

# **FREMONT ENVIRONMENTAL INC.**

August 10, 2013

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

Subject:      **Produced Water Pit Replacement Closure Report**  
Hop 13-11B  
API # 05-123-17457  
Kersey, Colorado  
Fremont Project No. C013-028

Dear Mr. Evans:

Enclosed please find a copy of the above referenced Produced Water Pit Replacement Report for the Hop 13-11B site near Kersey, Colorado. The enclosed report describes the soil sampling and replacement of the existing steel water pit. 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. Henahan, P.E.  
Senior Consultant

Enclosure

**PRODUCED WATER PIT REPLACEMENT**

**NOBLE ENERGY INC.**

**HOP 13-11B**

**KERSEY, COLORADO**

**FREMONT PROJECT NO. C013-028**

**Prepared by:**

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

**August 10, 2013**

## **TABLE OF CONTENTS**

1.0 INTRODUCTION .....	1
2.0 BACKGROUND INFORMATION .....	1
2.1 Site Location .....	1
2.2 Site History .....	1
3.0 FIELD ACTIVITIES .....	1
4.0 REMARKS.....	3

### **Figures**

Figure 1:     Site Location Map

Figure 2:     Site Map

### **Appendices**

Appendix A:     Laboratory Documentation

Appendix B:     Photos

# **PRODUCED WATER PIT REPLACEMENT**

**NOBLE ENERGY INC.**

**HOP 13-11B**

**KERSEY, COLORADO**

**FREMONT PROJECT NO. C013-028**

## **1.0 INTRODUCTION**

The purpose of this document is to describe the actions taken to replace the steel, produced water pit at the Hop 13-11B well location. In addition, this report will describe the soil sampling performed to determine whether subsurface impacts were present.

## **2.0 BACKGROUND INFORMATION**

### **2.1 Site Location**

The Hop 13-11B site is located approximately two miles west of Kersey, Colorado in Weld County as shown on Figure 1. The site is located in a rural and agricultural area north of the intersection of County Road 47 and Highway 34. The location is further described as the NE  $\frac{1}{4}$  of the SW  $\frac{1}{4}$  of Section 13, Township 5N, Range 65W.

### **2.2 Site History**

The site is a natural gas production and oil storage facility for the Hop 13-11B well as shown on Figure 2, Site Map. This well was drilled in 1993. In July 2013, it was determined that the steel produced water pit was unable to maintain its water level indicating a potential problem with the pit and/or piping. Therefore, it was scheduled for replacement.

## **3.0 FIELD ACTIVITIES**

On August 5, 2013, a crew from Ochoa Trucking Services excavated the produced water pit immediately west of the oil storage tank at the site. The steel water pit was removed

and inspected for damage. No obvious indication of failure was observed. Regardless, the steel pit was replaced with a new, concrete water pit. Photos of the pit excavation and former steel pit are provided.

Three soil samples were collected from the side wall of the excavation at depths of approximately two, three and four feet. The soil sample from a depth of three feet was submitted to eAnalytics Laboratory, Inc. (eAnalytics) in Loveland, Colorado for the analyses of benzene, toluene, ethylbenzene and xylenes (BTEX), naphthalene, Total Petroleum Hydrocarbons-Gasoline Range Organics (TPH-GRO) by EPA Method 8260C and TPH-Diesel Range Organics (TPH-DRO). In addition, this side wall sample was also analyzed for three inorganic parameters including sodium absorption ratio (SAR), electrical conductivity (EC) and pH. The soil samples were field screened with a photoionization detector (PID). The PID value for the soil samples was 0.0 ppm.

A floor soil sample was also collected from beneath the pit location after it was removed. This sample was collected from approximately the center of the former pit at a depth of approximately four feet. This sample was analyzed for BTEX, TPH-GRO, TPH-DRO and naphthalene but not for any inorganic soil parameters. The PID reading for this soil sample was also 0.0 ppm.

The laboratory data indicated that the BTEX, TPH-GRO, TPH-DRO and naphthalene constituents were below their respective laboratory detection limits for all soil samples. In addition, the SAR and EC were lower than the Colorado Oil and Gas Commission's (COGCC's) Table 910-1 limits. The pH was within the allowable range. A copy of the laboratory reports, quality control data, and chain-of-custody documentation are presented in Appendix A.

The steel pit was replaced by a new concrete pit at this same location and the facility was placed back in operation. Fremont personnel did not oversee that portion of the project.

#### **4.0 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.**



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Paul V. Henahan, P.E.

Senior Consultant

8/10/13  
Date\_\_\_\_\_

## **FIGURES**

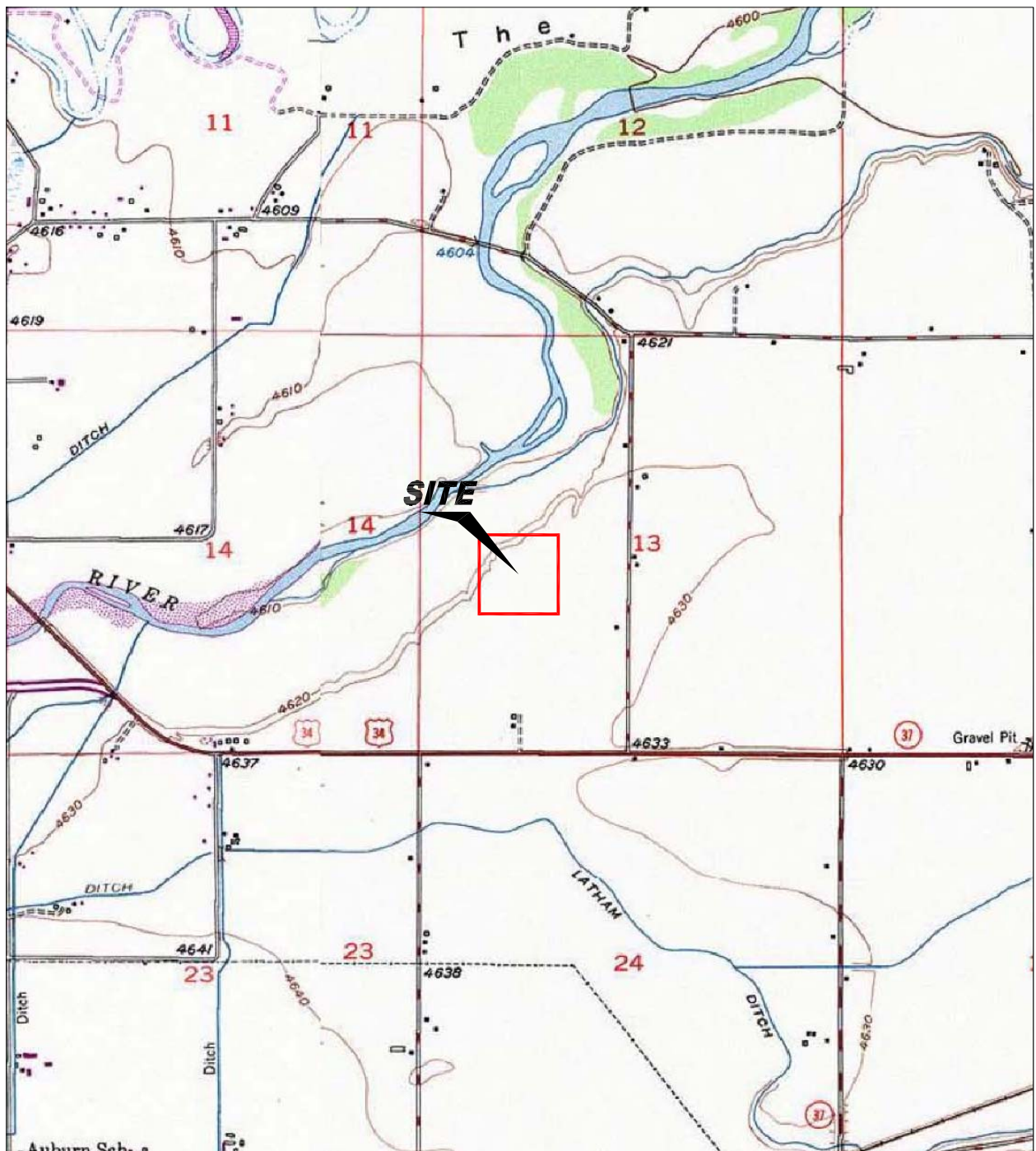


Figure 1  
SITE LOCATION MAP

Noble - Hop 13-11B  
NE SW Section 13, T5N, R65W  
Weld County, Colorado

Project No.  
C013-028

Prepared by

Drawn by  
JMA

Date  
8/12/13

Reviewed by

Filename  
13028T



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)






#### LEGEND

- FENCE LINE
- ..... BERM
- ABOVE GROUND STORAGE TANK

Figure 2

#### SITE MAP

**Noble - Hop 13-11B**  
NE SW Section 13, T5N, R65W  
Weld County, Colorado

Project No. <b>C013-028</b>	Prepared by	Drawn by <b>JMA</b>	
Date <b>8/12/13</b>	Reviewed by	Filename <b>13028Q</b>	

**APPENDIX A**

**LABORATORY DOCUMENTATION**

# Certificate of Analysis



August 5, 2013

Client: Fremont Environmental  
PO Box 1289  
Wellington CO 80549

Project: Hop 13-11B

Lab ID: 080501

Date Received: 08/05/13

Number of Samples Received: 2

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

Analysis	EPA Method	Lab ID on COC
BTEX / Nap	8260C	1 - 2
TPH - GRO/DRO	8260C/8015C	1 - 2
pH	9045D	2
Sodium Adsorption Ratio	U.S. Dept of Ag Handbook 60 Method 20B	2
Electrical Conductivity	U.S. Dept of Ag Handbook 60 Method 3	2

All quality control analyses associated with the requested analyses were satisfactorily passed before the samples were run. If you have any questions please give us a call, we are happy to help.

Thank you for allowing eAnalytics Laboratory to provide laboratory services for you, we truly appreciate your business.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Dieken".

Christopher Dieken  
Quality Assurance Manager

A handwritten signature in black ink, appearing to read "Todd Rhea".

Todd Rhea  
Laboratory Manager



A2LA & Department of Defense (DoD) Certified



**e**ANALYTICS  
LABORATORY

**August 5, 2013**

Lab ID: 080501

9045D	pH
U.S. Dept of Ag Handbook 60 Method 20B	SAR
U.S. Dept of Ag Handbook 60 Method 3	EC

[illegible]



**e**ANALYTICS  
LABORATORY

**August 5, 2013**

Project: Hop 13-11B

Lab ID: 080501

EPA Method: 8260C

eAnalytics Laboratory: 1767 Rocky Mountain Avenue Loveland CO 80538  
The results contained within this report relate only to the items analyzed







**APPENDIX B**

**PHOTOS**



**Looking northwest at pit excavation after most of the impacted soil was removed.**



**Steel water pit after removal. No indication of failure was observed.**