FREMONT ENVIRONMENTAL INC.

December 19, 2013

Mr. Jacob Evans
Noble Energy Inc.
1625 Broadway, Suite 2000
Denver, CO 80202

Subject: **Ground Water Monitoring Report**
Prebish #2
SWNW Sec 20, T4N, R64W
API # 05-123-12068
Weld County, Colorado
Fremont Project No. C013-029
Facility ID# 322794

Dear Mr. Evans:

Enclosed please find a copy of the above referenced Ground Water Monitoring Report for the Prebish #2 site in Weld County, Colorado. The enclosed report describes monitoring and sampling efforts to assess ground water quality at the site. Please contact me at (303) 956-8714 if you require any additional information.

Fremont appreciates the opportunity to provide this service.

Sincerely,
FREMONT ENVIRONMENTAL INC.

Paul V. Henehan, P.E.
Senior Consultant

Enclosure

12061 PENNSYLVANIA STREET, SUITE B-101, THORNTON, CO 80241
(303) 956-8714 (DIRECT), (303) 920-3520 (FAX)

GROUND WATER MONITORING REPORT

NOBLE ENERGY INC.

PREBISH #2

WELD COUNTY, COLORADO

FREMONT PROJECT NO. C012-029

COGCC FACILITY #322794

Prepared by:

Fremont Environmental Inc.
12061 Pennsylvania Street, Suite B-101
Thornton, CO 80241
(303) 956-8714

December 19, 2013

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NOBLE ENERGY INC.

PREBISH #2

WELD COUNTY, COLORADO

FREMONT PROJECT NO. C012-029

COGCC FACILITY #322794

1.0 INTRODUCTION

The purpose of this document is to present ground water quality data collected subsequent to remediation by excavation at the Prebish #2 site in Weld County, Colorado. Impacted soil and ground water were identified at this location due to a release from the concrete water vault. Therefore, thirteen monitoring wells were installed on August 9, 2013 to delineate the magnitude and extent of subsurface impacts prior to excavation. Based on that investigation, an excavation project to remove petroleum impacted soil was conducted in September 2013. Additional monitoring wells were installed in November 2013 to replace those wells that were destroyed during the excavation.

2.0 BACKGROUND INFORMATION

2.1 Site Location

The Prebish #2 facility is located approximately six miles south of Kersey, Colorado in Weld County as shown on Figure 1. The site includes one storage tank as well as separation and metering equipment.

The facility is located in an agricultural area 0.4 miles south of County Road 44 and 0.1 miles southeast of County Road 51. The location is further described as the SW ¼ of the NW ¼ of section 20, township 4N, range 64W. A Site Map is included as Figure 2.

2.2 Site History

The site is a natural gas production and oil storage facility for the Prebish #2 natural gas well. This well was drilled in 1985 to a depth of approximately 7,100 feet. Soil impacts were recently identified at the facility during replacement of the produced water vault.

Limited excavation of impacted soil adjacent to the water vault was conducted during the initial pit removal. Ground water was present in the excavation at a depth of approximately five feet.

On August 9, 2013, 13 monitoring wells were installed at the site to determine the magnitude and extent of subsurface impacts resulting from the release. Each of these wells were completed as flush-mounted monitoring wells as illustrated on the attached figures. Based on the information from this site investigation, it was determined that excavation of the petroleum impacted soil would be the most effective remedial approach.

Remediation efforts included the excavation of impacted soil adjacent to the concrete water pit and storage tank. A total of 1,780 cubic yards of soil were removed in September 2013 and the impacted soil was disposed of as non-hazardous waste. Gypsum was placed at the water table during backfilling to promote biodegradation of any residual petroleum in the soil and ground water.

As a result of the excavation, seven monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-7, MW-11 and MW-12) were destroyed. As shown on the attached figures, four additional wells (MW-14, MW-15, MW-16 and MW-17) have been installed to achieve point of compliance (POC) monitoring.

3.0 GROUND WATER MONITORING ACTIVITIES

3.1 Ground Water Level Measurements

Ground water levels were measured in the ten remaining monitoring wells on November 27, 2013 in accordance with the Sampling Plan included in Appendix A. The data are summarized in Table 1. Water table contours inferred from the November 2013 data are illustrated on Figure 3. Based on these data, ground water is inferred to flow generally to the southeast. The water table gradient was calculated at approximately 0.010 feet per foot (ft/ft) for the November 2013 data.

3.2 Ground Water Sampling and Analysis

Ground water samples were collected from the ten remaining monitoring wells on November 27, 2013 to monitor the magnitude and extent of ground water impacts at the site. The ground water samples were submitted to eAnalytics Laboratory in Loveland, Colorado for analyses of benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8260C. The ground water chemistry data is illustrated on Figure 4.

The laboratory data indicated that the BTEX constituents were all below their respective Colorado Oil and Gas Conservation Commission's (COGCC's) limits for the ground water samples. The ground water analytical data are summarized in Table 1. A copy of the laboratory reports, quality control data, and chain-of-custody documentation are presented in Appendix B.

4.0 DISCUSSION

Due to a release from the concrete water pit at the Prebish #2 location, monitoring wells were installed at the site to determine the extent of subsurface impacts. Based on this information, soil remediation was conducted at the site by extensive excavation of impacted soil in September 2013. Approximately 1,780 cubic yards of impacted soil were excavated and disposed of as non-hazardous waste at a landfill.

Ground water samples were collected in November 2013 from the ten remaining monitoring wells. The BTEX concentrations were below the COGCC Table 910-1 levels in all of the samples.

Noble will continue to sample the monitoring wells on a quarterly basis to evaluate the ground water quality at this location. After four consecutive quarters of COGCC-compliant BTEX concentrations, Noble will request closure of this site.

5.0 REMARKS

The discussion and conclusions contained in this report represent our professional opinions. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by **FREMONT ENVIRONMENTAL INC.**

12/19/13

_____ Date_____

Paul V. Henehan, P.E.

Senior Consultant

TABLE

TABLE 1
SUMMARY OF GROUND WATER ELEVATION DATA AND CHEMISTRY DATA
NOBLE ENERGY INC.
PREBISH #2, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C013-029

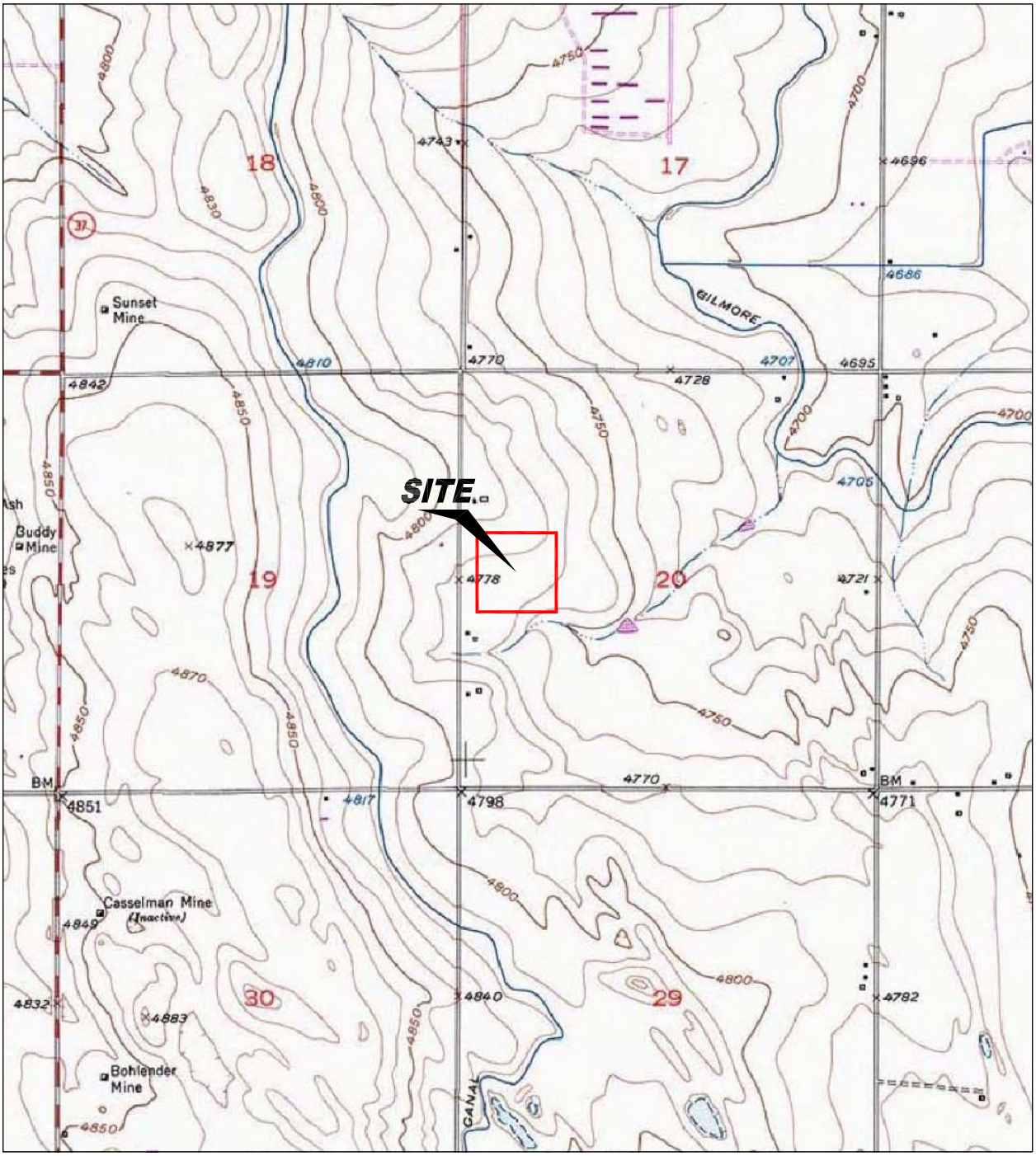
SAMPLE LOCATION	DATE	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL BENZENE (µg/L)	TOTAL XYLENES (µg/L)	TOC ELEVATION (feet)	DEPTH TO GROUND WATER (ft)	GROUND WATER ELEVATION (ft)	FREE PRODUCT THICKNESS (ft)
MW-1	08/11/13	<1.0	<1.0	<1.0	<1.0	100.00	2.95	97.05	NP
	11/27/13	WD	WD	WD	WD	WD	WD	WD	WD
MW-2	08/11/13	**209**	<1.0	64.1	19.8	99.52	2.97	96.55	NP
	11/27/13	WD	WD	WD	WD	WD	WD	WD	WD
MW-3	08/11/13	<1.0	<1.0	<1.0	<1.0	98.91	3.13	95.78	NP
	11/27/13	WD	WD	WD	WD	WD	WD	WD	WD
MW-4	08/11/13	<1.0	<1.0	<1.0	<1.0	98.93	1.72	97.21	NP
	11/27/13	WD	WD	WD	WD	WD	WD	WD	WD
MW-5	08/11/13	<1.0	<1.0	<1.0	<1.0	99.71	2.40	97.31	NP
	11/27/13	<1.0	<1.0	<1.0	<1.0		1.62	98.09	NP
MW-6	08/11/13	<1.0	<1.0	<1.0	<1.0	98.98	2.59	96.39	NP
	11/27/13	<1.0	<1.0	<1.0	<1.0		1.20	97.78	NP
MW-7	08/11/13	**255**	<1.0	189	339	98.43	2.91	95.52	NP
	11/27/13	WD	WD	WD	WD	WD	WD	WD	WD
MW-8	08/11/13	<1.0	<1.0	<1.0	<1.0	98.37	2.77	95.60	NP
	11/27/13	<1.0	<1.0	<1.0	<1.0		1.21	97.16	NP
MW-9	08/11/13	<1.0	<1.0	<1.0	<1.0	99.10	3.39	95.71	NP
	11/27/13	<1.0	<1.0	<1.0	<1.0		2.24	96.86	NP
MW-10	08/11/13	<1.0	<1.0	<1.0	<1.0	98.09	2.62	95.47	NP
	11/27/13	<1.0	<1.0	<1.0	<1.0		0.70	97.39	NP
MW-11	08/11/13	<1.0	<1.0	<1.0	<1.0	99.14	3.13	96.01	NP
	11/27/13	WD	WD	WD	WD	WD	WD	WD	WD
MW-12	08/11/13	<1.0	<1.0	<1.0	<1.0	99.86	2.99	96.87	NP
	11/27/13	WD	WD	WD	WD	WD	WD	WD	WD
MW-13	08/11/13	<1.0	<1.0	<1.0	<1.0	99.06	9.51	89.55	NP
	11/27/13	<1.0	<1.0	<1.0	<1.0		1.62	97.44	NP
MW-14	11/27/13	<1.0	<1.0	<1.0	<1.0	99.00	0.65	98.35	NP
MW-15	11/27/13	2.2	<1.0	1.9	23.6	98.60	1.04	97.56	NP
MW-16	11/27/13	<1.0	<1.0	<1.0	<1.0	99.58	2.62	96.96	NP
MW-17	11/27/13	<1.0	<1.0	<1.0	<1.0	99.52	2.17	97.35	NP
Table 910-1 Limits		5	560	700	1,400				

Bold face values exceed the COGCC limits

NP - No Free Product

WD - well destroyed during excavation of impacted soil

FIGURES



N

Scale (miles)
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1
0 1000 2000 3000 4000 5000
Scale (feet)

USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1
SITE LOCATION MAP

Noble - Prebish #2
SW NW Section 20, T4N, R64W
Weld County, Colorado

Project No.	Prepared by	Drawn by	
C013-029		JMA	FREMONT ENVIRONMENTAL
Date	Reviewed by	Filename	
8/8/13		13029T	

LEGEND

FENCE LINE

BERM

ABOVE GROUND STORAGE TANK

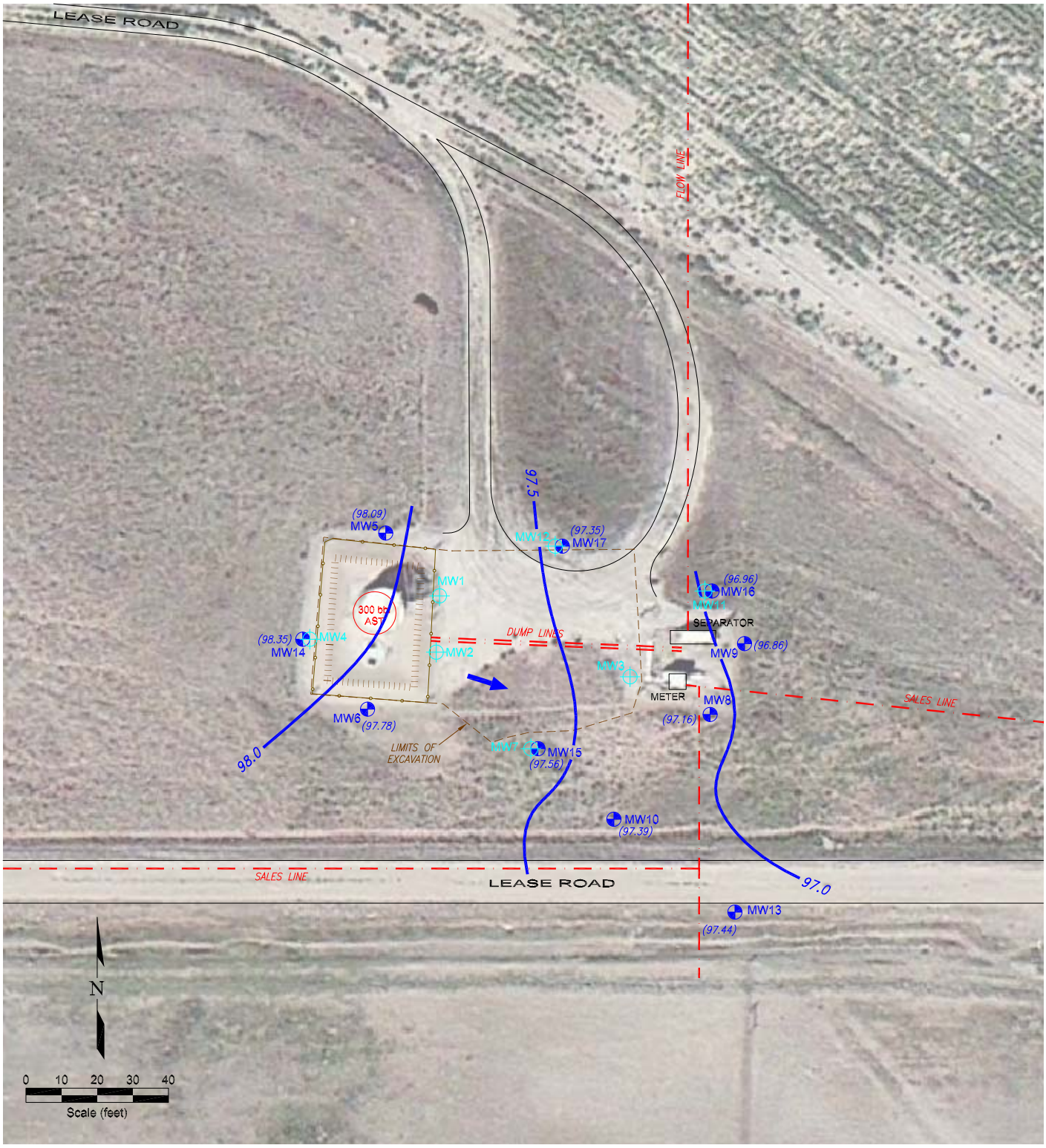
Figure 2

SITE MAP

Noble - Prebish #2
SW NW Section 20, T4N, R64W
Weld County, Colorado

Project No.	Prepared by	Drawn by
C013-029		JMA
Date	Reviewed by	Filename
8/8/13		13029Q

FREMONT ENVIRONMENTAL



LEGEND

- MONITORING WELL
- DESTROYED MONITORING WELL
- FENCE LINE
- BERM
- PIPELINE
- ABOVE GROUND STORAGE TANK
- (97.39) GROUND WATER ELEVATION (ft above arbitrary datum)
- 96.0 WATER TABLE CONTOUR
- GROUND WATER FLOW DIRECTION

Figure 3

INFERRED GROUNDWATER CONTOUR

NOVEMBER 27, 2013

Noble - Prebish #2

SW NW Section 20, T4N, R64W

Weld County, Colorado

Project No.	Prepared by	Drawn by
C013-029		JMA
Date	Reviewed by	Filename
12/19/13		13029Q

FREMONT ENVIRONMENTAL

LEGEND

- MONITORING WELL
- DESTROYED MONITORING WELL
- FENCE LINE
- BERM
- PIPELINE
- ABOVE GROUND STORAGE TANK

B <1 BENZENE (ug/L)
T <1 TOLUENE (ug/L)
E <1 ETHYLBENZENE (ug/L)
X <1 TOTAL XYLENES (ug/L)

Figure 4
GROUND WATER CHEMISTRY MAP
NOVEMBER 27, 2013

Noble - Prebish #2
SW NW Section 20, T4N, R64W
Weld County, Colorado

Project No.	Prepared by	Drawn by
C013-029		JMA
Date	Reviewed by	Filename
12/19/13		13029Q

FREMONT ENVIRONMENTAL

APPENDIX A

SAMPLING PLAN

SAMPLING METHODS AND PROCEDURES

Water Level Measurements

All ground water level measurements will be obtained using an electric measuring device, which indicates when a probe is in contact with ground water. Measurements will be obtained by lowering the device into the well until the water surface had been encountered, and by measuring the distance from the top of the inside riser pipe to the probe. All of the measurements will be recorded to the nearest 0.01 ft. To minimize cross-contamination, the water level indicator will be decontaminated with isopropyl alcohol and distilled water between each well.

Monitoring Well Sampling

All monitoring wells were sampled from the "cleanest" to the "most contaminated" according to the protocols listed below.

Field Protocol

Step 1 Measure water level in each well.

Step 2 Purge each monitoring well by evacuating a minimum of three well bore volumes using a disposable polyethylene bailer.

Step 3 Collect water samples using a disposable polyethylene bailer.

Step 4 Cool samples to approximately 4°C for transportation.

Step 5 Store water samples and transport to a specific laboratory, following all documentation and chain-of-custody procedures.

Upon completion of ground water sampling, a chain-of-custody log will be completed. Chain-of-custody records include the following information: project, project number, shipped by, shipped to, suspected hazard, sampling point, location, field identification number, date collected, sample type, number of containers, analysis required, and sampler's signature.

The chain-of-custody records will be shipped with the samples to the laboratory. Upon arrival at the laboratory the samples will be checked in and signed by the appropriate laboratory personnel. Laboratory identification numbers will be noted on the chain-of-custody record. Upon completion of the laboratory analysis, the completed chain-of-custody record will be returned to the project manager.

Analytical Methods

The following list identifies the various chemical constituents and analytical methods which will be used for their quantification.

Chemical Parameter	Method
Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX)	EPA Method – 8260B

APPENDIX B

LABORATORY DOCUMENTATION

Test Report

eANALYTICS
LABORATORY

December 4, 2013

Client:	Fremont Environmental / Noble Energy
Project:	Prebish #2
Lab Batch ID:	350
Date Samples Received:	11/27/2013
Number of Samples:	10
Sample Condition:	Samples arrived intact and in appropriate sample containers
Sample Temperature:	Within acceptable range of 2-6° C, or as specified in EPA Method

The quality control procedures associated with the requested analyses were satisfactorily passed before the samples were run.

Thank you for allowing eAnalytics Laboratory to provide laboratory services for you.

Sincerely,

Christopher Dieken
Quality Assurance Manager

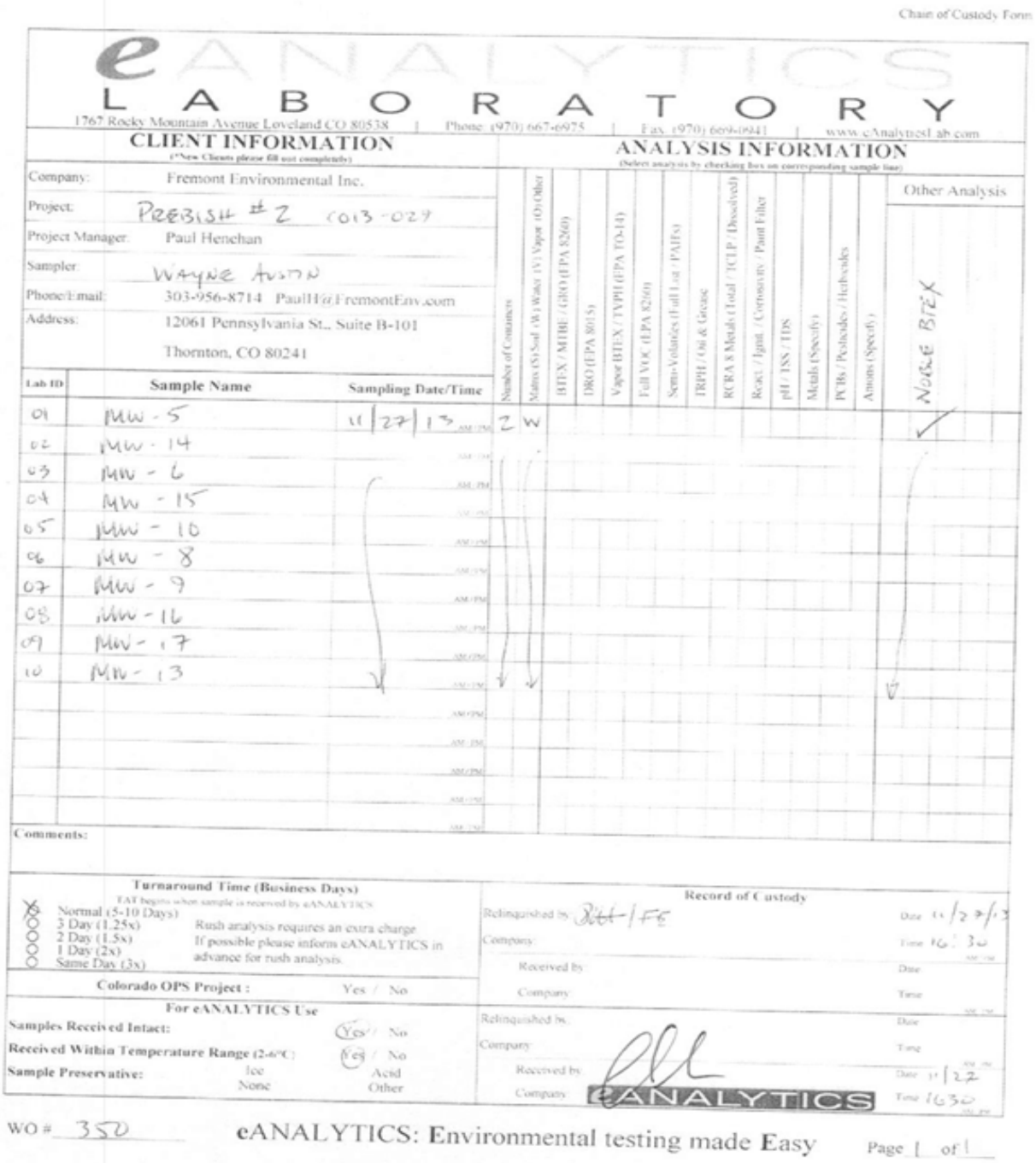
Todd Rhea
Laboratory Manager

A2LA ACCREDITED

eAnalytics Laboratory is proudly certified by A2LA & The United States Department of Defense (DoD)

Chain of Custody

eANALYTICS LABORATORY



Chain of Custody Form

eANALYTICS LABORATORY

1767 Rocky Mountain Avenue Loveland CO 80538 | Phone: (970) 667-6975 | Fax: (970) 669-0941 | www.eAnalyticsLab.com

CLIENT INFORMATION

("New Clients please fill out completely)

Company: Fremont Environmental Inc.

Project: Preiss # 2 2013-029

Project Manager: Paul Henehan

Sampler: Wayne Austin

Phone/Email: 303-956-8714 PaulH@FremontEnv.com

Address: 12061 Pennsylvania St., Suite B-101, Thornton, CO 80241

ANALYSIS INFORMATION

(Select analysis by checking box on corresponding sample line)

Lab ID	Sample Name	Sampling Date/Time	Number of Containers	Matrix (S) Soil (W) Water (V) Vapor (O) Other	BTEX / MTBE / GRO (EPA 8260)	DRO (EPA 8015)	Vapor BTEX / TVPH (EPA TO-14)	Full VOC (EPA 8260)	Semi-Volatiles (Full List / PAH's)	TRPH / Oil & Grease	RCRA 8 Metals (Total / TCLP / Dissolved)	React. / Ignit. / Corrosivity / Paint Filter	pH / TSS / TDS	Metals (Specify)	PCBs / Pesticides / Herbicides	Anions (Specify)	Other Analysis: NORM BTEX
01	MW-5	11/27/13	2	W													✓
02	MW-14																
03	MW-6																
04	MW-15																
05	MW-10																
06	MW-8																
07	MW-9																
08	MW-16																
09	MW-17																
10	MW-13																

Comments:

Turnaround Time (Business Days)

TAT begins when sample is received by eANALYTICS

- (X) Normal (5-10 Days)
- ( ) 3 Day (1.25x)
- ( ) 2 Day (1.5x)
- ( ) 1 Day (2x)
- ( ) Same Day (3x)

Rush analysis requires an extra charge. If possible please inform eANALYTICS in advance for rush analysis.

Colorado OPS Project: Yes / No

For eANALYTICS Use

Samples Received Intact: (Yes) / No

Received Within Temperature Range (2-6°C): (Yes) / No

Sample Preservative: Ice / None / Acid / Other

Record of Custody

Relinquished by: [illegible]	Company:	Date: 11/27/13 Time: 16:30
Received by:	Company:	Date: Time:
Relinquished by:	Company:	Date: Time:
Received by: eANALYTICS	Company:	Date: 11/27 Time: 1630

WO # 350

eANALYTICS: Environmental testing made Easy

Page 1 of 1

Water
Sample Analysis

eANALYTICS
LABORATORY

Client:	Fremont Environmental / Noble Energy	Lab Batch ID:	350
Project:	Prebish #2		
Analysis:	Volatile Organics	Method:	EPA8260

Sample Name	Benzene ug/L	Toluene ug/L	Ethyl-benzene ug/L	Total Xylenes ug/L	Date Sampled	Date Analyzed	Lab ID	
MW-5	< 1.0	< 1.0	< 1.0	< 1.0	11/27/13	12/01/13	350	1
MW-14	< 1.0	< 1.0	< 1.0	< 1.0	11/27/13	12/01/13	350	2
MW-6	< 1.0	< 1.0	< 1.0	< 1.0	11/27/13	12/01/13	350	3
MW-15	2.2	< 1.0	1.9	23.6	11/27/13	12/01/13	350	4
MW-10	< 1.0	< 1.0	< 1.0	< 1.0	11/27/13	12/01/13	350	5
MW-8	< 1.0	< 1.0	< 1.0	< 1.0	11/27/13	12/01/13	350	6
MW-9	< 1.0	< 1.0	< 1.0	< 1.0	11/27/13	12/01/13	350	7
MW-16	< 1.0	< 1.0	< 1.0	< 1.0	11/27/13	12/01/13	350	8
MW-17	< 1.0	< 1.0	< 1.0	< 1.0	11/27/13	12/01/13	350	9
MW-13	< 1.0	< 1.0	< 1.0	< 1.0	11/27/13	12/01/13	350	10

Water
Quality Control - Surrogate Recoveries

eANALYTICS LABORATORY

Client: Fremont Environmental / Noble Energy

Lab Batch ID: 350

Project: Prebish #2

Method: EPA8260

Sample Name	Dibromo-fluoromethane % Recovery	1,2 Dichloro-ethane-D4 % Recovery	Toluene-D8 % Recovery	Bromo-fluorobenzene % Recovery	Date Sampled	Date Analyzed	Lab ID
MW-5	101	97	93	100	11/27/13	12/01/13	350 1
MW-14	90	88	97	92	11/27/13	12/01/13	350 2
MW-6	98	91	103	96	11/27/13	12/01/13	350 3
MW-15	95	102	89	96	11/27/13	12/01/13	350 4
MW-10	104	102	101	87	11/27/13	12/01/13	350 5
MW-8	98	96	97	93	11/27/13	12/01/13	350 6
MW-9	92	92	92	93	11/27/13	12/01/13	350 7
MW-16	104	91	89	90	11/27/13	12/01/13	350 8
MW-17	95	102	94	91	11/27/13	12/01/13	350 9
MW-13	89	90	102	105	11/27/13	12/01/13	350 10

Water
Quality Control - Analyses

eANALYTICS LABORATORY

Client:	Fremont Environmental / Noble Energy	Lab Batch ID:	350
Project:	Prebish #2		
Analysis:	Volatile Organics	Method:	EPA8260

Sample Name	Benzene % Rec	Toluene % Rec	Ethyl-benzene % Rec	Total Xylenes % Rec	Date Analyzed		Lab ID
Laboratory Control	97	92	96	99	12/01/13	LCS	350 1
(70-130%)							
Calibration Verification	96	98	101	95	12/01/13	CCV	350 1
(80-120%)							
Method Blank	< 1.0	< 1.0	< 1.0	< 1.0	12/01/13	MB	350 1
	ug/L	ug/L	ug/L	ug/L			

eAnalytics Laboratory
1767 Rocky Mountain Avenue Loveland CO 80538