytical data shows that TPHg was detected in the soils from Well MW-1 at 25 and 30 feet bgs at concentrations of 186 and 43.1 ppm, respectively. Benzene was only detected in soils from Well MW-1 at 30 feet bgs at a concentration of 0.0909 ppm. Fractional organic carbon was detected in the soil sample from 10 feet bgs in Well MW-3 at 0.0241 percent by weight. Soil analytical data are summarized in Table 1.

#### **Groundwater Analytical Data**

Groundwater analytical data shows that TPHg was detected at in Well MW-1 at 14,800 parts per billion (ppb), in Well MW-2 at 718 ppb, and in Well MW-3 at 352 ppb. Benzene was detected in Well MW-1 at 12.8 ppb, in Well MW-2 at 3.14 ppb, and in Well MW-3 at 167 ppb. Groundwater analytical data are summarized in Table 2.

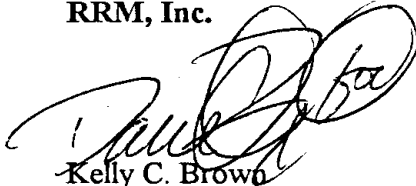
#### **CONCLUSIONS**

The purpose of the soil and groundwater assessment program was to investigate soil and groundwater adjacent to the site's USTs. Based on the results of soil and groundwater analytical data collected during the assessment program, dissolved petroleum hydrocarbons were detected in site soils and groundwater beneath the northern portion of the site at moderate to low concentrations.

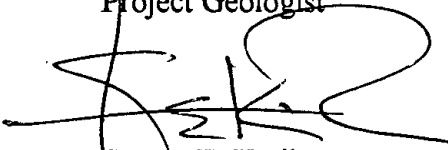
If you have any questions regarding the contents of this letter, please call RRM at (408) 475-8141.

Sincerely,

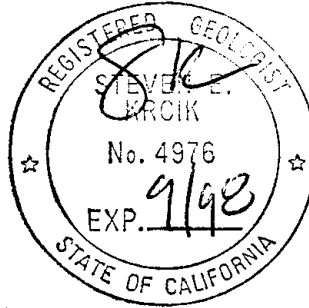
RRM, Inc.



Kelly C. Brown  
Project Geologist



Steven E. Krcik  
Senior Geologist  
RG 4976



- Attachments:
- Table 1 - Soil Analytical Data
  - Table 2 - Groundwater Analytical Data
  - Figure 1 - Groundwater Elevation Contour Map
  - Figure 2 - TPHg/Benzene Concentration Map
  - Attachment A - Field and Laboratory Procedures, Boring Logs, and Field Data Sheets
  - Attachment B - Certified Analytical Reports and Chain-of-Custody Documentation

Table 1  
Soil Analytical Data

Chevron Station 9-6489  
1304 Airport Heights Drive  
Anchorage, Alaska

Well Number	Date Sampled	Sample Depth (feet)	TPHg (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Xylenes (ppm)	FOC (% by wt.)
MW-1	8/27/97	25	186	ND	0.154	0.439	20.3	NA
		30	43.1	0.0909	0.157	0.156	2.13	NA
MW-2	8/27/97	20	ND	ND	ND	ND	ND	NA
		30	ND	ND	0.0817	ND	0.166	NA
MW-3	8/27/97	10	ND	ND	ND	ND	ND	0.0241
		20	ND	ND	ND	ND	ND	NA
		30	ND	ND	0.0702	ND	0.103	NA

## Notes:

TPHg = Total petroleum hydrocarbons as gasoline

FOC = Fractional organic carbon

ppm = Parts per million

ND = Not detected

Table 2  
Groundwater Analytical Data

0009

Chevron Station 9-6489  
1304 Airport Heights Drive  
Anchorage, Alaska

Well Number	Sampling Date	Well Elevation (TOC, feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
MW-1	08/27/97	99.20	27.33	71.87	14,800	12.8	12.2	4.09	3,010
MW-2	08/27/97	100.00	28.32	71.68	718	3.14	3.67	1.73	4.41
MW-3	08/27/97	98.69	27.95	70.74	3,520	167.0	62.5	47.1	98.9

Notes:

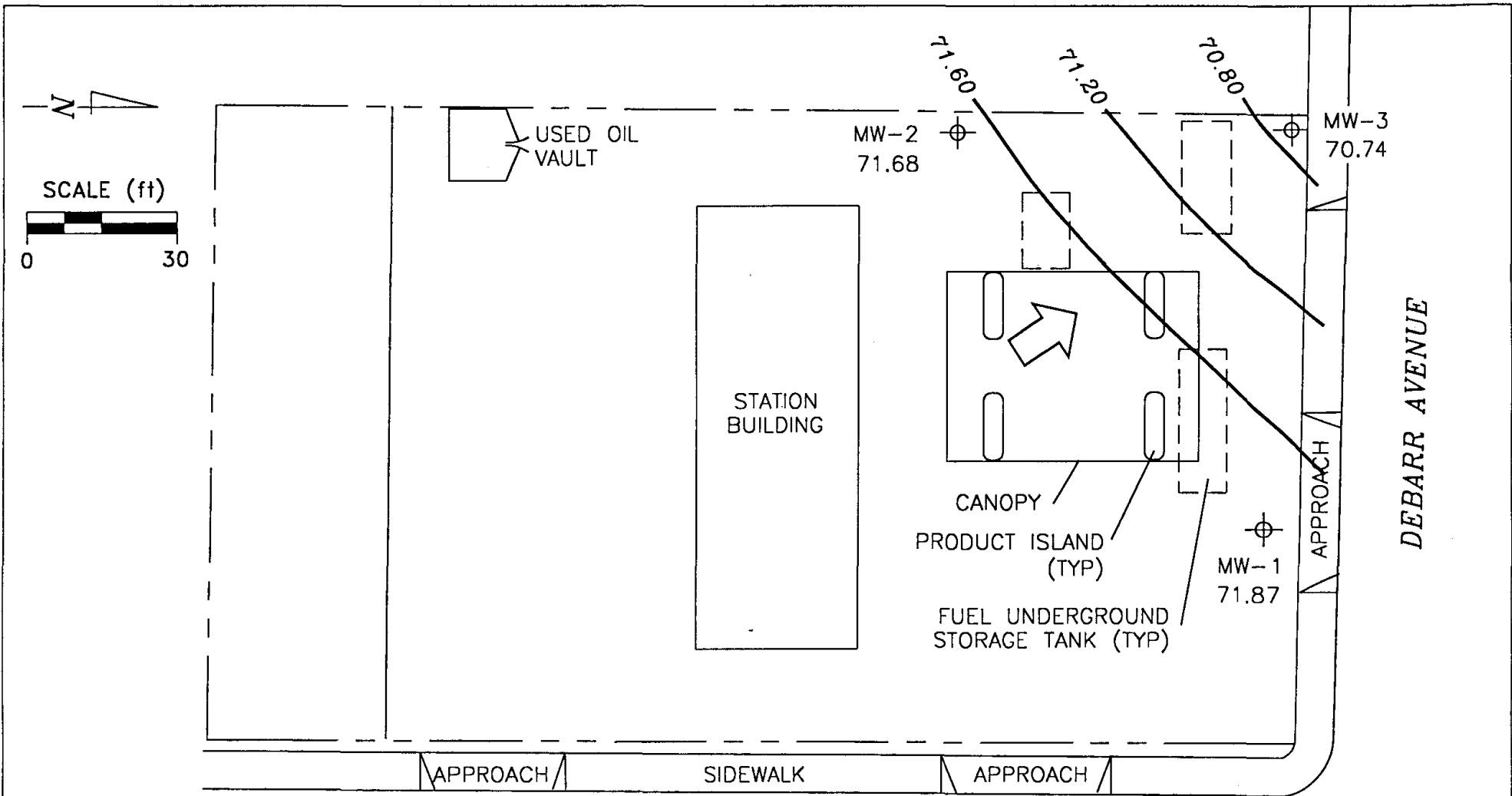
TOC = Top of casing

TPHg = Total petroleum hydrocarbons as gasoline




ppb = parts per billion (ug/L)

ND = Not detected

Well elevations were collected using site datum with Well MW-2 as the 100.00 foot benchmark



**EXPLANATION**

-  MONITORING WELL
- 71.87 GROUNDWATER ELEVATION (FT, MSL)
- 70.80  GROUNDWATER ELEVATION CONTOUR (FT, MSL)
-  ESTIMATED GROUNDWATER FLOW DIRECTION

*AIRPORT HEIGHTS DRIVE*

*DEBARR AVENUE*

0100

Base map from Chevron, Northwest Region

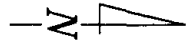
PREPARED BY



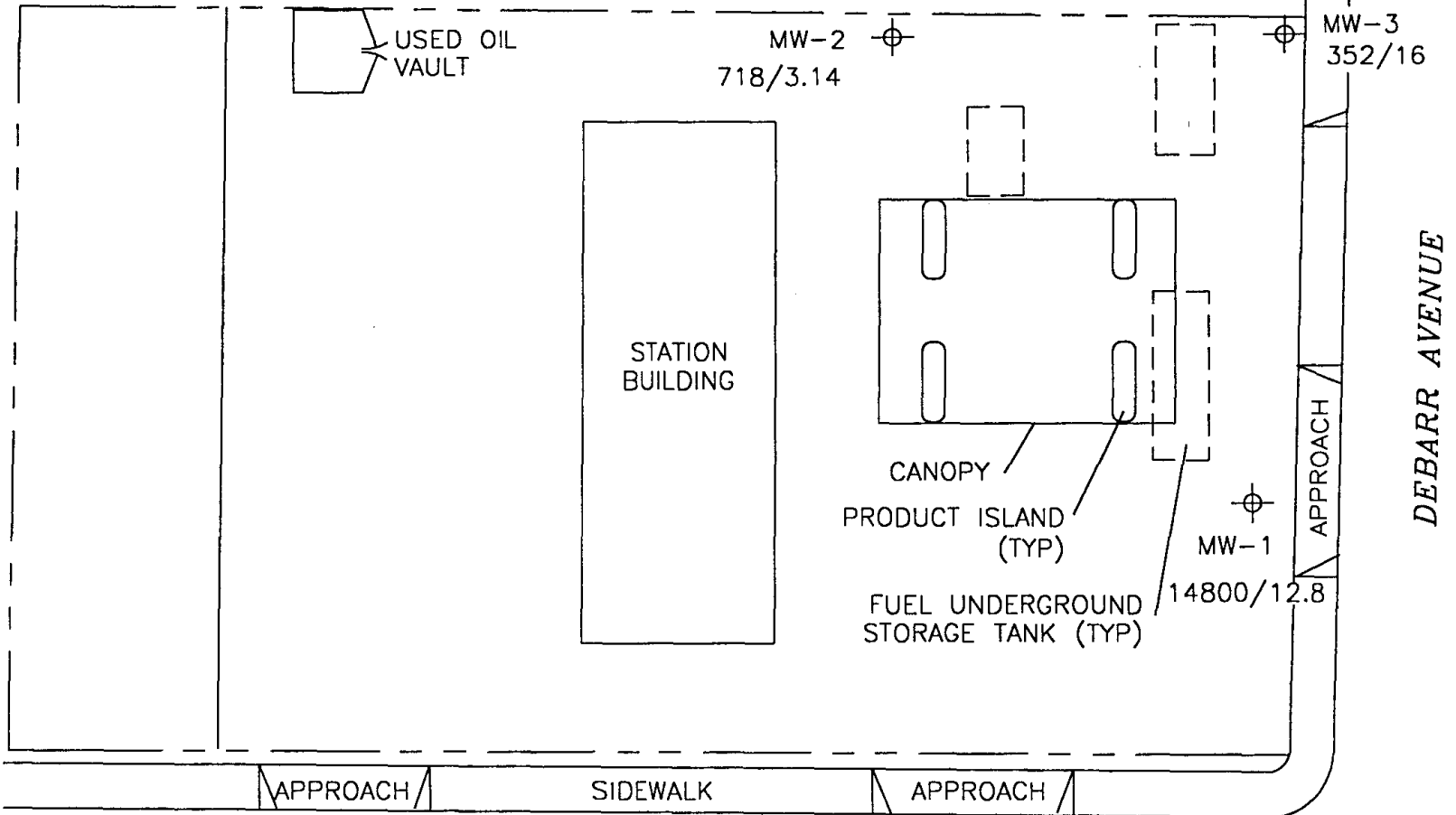
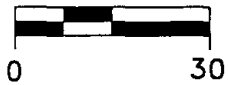
**Chevron USA Service Station 9-6489**  
 1304 Airport Heights Drive  
 Anchorage, California

**GROUNDWATER ELEVATION  
 CONTOUR MAP**

**FIGURE:  
 1  
 PROJECT:  
 AA11**



SCALE (ft)



EXPLANATION

⊕ MONITORING WELL

718/3.14 TPHG/BENZENE CONCENTRATION  
IN GROUNDWATER, ppb

*AIRPORT HEIGHTS DRIVE*

0011

Basemap from Chevron, Northwest Region

PREPARED BY

**RRM**  
engineering contracting firm

**Chevron USA Service Station 9-6489**  
1304 Airport Heights Drive  
Anchorage, California

**TPHG/BENZENE CONCENTRATION MAP**

**FIGURE:**  
**2**  
**PROJECT:**  
AA11



**ATTACHMENT A**  
**FIELD AND LABORATORY PROCEDURES, BORING LOGS,**  
**AND FIELD DATA SHEETS**

---

**ATTACHMENT A**  
**FIELD AND LABORATORY PROCEDURES, BORING LOGS,**  
**SURVEY DATA, AND FIELD DATA SHEETS**

---

### **Soil Boring Drilling Procedures**

The soil borings for Wells MW-1, MW-2, and MW-3 were drilled using 8-inch diameter hollow-stem auger drilling equipment. The borings were logged by an RRM, Inc. geologist using the Unified Soil Classification System and standard geologic techniques. The borings were drilled to a depth of approximately 40 feet below ground surface (bgs).

Soil samples for logging and chemical analysis were collected at 5-foot depth intervals by advancing a California-modified split-spoon sampler with 6-inch brass liners into undisturbed soil beyond the tip of the auger. The sampler was driven a maximum of 18 inches, using a 140-pound hammer with a 30-inch drop. The brass liner containing the deepest 6 inches of soil from each sample interval was retained for chemical analysis and was capped with Teflon<sup>®</sup> tape squares and plastic end caps, and then placed in a sealable plastic bag. These samples were placed on ice for transport to a state-certified laboratory, accompanied by chain-of-custody documentation. All downhole drilling equipment was steam-cleaned between borings.

### **Organic Vapor Procedures**

Soil samples collected during drilling were analyzed in the field for concentrations of volatile organic compounds using a photo-ionization detector. The test procedure involves measuring approximately 30 grams from an undisturbed soil sample and placing this subsample in a clean plastic bag. The bag was then warmed for approximately 20 minutes, pierced, and the head-space within the bag tested for total organic vapor measured in parts per million as benzene (ppm; volume/volume). The instrument was previously calibrated prior to field use. The results of the field testing are noted on the attached boring logs.

### **Groundwater Monitoring Well Installation Procedures**

The borings for Wells MW-1, MW-2, and MW-3 were converted to groundwater monitoring wells with the installation of 2-inch diameter Schedule 40 PVC casing. Factory-slotted well screen with 0.02-inch slots was installed in the borings from the

approximate depths of 24 to 39 feet bgs. Solid casing was then placed on top of the screened section to the ground surface. A 2/12 annular sand pack was placed in the annular space around the casing extending from the bottom of the boring to depths of approximately 22 feet bgs. A bentonite seal was then placed on top of the sand pack to approximately 2-foot below the ground surface, with concrete to the ground surface. A traffic grade well vault box was then placed on top of each well.

0014

Each well was surveyed to site datum using Well MW-2 as the 100.00 foot bench mark. The drill cuttings were placed in drums, sampled, and stored on site. Once the analyses are obtained, the drill cuttings will be disposed of according to State and local requirements.

### **Well Development Procedures**

The newly installed wells were developed by the surge and purge well development technique. Prior to initiating well development, depth to groundwater in each well was measured and each well was visually checked for separate-phase hydrocarbons. Each well was then surged with a 1-3/4 inch swab, across the well screen. The well was then purged of water to remove the suspended fines. This process was repeated until approximately 25-gallons of groundwater were removed and the well waters were clear. During well development procedures, well stabilization parameters (temperature, pH, and electrical conductivity) were collected and recorded for each well. Well development water was stored in 55-gallon drums on-site pending disposal.



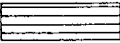

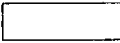
### **Groundwater Sampling Procedures**

The groundwater sampling procedure for the newly installed wells was performed immediately after well development. Groundwater in each well was allowed to recover approximately 80% of the original groundwater level recorded prior to well development. Groundwater samples were collected using a new disposable Teflon<sup>®</sup> bailer, placed into appropriate EPA-approved containers, labeled, logged onto chain-of-custody documents, and transported on ice to a California State-certified laboratory. All sampling equipment was cleaned with tri-sodium phosphate between uses.

### **Laboratory Procedures**

Selected soil and the groundwater samples were analyzed for the presence of total petroleum hydrocarbons calculated as gasoline (TPHg), and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds). The analyses were performed according to EPA Methods 8015 (modified) and 8020. In addition, one soil sample collected from the boring for Well MW-3 was analyzed for fractional organic carbon by ASTM Method D2940. The methods of analysis for the soil and groundwater samples are documented on the certified analytical reports presented as Attachment B.



WELL/BORING COMPLETION

- |   |  |
|---|--|
|  Annular seal; cement grout  |  Bentonite seal    |
|  Slotted well screen section |  Annular sand pack |
|  Solid well section          |  |

MOISTURE CONTENT

- D - Dry
- DP - Damp
- M - Moist
- S - Saturated (Silts and Clays)
- W - Wet (Sands and Gravels)

GROUNDWATER

-  First encountered groundwater
-  Stabilized groundwater level

DENSITY (blows/foot - Cal Mod Sampler)

-Sands and Gravels-	-Silts and Clays-
0-5      -Very loose	0-2      -Very soft
5-13     -Loose	2-4      -Soft
13-38   -Medium dense	4-9      -Firm
38-63   -Dense	9-17     -Stiff
OVER 63 -Very dense	17-37   -Very stiff
	37-72   -Hard
	OVER 72 -Very hard

FIELD TEST

- PID - Photo-ionization detector
- FID - Flame-ionization detector

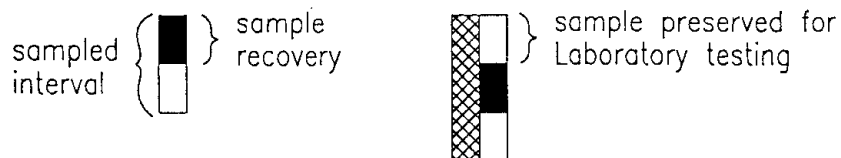
SOIL SAMPLE NUMBER

- B-1-5      B-Sample#-Depth in feet (for borings)
- MW-1-5    MW-Sample#-Depth in feet (for wells)

RECOVERY / SAMPLE INTERVAL

- SAMPLE INTERVAL - Attempted sample interval
- RECOVERY - Sample retained within sample interval
- NO RECOVERY - Sample not retained within sample interval

GRAPHIC



EXPLANATION AND ABBREVIATIONS

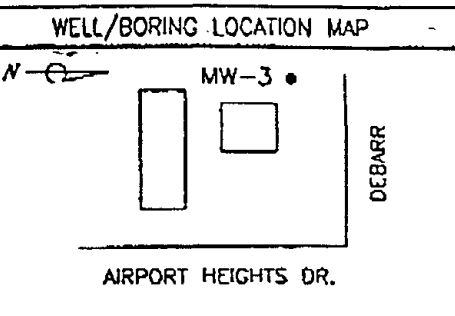
- USCS SYMBOL = Unified Soil Classification System
- MSL = mean sea level
- 2.5YR 6/2 = Munsel Color Chart Designation

COARSE GRAINED SOILS	GRAVELS More than 50% of coarse fraction larger than #4 sieve	Clean gravels with less than 5% fines	GW		Well graded gravel, gravel-sand mixtures
		Gravels with over 12% fines	GP		Poorly graded gravels, gravel-sand mixtures
			GM		Silty gravels, poorly graded gravel-sand-silt mixtures
		GC		Clayey gravels, poorly graded gravel-sand-clay mixtures	
	SANDS More than 50% of coarse fraction smaller than #4 sieve	Clean sands with less than 5% fines	SW		Well graded sands, gravelly sands
		Sands with over 12% fines	SP		Poorly graded sands, gravelly sands
			SM		Silty sands, poorly graded sand-silt mixtures
		SC		Clayey sands, poorly graded sand-clay mixtures	
FINE GRAINED SOILS	SILTS AND CLAYS liquid limit less than 50%	ML		Inorganic silts and very fine sands, silty or clayey fine sands	
		CL		Inorganic clays of low to medium plasticity, gravelly, sandy or silty clays, lean clays	
		OL		Organic clays and organic silty clays of low plasticity	
	SILTS AND CLAYS liquid limit greater than 50%	MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
		CH		Inorganic clays of high plasticity, fat clays	
		OH		Organic clays of medium to high plasticity, organic silts	
HIGHLY ORGANIC SOILS		Pt		Peat and other highly organic soils	

U.S. STANDARD SERIES SIEVE				CLEAR SQUARE SIEVE OPENINGS			
	200	40	10	4	3/4"	3"	12"
Sils and Clays	Sand			Gravel		Cobbles	Boulders
	fine	medium	coarse	fine	coarse		







REMEDIATION RISK MANAGEMENT, INC. WELL/BORING: MW-3

DATE: 8-27-97 DRILLING METHOD: hollow stem

PROJECT: AA11 SAMPLING METHOD: split spoon 0019

CLIENT: Chevron 9-6489 BORING DIAMETER: 8"

LOCATION: 1304 Airport Heights Dr. BORING DEPTH: 40'

CITY: Anchorage WELL CASING: 0-24'

CO./STATE: Alaska WELL SCREEN: 24'-39'

DRILLER: Discovery Drilling SAND PACK: 22'-40'

WELL/BORING COMPLETION	FIRST	STABILIZED	MOISTURE	DENSITY BLOW/FOOT	FIELD TEST PID	SAMPLE NUMBER	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	GRAPHIC	USCS SYMBOL	WATER LEVEL:		
												TIME:	DATE:	
												DESCRIPTION		
BENTONITE							2			ASPHALT & SANDY GRAVEL - FILL: brownish gray; <5% fines, 35% fine to coarse sand; 60% fine to coarse gravel; medium dense.	SP-6P			
							4			GRAVELLY SAND: brownish gray; <5% fines, 60% fine to coarse sand; 35% fine gravel; medium dense.				
SAND 2/12			D	18	10	⊕10	8							
						FOC	10							
			M	12			14							⊕15': As above.
			M	20	10	⊕20	18							⊕20': As above.
			M	20			24							⊕25': As above.
		▽	W	15	10	⊕30	28							⊕30': 20% gravel.
							30							
							34							
							38							
			W	18	10		40							⊕40': As above.
												BOTTOM OF BORING AT 40'		



FIELD DATA

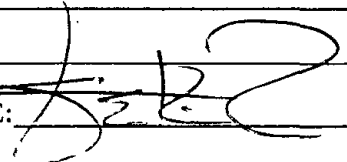
DEPTH TO GROUNDWATER/SEPARATE-PHASE HYDROCARBON REMOVAL FORM

DATE: 8/27/97 SITE ADDRESS: 1304 AIRPORT HEIGHTS DRIVE  
 STATION/PROJECT NO.: AA11/CUSA 9-6489 CITY/COUNTY/STATE: ANCHORAGE / ALASKA FIELD TECH: STEVE KRIK

PROBE TYPE  
 Oil/Water Interface Probe  
 Other: ELECTRONIC

Dtw Ord.	Well ID	Time (2400 hr)	Total Depth (feet)	First Depth to Water (feet) TOB/TOC	Second Depth to Water (feet) TOB/TOC	SPH Depth (feet) TOB/TOC	SPH Thickness (feet)	SEPARATE-PHASE HYDROCARBON (SPH) QUALITATIVE DESCRIPTION								Well Integrity Notes		
								Clear	Light	Dark	Other	Light	Medium	Heavy	SPH		Water	
								COLOR				VISCOSITY			LIQUID REMOVED			
	MW-1		40'	27.33	27.33	0	0											
	MW-2		40'	28.32	28.32	0	0											
	MW-3		40'	27.95	27.95	0	0											

Comments/Notes: \_\_\_\_\_

SIGNATURE: 

**FIELD DATA**

**WELL DEVELOPMENT FORM**

GENERAL INFORMATION

DATE: 8/27/97 WELL ID: MW-1  
 STATION/PROJECT NO.: AA11 / CUSA 9-6489  
 SITE ADDRESS: 1304 AIRPORT HEIGHTS DRIVE  
 CITY: ANCHORAGE  
 COUNTY/STATE: ALASKA  
 FIELD TECHNICIAN: STEVE KRICK

WELL CONSTRUCTION INFORMATION

WELL DIAMETER: 2"  
 WELL MATERIAL: SCH 40 PVC  
 WELL TOTAL DEPTH: 40'  
 SCREEN INTERVAL: 24-39'  
 FILTER PACK INTERVAL: 22-40'  
 FILTER PACK MATERIAL: 2#12 SAND

WELL DEVELOPMENT SUMMARY

ESTIMATED PURGE VOLUME (gal.): 25  
 ACTUAL PURGE VOLUME (gal.): 25  
 WELL TYPE:  Groundwater Monitoring Well  
 Groundwater Extraction Well  
 Sparge/Dual Purpose Well  
 Other: \_\_\_\_\_

WELL DEVELOPMENT METHOD:  Submersible Pump  Bailer  Surge Block/Swab  Other: \_\_\_\_\_

**WELL DEVELOPMENT DATA**

TIME		DEPTH		GALLONS		MEASUREMENTS				NOTES:
Start	End	to Water	to Bottom	Pumped	Total	pH	Conductivity	Temperature	Turbidity	
12:00	1:00	29	39	25	25	4.7	480	59	BROWN TO CLEAR	

SIGNATURE: [Signature]

0021

**FIELD DATA**

**WELL DEVELOPMENT FORM**

**GENERAL INFORMATION**

DATE: 9/27/97 WELL ID: MIV-2  
 STATION/PROJECT NO.: AA11 / CUSA 9-6489  
 SITE ADDRESS: 1304 AIRPORT HEIGHTS DRIVE  
 CITY: ANCHORAGE  
 COUNTY/STATE: ALASKA  
 FIELD TECHNICIAN: STEVE KRICK

**WELL CONSTRUCTION INFORMATION**

WELL DIAMETER: 2"  
 WELL MATERIAL: 5/4 40 PVC  
 WELL TOTAL DEPTH: 40'  
 SCREEN INTERVAL: 24-39'  
 FILTER PACK INTERVAL: 22-40'  
 FILTER PACK MATERIAL: 2X12 SAND

**WELL DEVELOPMENT SUMMARY**

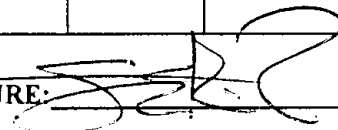
ESTIMATED PURGE VOLUME (gal.): 25  
 ACTUAL PURGE VOLUME (gal.): 25  
 WELL TYPE:  Groundwater Monitoring Well  
 Groundwater Extraction Well  
 Sparge/Dual Purpose Well  
 Other: \_\_\_\_\_

WELL DEVELOPMENT METHOD:  Submersible Pump  Bailer  Surge Block/Swab  Other: \_\_\_\_\_

**WELL DEVELOPMENT DATA**

TIME		DEPTH		GALLONS		MEASUREMENTS				NOTES:
Start	End	to Water	to Bottom	Pumped	Total	pH	Conductivity	Temperature	Turbidity	
1:00	2:00	29	34	25	25	5.04	320	55	BLOWN TO CLEAR	

SIGNATURE: \_\_\_\_\_



## FIELD DATA

### WELL DEVELOPMENT FORM

GENERAL INFORMATION

DATE: 8/27/97 WELL ID: MW-3  
 STATION/PROJECT NO.: AA11 / CUSA 9-0489  
 SITE ADDRESS: 1304 AIRPORT HEIGHTS DRIVE  
 CITY: ANCHORAGE  
 COUNTY/STATE: ALASKA  
 FIELD TECHNICIAN: STEVE KROK

WELL CONSTRUCTION INFORMATION

WELL DIAMETER: 2"  
 WELL MATERIAL: SCH 40 PVC  
 WELL TOTAL DEPTH: 40'  
 SCREEN INTERVAL: 24-39'  
 FILTER PACK INTERVAL: 22-40'  
 FILTER PACK MATERIAL: 2X/2 SAND

WELL DEVELOPMENT SUMMARY

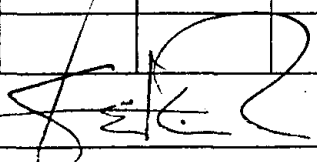
ESTIMATED PURGE VOLUME (gal.): 25  
 ACTUAL PURGE VOLUME (gal.): 25  
 WELL TYPE:  Groundwater Monitoring Well  
 Groundwater Extraction Well  
 Sparge/Dual Purpose Well  
 Other: \_\_\_\_\_

WELL DEVELOPMENT METHOD:  Submersible Pump  Bailer  Surge Block/Swab  Other: \_\_\_\_\_

### WELL DEVELOPMENT DATA

TIME		DEPTH		GALLONS		MEASUREMENTS				NOTES:
Start	End	to Water	to Bottom	Pumped	Total	pH	Conductivity	Temperature	Turbidity	
2:00	3:00	29	39	25	25	3.8	300	54	Brown to CLEAR	

0023

SIGNATURE: 

FIELD DATA

0024

GROUNDWATER SAMPLING FORM

DATE: 8/27/97 SITE ADDRESS: 1304 AIRPORT HEIGHTS DRIVE WELL ID #: MW-1  
 STATION/PROJECT NO.: AA11 / CSA9-6489 CITY/COUNTY/STATE: ANCHORAGE, ALASKA FIELD TECH.: S. KRCIK

PROBE TYPE:  Oil/Water Interface Probe  
 Electronic Indicator  
 Other

CASING DIAMETER	GAL/ LINEAR FT.
<input checked="" type="checkbox"/> 2	<input checked="" type="checkbox"/> 0.17
<input type="checkbox"/> 3	<input type="checkbox"/> 0.38
<input type="checkbox"/> 4	<input type="checkbox"/> 0.66
<input type="checkbox"/> 4.5	<input type="checkbox"/> 0.83
<input type="checkbox"/> 5	<input type="checkbox"/> 1.02
<input type="checkbox"/> 6	<input type="checkbox"/> 1.5
<input type="checkbox"/> 7	<input type="checkbox"/> 2.0
<input type="checkbox"/> 8	<input type="checkbox"/> 2.6

SAMPLE TYPE

Groundwater  
 Duplicate  
 Extraction Well  
 Trip Blank  
 Field Blank  
 Equipment Blank  
 Other \_\_\_\_\_

WELL INFORMATION

Depth to Liquid: \_\_\_\_\_ TOB  
 Depth to Liquid: 27.33 TOC  
 Depth to Water: \_\_\_\_\_ TOB  
 Depth to Water: 27.33 TOC  
 Total Depth: 40' (Feet)

TD 40' - Dtw 27.33 = 12.67 Gal/Linear X Foot 0.17 = 2.15 X Casings 3 = Purge 6.46

PURGE INFORMATION

DATE PURGED: 8/27/97 START: 12:00 END (2400 hr): 1300 PURGED BY: S. KRCIK  
 DATE SAMPLED: 8/27/97 START: 1620 END (2400 hr): 1630 SAMPLED BY: S. KRCIK

TIME (2400 hr)	VOLUME (gallons)	pH (units)	E.C. (umhos/cm @ 25 ° C)	TEMPERATURE (° F)	COLOR (Blow TO CLEAR)	TURBIDITY (NTU 0-200)	ODOR
<u>1200-1300</u>	<u>25</u>	<u>4.7</u>	<u>180</u>	<u>59</u>	<u>TO CLEAR</u>	<u>—</u>	<input checked="" type="checkbox"/>

Total Purge Volume: 25 gal Well Pumped Dry: Yes  No

Legend: Clear, Cloudy, Yellow, Brown, Heavy Moderate, Light Trace, Strong Moderate, Faint, None

PURGING EQUIPMENT/NOTES:  Bailer: NEW TEFALON  Airlift Pump: \_\_\_\_\_  
 Centrifugal Pump: \_\_\_\_\_  Dedicated: \_\_\_\_\_  
 Other: \_\_\_\_\_

SAMPLING EQUIPMENT/NOTES:  Bailer: NEW TEFALON  Dedicated: \_\_\_\_\_  
 Other: \_\_\_\_\_

GROUNDWATER SAMPLING INFORMATION

SAMP. ID #	DATE	TIME (2400 hr)	CONTAINER	SIZE	No. of Cont.	PRESERVE	ANALYTICAL PARAMETER
<u>MW-1</u>	<u>8/27/97</u>		<u>40 mL VOA</u>	<u>40 mL</u>	<u>3</u>	<u>HCL</u>	<u>TPH, 1,2,4</u>

REMARKS: GROUNDWATER SAMPLE COLLECTED AFTER WELL DEVELOPMENT

FIELD DATA

0025

GROUNDWATER SAMPLING FORM

DATE: 8/27/97 SITE ADDRESS: 1304 AIRPORT HEIGHTS DRIVE WELL ID #: MW-2  
 STATION/PROJECT NO.: AA11 / CSA9-6489 CITY/COUNTY/STATE: ANCHORAGE, ALASKA FIELD TECH.: S. KRICK

PROBE TYPE  Oil/Water Interface Probe  
 Electronic Indicator  
 Other

CASING DIAMETER	GAL/ LINEAR FT.
<input checked="" type="checkbox"/> 2	<input checked="" type="checkbox"/> 0.17
<input type="checkbox"/> 3	<input type="checkbox"/> 0.38
<input type="checkbox"/> 4	<input type="checkbox"/> 0.66
<input type="checkbox"/> 4.5	<input type="checkbox"/> 0.83
<input type="checkbox"/> 5	<input type="checkbox"/> 1.02
<input type="checkbox"/> 6	<input type="checkbox"/> 1.5
<input type="checkbox"/> 7	<input type="checkbox"/> 2.0
<input type="checkbox"/> 8	<input type="checkbox"/> 2.6

SAMPLE TYPE  
 Groundwater  
 Duplicate  
 Extraction Well  
 Trip Blank  
 Field Blank  
 Equipment Blank  
 Other \_\_\_\_\_

WELL INFORMATION  
 Depth to Liquid: \_\_\_\_\_ TOB  
 Depth to Liquid: 28.32 TOC  
 Depth to Water: \_\_\_\_\_ TOB  
 Depth to Water: 28.32 TOC  
 Total Depth: 40.00 (Feet)

TD 40' - Dtw 28.32 = 11.68 Gal/Linear x Foot 0.17 = 1.99 Number of x Casings 3 = Calculated Purge 5.96

PURGE INFORMATION

DATE PURGED: 8/27/97 START: 1300 END (2400 hr): 1400 PURGED BY: S. KRICK  
 DATE SAMPLED: 8/27/97 START: 1630 END (2400 hr): 1640 SAMPLED BY: S. KRICK

TIME (2400 hr)	VOLUME (gallons)	pH (units)	E.C. (umhos/cm @ 25 ° C)	TEMPERATURE (° F)	COLOR	TURBIDITY (NTU 0-200)	ODOR
<u>1300-1400</u>	<u>25</u>	<u>5.04</u>	<u>320</u>	<u>55</u>	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

Total Purge Volume: 25 gal Well Pumped Dry: Yes  No   
 Legend: Clear, Cloudy, Yellow, Brown, Heavy Moderate, Light Trace, Strong Moderate, Faint, None

PURGING EQUIPMENT/NOTES

SAMPLING EQUIPMENT/NOTES

Bailer: NEW TEFALON  Airlift Pump: \_\_\_\_\_  
 Centrifugal Pump: \_\_\_\_\_  Dedicated: \_\_\_\_\_  
 Other: \_\_\_\_\_  Bailer: NEW TEFALON  
 Dedicated: \_\_\_\_\_  
 Other: \_\_\_\_\_

GROUNDWATER SAMPLING INFORMATION

SAMP. ID #	DATE	TIME (2400 hr)	CONTAINER	SIZE	No. of Cont.	PRESERVE	ANALYTICAL PARAMETER
<u>MW-1</u>	<u>8/27/97</u>	_____	<u>40 mL VOA</u>	<u>40 mL</u>	<u>3</u>	<u>HCL</u>	<u>TPH, 1,2,4-D</u>
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

REMARKS: GROUNDWATER SAMPLE COLLECTED AFTER WELL DEVELOPMENT

SIGNATURE: \_\_\_\_\_

FIELD DATA

0026

GROUNDWATER SAMPLING FORM

DATE: 8/27/97 SITE ADDRESS: 1304 AIRPORT HEIGHTS DRIVE WELL ID #: MW-3  
 STATION/PROJECT NO.: AA11 / CSA9-6439 CITY/COUNTY/STATE: ANCHORAGE, ALASKA FIELD TECH.: S. KRECIK

PROBE TYPE  Oil/Water Interface Probe  
 Electronic Indicator  
 Other

CASING DIAMETER	GAL/ LINEAR FT.
<input checked="" type="checkbox"/> 2	<input checked="" type="checkbox"/> 0.17
<input type="checkbox"/> 3	<input type="checkbox"/> 0.38
<input type="checkbox"/> 4	<input type="checkbox"/> 0.66
<input type="checkbox"/> 4.5	<input type="checkbox"/> 0.83
<input type="checkbox"/> 5	<input type="checkbox"/> 1.02
<input type="checkbox"/> 6	<input type="checkbox"/> 1.5
<input type="checkbox"/> 7	<input type="checkbox"/> 2.0
<input type="checkbox"/> 8	<input type="checkbox"/> 2.6

SAMPLE TYPE  
 Groundwater  
 Duplicate  
 Extraction Well  
 Trip Blank  
 Field Blank  
 Equipment Blank  
 Other \_\_\_\_\_

WELL INFORMATION  
 Depth to Liquid: \_\_\_\_\_ TOB  
 Depth to Liquid: 27.95 TOC  
 Depth to Water: \_\_\_\_\_ TOB  
 Depth to Water: 27.95 TOC  
 Total Depth: 40.00 (Feet)

TD 40' - Dtw 27.95 = 12.05 Gal/Linear x Foot 0.17 = 2.05 Number of Casings 3 = Calculated Purge 6.15

PURGE INFORMATION

DATE PURGED: 8/27/97 START: 1400 END (2400 hr): 1500 PURGED BY: S. KRECIK  
 DATE SAMPLED: 8/27/97 START: 1645 END (2400 hr): 1655 SAMPLED BY: S. KRECIK

TIME (2400 hr)	VOLUME (gallons)	pH (units)	E.C. (umhos/cm @ 25 ° C)	TEMPERATURE (° F)	COLOR	TURBIDITY (NTU 0-200)	ODOR
<u>1400-1500</u>	<u>25</u>	<u>5.8</u>	<u>300</u>	<u>54</u>			
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

Total Purge Volume: 25 gal Well Pumped Dry: Yes  No   
 Legend: Clear, Cloudy, Yellow, Brown, Heavy Moderate Light Trace, Strong Moderate Faint None

PURGING EQUIPMENT/NOTES

SAMPLING EQUIPMENT/NOTES

Bailer: NEW TEFALON  Airlift Pump: \_\_\_\_\_  
 Centrifugal Pump: \_\_\_\_\_  Dedicated: \_\_\_\_\_  
 Other: \_\_\_\_\_  Bailer: NEW TEFALON  
 Dedicated: \_\_\_\_\_  
 Other: \_\_\_\_\_

GROUNDWATER SAMPLING INFORMATION

SAMP. ID #	DATE	TIME (2400 hr)	CONTAINER	SIZE	No. of Cont.	PRESERVE	ANALYTICAL PARAMETER
<u>MW-1</u>	<u>8/27/97</u>		<u>40 mL VOA</u>	<u>40 mL</u>	<u>3</u>	<u>HCL</u>	<u>TPHq / BTEX</u>
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

REMARKS: GROUNDWATER SAMPLE COLLECTED AFTER WELL DEVELOPMENT

SIGNATURE: \_\_\_\_\_

**ATTACHMENT B**  
**CERTIFIED ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY**  
**DOCUMENTATION**

---





# NORTH CREEK ANALYTICAL

Environmental Laboratory Services

0028  
BOTHELL ■ (425) 481-9200 ■ FAX 485-2992  
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290  
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

RRM, INC.  
P.O. Box 1362  
Aptos, CA 95001

Project: Chevron #9-6489  
Project Number: 1304 Airport Heights Drive  
Project Manager: Steve Krcik

Sampled: 8/27/97  
Received: 8/29/97  
Reported: 9/2/97 15:32

### ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW-1-25	B708544-01	Soil	8/27/97
MW-1-30	B708544-02	Soil	8/27/97
MW-2-20	B708544-03	Soil	8/27/97
MW-2-30	B708544-04	Soil	8/27/97
MW-3-10	B708544-05	Soil	8/27/97
MW-3-20	B708544-06	Soil	8/27/97
MW-3-30	B708544-07	Soil	8/27/97
MW-1	B708544-08	Water	8/27/97
MW-2	B708544-09	Water	8/27/97
MW-3	B708544-10	Water	8/27/97

North Creek Analytical, Inc.

*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.*

Joy B. Chang, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

0029



BOTHELL ■ (425) 481-9200 ■ FAX 485-2992  
 SPOKANE ■ (509) 924-9200 ■ FAX 924-9290  
 PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

RRM, INC. P.O. Box 1362 Aptos, CA 95001	Project: Chevron #9-6489 Project Number: 1304 Airport Heights Drive Project Manager: Steve Kreik	Sampled: 8/27/97 Received: 8/29/97 Reported: 9/2/97 15:32
---	--	---

**Gasoline Hydrocarbons (2-Methylpentane to 1,2,4-Trimethylbenzene) and BTEX by EPA 8015M and 8020A  
 North Creek Analytical - Bothell**

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Not
<b>MW-1-25</b>				<b>B708544-01</b>			<b>Soil</b>	
Gasoline Range Hydrocarbons	0870870	8/30/97	9/2/97		10.0	186	mg/kg dry	
Benzene	"	"	"		0.100	ND	"	
Toluene	"	"	"		0.100	0.154	"	
Ethylbenzene	"	"	"		0.100	0.439	"	
Xylenes (total)	"	"	"		0.200	20.3	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		173	%	1
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		147	"	
<b>MW-1-30</b>				<b>B708544-02</b>			<b>Soil</b>	
Gasoline Range Hydrocarbons	0870870	8/30/97	9/1/97		5.00	43.1	mg/kg dry	
Benzene	"	"	"		0.0500	0.0909	"	
Toluene	"	"	"		0.0500	0.157	"	
Ethylbenzene	"	"	"		0.0500	0.156	"	
Xylenes (total)	"	"	"		0.100	2.13	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		113	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		83.0	"	
<b>MW-2-20</b>				<b>B708544-03</b>			<b>Soil</b>	
Gasoline Range Hydrocarbons	0870870	8/30/97	9/1/97		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		92.9	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		112	"	
<b>MW-2-30</b>				<b>B708544-04</b>			<b>Soil</b>	
Gasoline Range Hydrocarbons	0870870	8/30/97	9/1/97		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	0.0817	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	0.166	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		85.7	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		86.4	"	
<b>MW-3-10</b>				<b>B708544-05</b>			<b>Soil</b>	
Gasoline Range Hydrocarbons	0870870	8/30/97	9/2/97		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	

North Creek Analytical, Inc.

\*Refer to end of report for text of notes and definitions.

Joy B Chang, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
 East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
 9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

0030



**NORTH CREEK ANALYTICAL**  
Environmental Laboratory Services

BOTHELL ■ (425) 481-9200 ■ FAX 485-2992  
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290  
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

RRM, INC. P.O. Box 1362 Aptos, CA 95001	Project: Chevron #9-6489 Project Number: 1304 Airport Heights Drive Project Manager: Steve Kreik	Sampled: 8/27/97 Received: 8/29/97 Reported: 9/2/97 15:32
---	--	---

**Gasoline Hydrocarbons (2-Methylpentane to 1,2,4-Trimethylbenzene) and BTEX by EPA 8015M and 8020A**  
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Not
<b>MW-3-10 (continued)</b>				<b>B708544-05</b>		<b>Soil</b>		
Toluene	0870870	8/30/97	9/2/97		0.0500	ND	mg/kg dry	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		88.6	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		97.8	"	
<b>MW-3-20</b>				<b>B708544-06</b>		<b>Soil</b>		
Gasoline Range Hydrocarbons	0870870	8/30/97	9/1/97		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		93.3	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		111	"	
<b>MW-3-30</b>				<b>B708544-07</b>		<b>Soil</b>		
Gasoline Range Hydrocarbons	0870870	8/30/97	9/1/97		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	0.0702	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	0.103	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		94.0	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		99.1	"	
<b>MW-1</b>				<b>B708544-08</b>		<b>Water</b>		
Gasoline Range Hydrocarbons	0870865	8/30/97	8/30/97		250	14800	ug/l	
Benzene	"	"	"		2.50	12.8	"	
Toluene	"	"	"		2.50	12.2	"	
Ethylbenzene	"	"	"		2.50	4.09	"	
Xylenes (total)	"	"	"		25.0	3010	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		102	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		72.5	"	
<b>MW-2</b>				<b>B708544-09</b>		<b>Water</b>		
Gasoline Range Hydrocarbons	0870865	8/30/97	8/30/97		50.0	718	ug/l	
Benzene	"	"	"		0.500	3.14	"	
Toluene	"	"	"		0.500	3.67	"	
Ethylbenzene	"	"	"		0.500	1.73	"	

North Creek Analytical, Inc.

\*Refer to end of report for text of notes and definitions.

Joy B Chang, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132



**NORTH CREEK ANALYTICAL**  
Environmental Laboratory Services

0031

BOTHELL ■ (425) 481-9200 ■ FAX 485-2992  
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290  
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

RRM, INC. P.O. Box 1362 Aptos, CA 95001	Project: Chevron #9-6489 Project Number: 1304 Airport Heights Drive Project Manager: Steve Krcik	Sampled: 8/27/97 Received: 8/29/97 Reported: 9/2/97 15:32
---	--	---

**Gasoline Hydrocarbons (2-Methylpentane to 1,2,4-Trimethylbenzene) and BTEX by EPA 8015M and 8020A  
North Creek Analytical - Bothell**

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Note
<u>MW-2 (continued)</u>				<u>B708544-09</u>				<u>Water</u>
Xylenes (total)	0870865	8/30/97	8/30/97		1.00	4.41	ug/l	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		97.7	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		82.5	"	
<u>MW-3</u>				<u>B708544-10</u>				<u>Water</u>
Gasoline Range Hydrocarbons	0870865	8/30/97	8/30/97		250	3520	ug/l	
Benzene	"	"	"		2.50	167	"	
Toluene	"	"	"		2.50	62.5	"	
Ethylbenzene	"	"	"		2.50	47.1	"	
Xylenes (total)	"	"	"		5.00	98.9	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		98.3	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		83.3	"	

North Creek Analytical, Inc.

\*Refer to end of report for text of notes and definitions

  
Joy B. Chang, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132



# NORTH CREEK ANALYTICAL

Environmental Laboratory Services

0032

BOTHELL ■ (425) 481-9200 ■ FAX 485-2992  
 SPOKANE ■ (509) 924-9200 ■ FAX 924-9290  
 PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

RRM, INC.  
 P.O. Box 1362  
 Aptos, CA 95001

Project: Chevron #9-6489  
 Project Number: 1304 Airport Heights Drive  
 Project Manager: Steve Kreik

Sampled: 8/27/97  
 Received: 8/29/97  
 Reported: 9/2/97 15:32

Physical Parameters by APHA/ASTM/EPA Methods  
 North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Note:
<u>MW-3-10</u> Fractional Organic Carbon	0970023	9/2/97	9/2/97	<u>B708544-05</u> ASTM D2940	0.0100	0.0241	Soil % by Weight	

North Creek Analytical, Inc.

\*Refer to end of report for text of notes and definitions

  
 Joy B. Chang, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
 East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
 9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

0033



**NORTH  
CREEK  
ANALYTICAL**  
*Environmental Laboratory Services*

BOTHELL ■ (425) 481-9200 ■ FAX 485-2992  
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290  
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

RRM, INC. P.O. Box 1362 Aptos, CA 95001	Project: Chevron #9-6489 Project Number: 1304 Airport Heights Drive Project Manager: Steve Krcik	Sampled: 8/27/97 Received: 8/29/97 Reported: 9/2/97 15:32
---	--	---

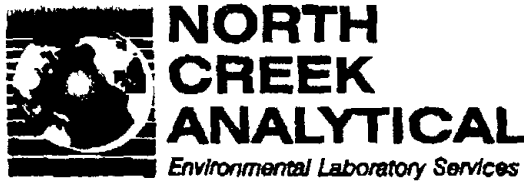
**Dry Weight Determination**  
**North Creek Analytical - Bothell**

Sample Name	Lab ID	Matrix	Result	Units
MW-1-25	B708544-01	Soil	95.5	%
MW-1-30	B708544-02	Soil	85.8	%
MW-2-20	B708544-03	Soil	94.3	%
MW-2-30	B708544-04	Soil	90.6	%
MW-3-10	B708544-05	Soil	87.2	%
MW-3-20	B708544-06	Soil	95.5	%
MW-3-30	B708544-07	Soil	92.6	%

North Creek Analytical, Inc.

  
Joy B. Chang, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132



0034

BOTHELL ■ (425) 481-9200 ■ FAX 485-2992  
 SPOKANE ■ (509) 924-9200 ■ FAX 924-9290  
 PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

RRM, INC. P.O. Box 1362 Aptos, CA 95001	Project: Chevron #9-6489 Project Number: 1304 Airport Heights Drive Project Manager: Steve Krcik	Sampled: 8/27/97 Received: 8/29/97 Reported: 9/2/97 15:32
---	--	---

**Gasoline Hydrocarbons (2-Methylpentane to 1,2,4-Trimethylbenzene) and BTEX by EPA 8015M and 8020A/Quality Control**  
 North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %
<b>Batch: 0870865</b>			<b>Date Prepared: 8/30/97</b>			<b>Extraction Method: EPA 5030</b>			
<b>Blank</b>			<b>0870865-BLK1</b>						
Gasoline Range Hydrocarbons	8/30/97			ND	ug/l	50.0			
Benzene	"			ND	"	0.500			
Toluene	"			ND	"	0.500			
Ethylbenzene	"			ND	"	0.500			
Xylenes (total)	"			ND	"	1.00			
Surrogate: 4-BFB (FID)	"	48.0		45.6	"	50.0-150	95.0		
Surrogate: 4-BFB (PID)	"	48.0		43.0	"	50.0-150	89.6		
<b>LCS</b>			<b>0870865-BS1</b>						
Gasoline Range Hydrocarbons	8/30/97	500		545	ug/l	80.0-120	109		
Surrogate: 4-BFB (FID)	"	48.0		48.3	"	50.0-150	101		
<b>Duplicate</b>			<b>0870865-DUP1</b>		<b>B708467-06</b>				
Gasoline Range Hydrocarbons	8/30/97		2400	2730	ug/l			25.0	12.9
Surrogate: 4-BFB (FID)	"	48.0		55.7	"	50.0-150	116		
<b>Duplicate</b>			<b>0870865-DUP2</b>		<b>B708544-08</b>				
Gasoline Range Hydrocarbons	8/30/97		14800	12700	ug/l			25.0	15.3
Surrogate: 4-BFB (FID)	"	48.0		45.1	"	50.0-150	94.0		
<b>Matrix Spike</b>			<b>0870865-MS1</b>		<b>B708467-04</b>				
Benzene	8/30/97	10.0	ND	9.32	ug/l	70.0-130	93.2		
Toluene	"	10.0	ND	8.93	"	70.0-130	89.3		
Ethylbenzene	"	10.0	ND	8.69	"	70.0-130	86.9		
Xylenes (total)	"	30.0	ND	25.4	"	70.0-130	84.7		
Surrogate: 4-BFB (PID)	"	48.0		39.9	"	50.0-150	83.1		
<b>Matrix Spike Dup</b>			<b>0870865-MSD1</b>		<b>B708467-04</b>				
Benzene	8/30/97	10.0	ND	8.99	ug/l	70.0-130	89.9	15.0	3.60
Toluene	"	10.0	ND	8.62	"	70.0-130	86.2	15.0	3.53
Ethylbenzene	"	10.0	ND	8.40	"	70.0-130	84.0	15.0	3.39
Xylenes (total)	"	30.0	ND	24.3	"	70.0-130	81.0	15.0	4.47
Surrogate: 4-BFB (PID)	"	48.0		39.3	"	50.0-150	81.9		
<b>Batch: 0870870</b>			<b>Date Prepared: 8/30/97</b>			<b>Extraction Method: MeOH Extraction</b>			
<b>Blank</b>			<b>0870870-BLK1</b>						
Gasoline Range Hydrocarbons	8/30/97			ND	mg/kg dry	5.00			

North Creek Analytical, Inc.

\*Refer to end of report for text of notes and definition

Joy B Chang, Project Manager

18039 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
 East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
 9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132



**NORTH CREEK ANALYTICAL**  
Environmental Laboratory Services

0035

BOTHELL • (425) 481-9200 • FAX 485-2992  
SPOKANE • (509) 924-9200 • FAX 924-9290  
PORTLAND • (503) 643-9200 • FAX 644-2202

RRM, INC. P.O. Box 1362 Aptos, CA 95001	Project: Chevron #9-6489 Project Number: 1304 Airport Heights Drive Project Manager: Steve Krcik	Sampled: 8/27/97 Received: 8/29/97 Reported: 9/2/97 15:32
---	--	---

**Gasoline Hydrocarbons (2-Methylpentane to 1,2,4-Trimethylbenzene) and BTEX by EPA 8015M and 8020A/Quality Control**  
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %
<b>Blank (continued)</b>									
<b>0870870-BLK1</b>									
Benzene	8/30/97			ND	mg/kg dry	0.0500			
Toluene	"			ND	"	0.0500			
Ethylbenzene	"			ND	"	0.0500			
Xylenes (total)	"			ND	"	0.100			
Surrogate: 4-BFB (FID)	"	4.00		3.76	"	50.0-150	94.0		
Surrogate: 4-BFB (PID)	"	4.00		4.02	"	50.0-150	100		
<b>LCS</b>									
<b>0870870-BS1</b>									
Gasoline Range Hydrocarbons	8/30/97	25.0		23.9	mg/kg dry	75.0-125	95.6		
Surrogate: 4-BFB (FID)	"	4.00		3.97	"	50.0-150	99.3		
<b>Duplicate</b>									
<b>0870870-DUP1 B708544-01</b>									
Gasoline Range Hydrocarbons	8/30/97		186	156	mg/kg dry			50.0	17.5
Surrogate: 4-BFB (FID)	"	4.19		ND	"	50.0-150	NR		
<b>Matrix Spike</b>									
<b>0870870-MS1 B708426-03</b>									
Benzene	8/30/97	0.518	ND	0.475	mg/kg dry	60.0-140	91.7		
Toluene	"	0.518	ND	0.486	"	60.0-140	93.8		
Ethylbenzene	"	0.518	ND	0.469	"	60.0-140	90.5		
Xylenes (total)	"	1.56	ND	1.39	"	60.0-140	89.1		
Surrogate: 4-BFB (PID)	"	4.15		3.87	"	50.0-150	93.3		
<b>Matrix Spike Dup</b>									
<b>0870870-MSD1 B708426-03</b>									
Benzene	8/30/97	0.518	ND	0.533	mg/kg dry	60.0-140	103	20.0	11.6
Toluene	"	0.518	ND	0.517	"	60.0-140	99.8	20.0	6.20
Ethylbenzene	"	0.518	ND	0.519	"	60.0-140	100	20.0	9.97
Xylenes (total)	"	1.56	ND	1.54	"	60.0-140	98.7	20.0	10.2
Surrogate: 4-BFB (PID)	"	4.15		4.27	"	50.0-150	103		

North Creek Analytical, Inc.

\*Refer to end of report for text of notes and definitions.

Joy B Chang, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132





**NORTH CREEK ANALYTICAL**  
Environmental Laboratory Services

0036

BOTHELL ■ (425) 481-9200 ■ FAX 485-2992  
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290  
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

RRM, INC. P.O. Box 1362 Aptos, CA 95001	Project: Chevron #9-6489 Project Number: 1304 Airport Heights Drive Project Manager: Steve Krcik	Sampled: 8/27/97 Received: 8/29/97 Reported: 9/2/97 15:32
---	--	---

Physical Parameters by APHA/ASTM/EPA Methods/Quality Control  
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD % No
<u>Batch: 0970023</u>			<u>Date Prepared: 9/2/97</u>		<u>Extraction Method: General Preparation</u>				
<u>Blank</u>	<u>0970023-BLK1</u>								
Fractional Organic Carbon	9/2/97			ND	% by Weight	0.0100			
<u>LCS</u>	<u>0970023-BS1</u>								
Fractional Organic Carbon	9/2/97	0.250		0.255	% by Weight	75.0-125	102		
<u>Duplicate</u>	<u>0970023-DUP1</u>		<u>B708544-05</u>						
Fractional Organic Carbon	9/2/97		0.0241	0.0146	% by Weight			10.0	49.1

North Creek Analytical, Inc.

\*Refer to end of report for text of notes and definitions.

Joy B Chang, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132



**NORTH  
CREEK  
ANALYTICAL**  
*Environmental Laboratory Services*

0037

BOTHELL ■ (425) 481-9200 ■ FAX 485-2992  
 SPOKANE ■ (509) 924-9200 ■ FAX 924-9290  
 PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

RRM, INC.	Project: Chevron #9-6489	Sampled: 8/27/97
P.O. Box 1362	Project Number: 1304 Airport Heights Drive	Received: 8/29/97
Aptos, CA 95001	Project Manager: Steve Krcik	Reported: 9/2/97 15:32

**Notes and Definitions**

#	Note
---	------

- 1 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.
- 2 Analyses are not controlled on RPD values from sample concentrations less than 5 times the reporting limit.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- Recov. Recovery
- RPD Relative Percent Difference

North Creek Analytical, Inc.

  
 Joy B. Chang, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508  
 East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
 9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

B708544

Fax copy of Lab Report and COC to Chevron Contact:  No

Chain-of-Custody-Record

1595-10-11 08:20 8703 P.01/02 FROM

Chevron U.S.A. Inc. P.O. BOX 5004 San Ramon, CA 94583 FAX (415)842-9591	Chevron Facility Number <u>9-6409</u> Facility Address <u>1304 AIRPORT HEIGHTS DRIVE</u> <u>ANCHORAGE, ALASKA</u> Consultant Project Number _____ Consultant Name <u>RAM, INC.</u> Address <u>P.O. Box 1362, ORTOS, CA 95001</u> Project Contact (Name) <u>STEVE KOLIK</u> (Phone) <u>907 475 8141</u> (Fax Number) <u>907 475 8249</u>	Chevron Contact (Name) <u>BOB BONDEN</u> (Phone) <u>510 842 9854</u> Laboratory Name <u>NORTH LEBER ANALYTICAL</u> Laboratory Release Number _____ Sampler Collected by (Name) <u>STEVE KOLIK</u> Collection Date <u>8/27/97</u> Signature <u>[Signature]</u>
--	--	---

Sample Number	Lab Sample Number	Number of Containers	Media S = Soil W = Water A = Air C = Chemical	Type C = Comb C = Compost D = Drains	Time	Sample Preservation	Iced (Yes or No)	Analysis To Be Performed											Remarks
								BDX + TPH CAS (8020 + 8015)	TPH Distill (8015)	Oil and Grease (8020)	Purgeable Hydrocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8140)	Extractable Organics (8020)	Metals Cd, Cr, Pb, Zn, Ni (ICP or AA)	FRAC TIONAL SPINNING			
MW-1-25		1	S	D	8/27		✓	✓											B708544-01
MW-1-30		1	S	D			✓	✓											02
MW-2-20		1	S	D			✓	✓											03
MW-2-30		1	S	D			✓	✓											04
MW-3-10		1	S	D			✓	✓											05
MW-3-20		1	S	D			✓	✓											06
MW-3-30		1	S	D			✓	✓											07
MW-1		4	W	D	1620	HCL	✓	✓											08
MW-2		4	W	D	1630	HCL	✓	✓											09
MW-3		4	W	D	1645	HCL	✓	✓											10

Relinquished By (Signature) <u>[Signature]</u>	Organization <u>RAM</u>	Date/Time <u>8/27/97</u>	Received By (Signature) <u>[Signature]</u>	Organization <u>NCA</u>	Date/Time <u>8/29/97 0945</u>	Turn Around Time (Circle Choice) <input type="radio"/> 24 Hrs. <input type="radio"/> 48 Hrs. <input type="radio"/> 5 Days <input type="radio"/> 10 Days <input type="radio"/> As Contracted
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)	Organization	Date/Time	

\*\* TOTAL PAGE. 12 \*\*