

## **FREMONT ENVIRONMENTAL INC.**

May 2, 2015

Mr. Phil Wright  
Homestead Oil Inc.  
16880 Wild Plum Circle  
Morrison, CO 80465

Subject:       **Ground Water Monitoring and Remediation Report**  
                  Stephens #1  
                  API # 05-123-11552  
                  SENW Sec 15, T4N, R66W  
                  Weld County, Colorado  
                  Fremont Project No. C014-027  
                  Facility #243760, Remediation # 8307, Spill #2148350

Dear Mr. Wright:

Enclosed please find a copy of the above referenced Ground Water Monitoring and Remediation Report for the Stephens #1 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

**GROUND WATER MONITORING AND REMEDIATION REPORT**

**HOMESTEAD OIL INC.**

**STEPHENS #1 WATER VAULT RELEASE**

**WELD COUNTY, COLORADO**

**FREMONT PROJECT NO. C014-027**

**FACILITY #243760, REMEDIATION #8307, SPILL #2148350**

**Prepared by:**

**Fremont Environmental Inc.  
1759 Redwing Lane  
Broomfield, CO 80020  
(303) 956-8714**

**May 2, 2015**

## TABLE OF CONTENTS

1.0 INTRODUCTION .....	1
2.0 BACKGROUND INFORMATION .....	1
2.1 Site Location .....	1
2.2 Site History .....	1
3.0 GROUND WATER MONITORING ACTIVITIES.....	3
3.1 Ground Water Level Measurements .....	3
3.2 Ground Water Sampling and Analysis .....	3
4.0 DISCUSSION .....	4
5.0 REMARKS.....	4

### Table

Table 1: Summary of Ground Water Chemistry and Elevation Data

### Figures

Figure 1: Site Location Map

Figure 2: Site Map

Figure 3: Ground Water Contour Map

Figure 4: Ground Water Chemistry Map

Figure 5: Air Sparge/Soil Vapor Extraction As-Built Layout

### Appendices

Appendix A: Sampling Plan

Appendix B: Laboratory Documentation

# **GROUND WATER MONITORING AND REMEDIATION REPORT**

**HOMESTEAD OIL INC.**

**STEPHENS #1 WATER VAULT RELEASE**

**WELD COUNTY, COLORADO**

**FREMONT PROJECT NO. C014-027**

**FACILITY #243760, REMEDIATION #8307, SPILL #2148350**

## **1.0 INTRODUCTION**

The purpose of this document is to present ground water quality data collected subsequent to remediation by limited excavation at the Stephens #1 water vault release site in Weld County, Colorado. Impacted soil and ground water were identified at this location due to a release from the facility's water vault. Limited soil removal was conducted on May 5, 2014 at this facility. Eight monitoring wells were advanced in August 2014 to delineate the magnitude and extent of subsurface impacts after excavation. In an effort to improve ground water quality, an air sparge/soil vapor extraction (AS/SVE) system was installed at the site and was activated in January 2015.

## **2.0 BACKGROUND INFORMATION**

### **2.1 Site Location**

The Stephens #1 site is located approximately 1.5 miles north of Gilcrest, Colorado in Weld County as shown on Figure 1. The site is located in a rural and agricultural area 0.5 miles southeast of the intersection of County Road 31 and County Road 46. The location is further described as the SE  $\frac{1}{4}$  of the NW  $\frac{1}{4}$  of Section 15, Township 4N, Range 66W.

### **2.2 Site History**

The site consists of the former water vault and aboveground storage tank (AST) for the Stephens #1 natural gas well. The well was drilled in 1984 to a depth of 7,850 feet. Soil

impacts were identified during the plugging and abandoning of this well and ancillary equipment.

An excavation to remediate the source impacts was undertaken on May 5, 2014 by Fremont Environmental Inc. (Fremont). Approximately 120 cubic yards of impacted soil were excavated and removed from the storage tank and water vault area. One ground water sample was collected from the excavation and analyzed for petroleum constituents. The laboratory analysis of the water sample indicated that the ground water exhibited a dissolved petroleum concentration of benzene of 4,112 ug/L, which is greater than the Colorado Oil and Gas Conservation Commission's (COGCC's) Table 910-1 limit of 5 ug/L. As a result, a site investigation to determine the extent of ground water impacts was required.

In August 2014, eight soil borings were advanced by Fremont at the site to determine the magnitude and extent of subsurface impacts resulting from the release. All eight of the borings were completed as monitoring wells (MW-1 through MW-8) as illustrated on the attached figures.

In an effort to improve the ground water quality in the impacted area, an air sparge/soil vapor extraction (AS/SVE) system was installed in November 2014 and energized in January 2015. This system consisted of nine 2-inch diameter AS wells that were installed near the former water vault and AST location. A soil vapor extraction (SVE) system was also installed to capture any fugitive vapors that might be produced by the AS system; four 2-inch diameter SVE wells were installed. Figure 5 illustrates the layout of the AS/SVE system. Additional detail regarding the remediation system can be found in the "Proposed Remediation Report" dated September 15, 2014.

### **3.0 GROUND WATER MONITORING ACTIVITIES**

#### **3.1 Ground Water Level Measurements**

Ground water levels were measured in the eight monitoring wells on April 7, 2015 in accordance with the Sampling Plan included in Appendix A. The data are summarized in Table 1.

Water table contours inferred from the April 2015 data are illustrated on Figure 3. Based on these data, ground water is inferred to flow generally to the east. The water table gradient was calculated at approximately 0.002 feet per foot (ft/ft) for the April 2015 data.

#### **3.2 Ground Water Sampling and Analysis**

Ground water samples were collected from the eight monitoring wells on April 7, 2015 to monitor the magnitude and extent of ground water impacts at the site. The ground water samples were submitted to Summit Scientific Inc. in Golden, Colorado for analyses of benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8260C. The ground water chemistry data for the most recent sampling event is illustrated on Figure 4.

The laboratory data indicated that the BTEX constituents were below their respective laboratory detection limits for all of the ground water samples except for monitoring wells MW-1 and MW-5, which had benzene concentrations of 30 and 31 ug/L, respectively. In January 2015, these two wells had benzene concentrations of 1,728 and 727 ug/L, respectively. The April 2015 concentrations remain above the COGCC Table 910-1 limit of 5 ug/L for benzene.

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 water vault for the Stephens #1 well, a limited excavation was conducted in May 2014 to remove petroleum impacted soil. A total of 120 cubic yards of impacted soil were removed and transported to a landfill as non-hazardous waste. Subsequent to the excavation, eight monitoring wells have been advanced at the site to determine the extent of subsurface impacts in ground water. Further, an AS/SVE system has been installed to improve ground water quality at the site.

Ground water samples from all of the wells were collected and analyzed during April 2015. These data are illustrated on Figure 4 and indicate that six of the eight monitoring wells are below their respective COGCC concentrations for BTEX. However, monitoring wells MW-1 and MW-5 had benzene concentrations of 30 and 31 ug/L, respectively. These concentrations have decreased significantly since January 2015 when their benzene concentrations were 1,728 and 727 ug/L, respectively.

The AS/SVE remediation system has been operational since mid-January 2015 and appears to have had substantial beneficial impacts. It is anticipated that further improvements in ground water quality will be realized.

Homestead 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, Homestead 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.**



5/2/15

Date \_\_\_\_\_

\_\_\_\_\_  
Paul V. Henehan, P.E.

Senior Consultant

**TABLE**

**TABLE 1**  
**SUMMARY OF GROUND WATER ELEVATION DATA AND CHEMISTRY DATA**  
**HOMESTEAD OIL INC.**  
**STEPHENS #1, WELD COUNTY, COLORADO**  
**FREMONT PROJECT NO. C014-027**

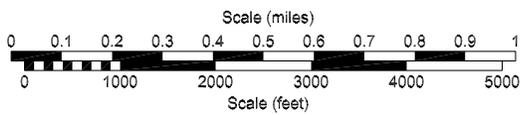
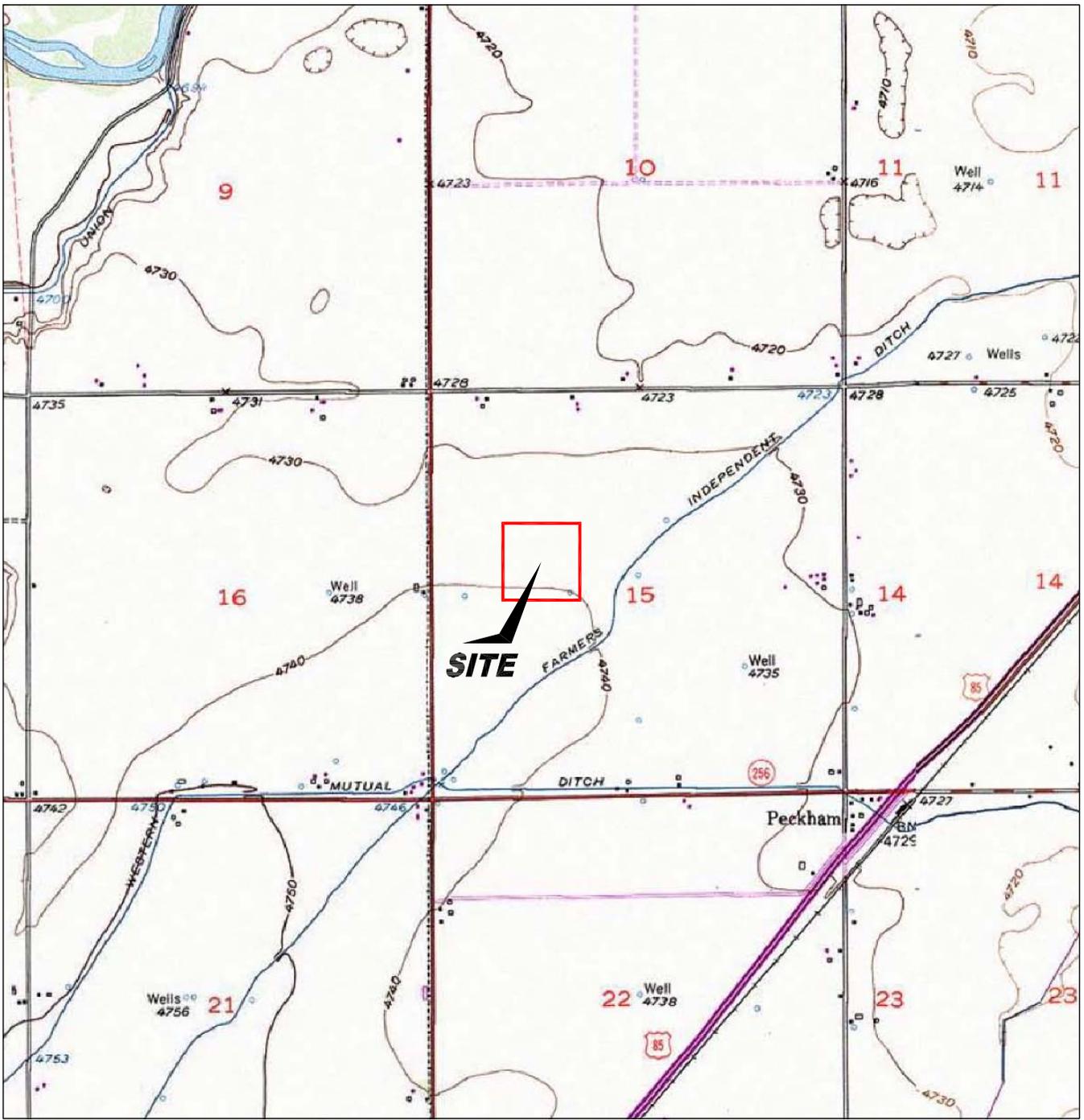
<b>SAMPLE LOCATION</b>	<b>DATE</b>	<b>BENZENE (µg/L)</b>	<b>TOLUENE (µg/L)</b>	<b>ETHYL BENZENE (µg/L)</b>	<b>TOTAL XYLENES (µg/L)</b>	<b>TOC ELEVATION (feet)</b>	<b>DEPTH TO GROUND WATER (ft)</b>	<b>GROUND WATER ELEVATION (ft)</b>	<b>FREE PRODUCT THICKNESS (ft)</b>
MW-1	08/20/14	<b>2616</b>	<b>3751</b>	<b>4182</b>	<b>96434</b>	99.22	17.94	81.28	NP
	01/29/15	<b>1728</b>	114	455	<b>8314</b>		20.03	79.19	NP
	04/07/15	<b>30</b>	2.2	<1.0	<b>8800</b>		21.01	78.21	NP
MW-2	08/20/14	<1.0	<1.0	<1.0	<1.0	99.43	18.11	81.32	NP
	01/29/15	<1.0	<1.0	<1.0	<1.0		20.27	79.16	NP
	04/07/15	<1.0	<1.0	<1.0	11		21.52	77.91	NP
MW-3	08/20/14	<b>8.1</b>	<1.0	<1.0	<1.0	99.81	18.39	81.42	NP
	01/29/15	<1.0	<1.0	<1.0	<1.0		20.56	79.25	NP
	04/07/15	<1.0	<1.0	<1.0	<1.0		21.82	77.99	NP
MW-4	08/20/14	<1.0	<1.0	<1.0	<1.0	99.89	18.63	81.26	NP
	01/29/15	<1.0	<1.0	<1.0	<1.0		20.72	79.17	NP
	04/07/15	<1.0	<1.0	<1.0	<1.0		21.95	77.94	NP
MW-5	08/20/14	<b>1755</b>	<b>3134</b>	454	<b>10854</b>	99.68	18.55	81.13	NP
	01/29/15	<b>727</b>	<b>2206</b>	298	<b>2476</b>		20.64	79.04	NP
	04/07/15	<b>31</b>	<1.0	6.3	560		21.92	77.76	NP
MW-6	08/20/14	<1.0	<1.0	<1.0	<1.0	99.51	18.3	81.21	NP
	01/29/15	<1.0	<1.0	<1.0	<1.0		20.43	79.08	NP
	04/07/15	<1.0	<1.0	<1.0	<1.0		21.69	77.82	NP
MW-7	08/20/14	<1.0	<1.0	<1.0	<1.0	100.00	19.00	81.00	NP
	01/29/15	1.1	<1.0	<1.0	3.1		21.07	78.93	NP
	04/07/15	<1.0	<1.0	<1.0	<1.0		21.37	78.63	NP

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-8	08/20/14	<1.0	<1.0	<1.0	<1.0	99.29	18.33	80.96	NP
	01/29/15	1.0	<1.0	<1.0	<1.0		20.37	78.92	NP
	04/07/15	<1.0	<1.0	<1.0	<1.0		21.63	77.66	NP
Table 910-1 Limits		5	560	700	1,400				

Bold face values exceed the COGCC limits

NP - No Free Product

## FIGURES



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1  
SITE LOCATION MAP

**Homestead Oil - Stephens 1**  
SW NW Section 15, T4N, R66W  
Weld County, Colorado

Project No. C014-027	Prepared by	Drawn by JMA
Date 8/22/14	Reviewed by	Filename 14027T





**LEGEND**

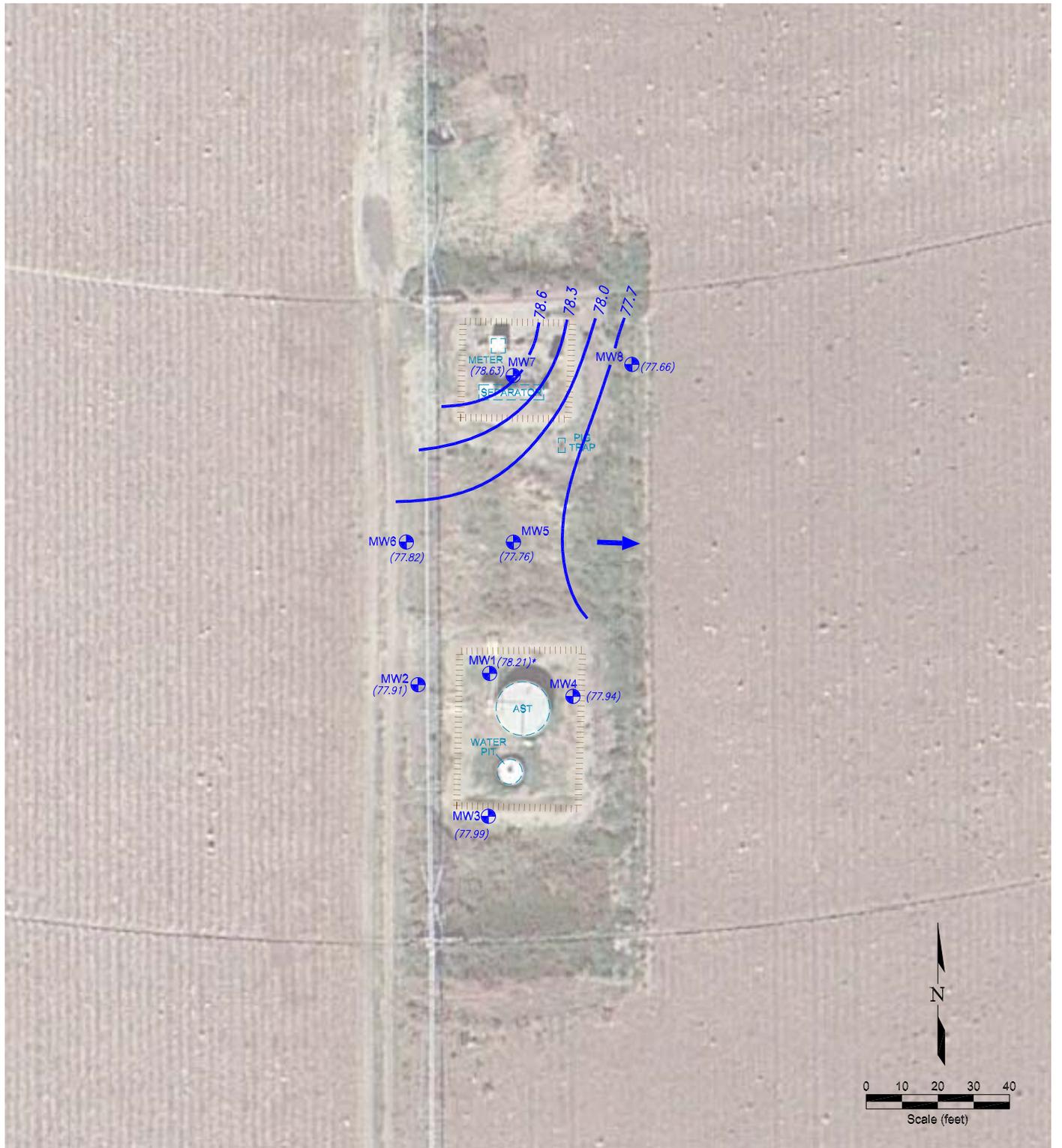
- CONTAINMENT
- FORMER FORMER FACILITY

**Figure 2  
SITE MAP**

**Homestead Oil - Stephens 1**  
 SW NW Section 15, T4N, R66W  
 Weld County, Colorado

Project No. <b>C014-027</b>	Prepared by	Drawn by <b>JMA</b>
Date <b>8/22/14</b>	Reviewed by	Filename <b>14027Q</b>





**LEGEND**

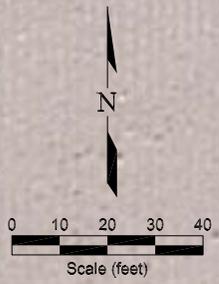
-  MONITORING WELL
-  CONTAINMENT
-  FORMER FACILITY
-  GROUND WATER ELEVATION (ft above arbitrary datum)
-  WATER TABLE CONTOUR
-  GROUND WATER FLOW DIRECTION
-  NOT USED FOR CONTOURING

Figure 3  
**INFERRED GROUNDWATER CONTOUR**  
 APRIL 7, 2015

**Homestead Oil - Stephens 1**  
 SW NW Section 15, T4N, R66W  
 Weld County, Colorado

Project No. <b>C014-027</b>	Prepared by	Drawn by <b>JMA</b>
Date <b>4/18/15</b>	Reviewed by	Filename <b>14027Q</b>





**LEGEND**

- MONITORING WELL
- CONTAINMENT
- FORMER FACILITY

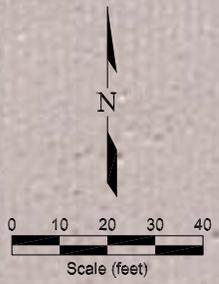
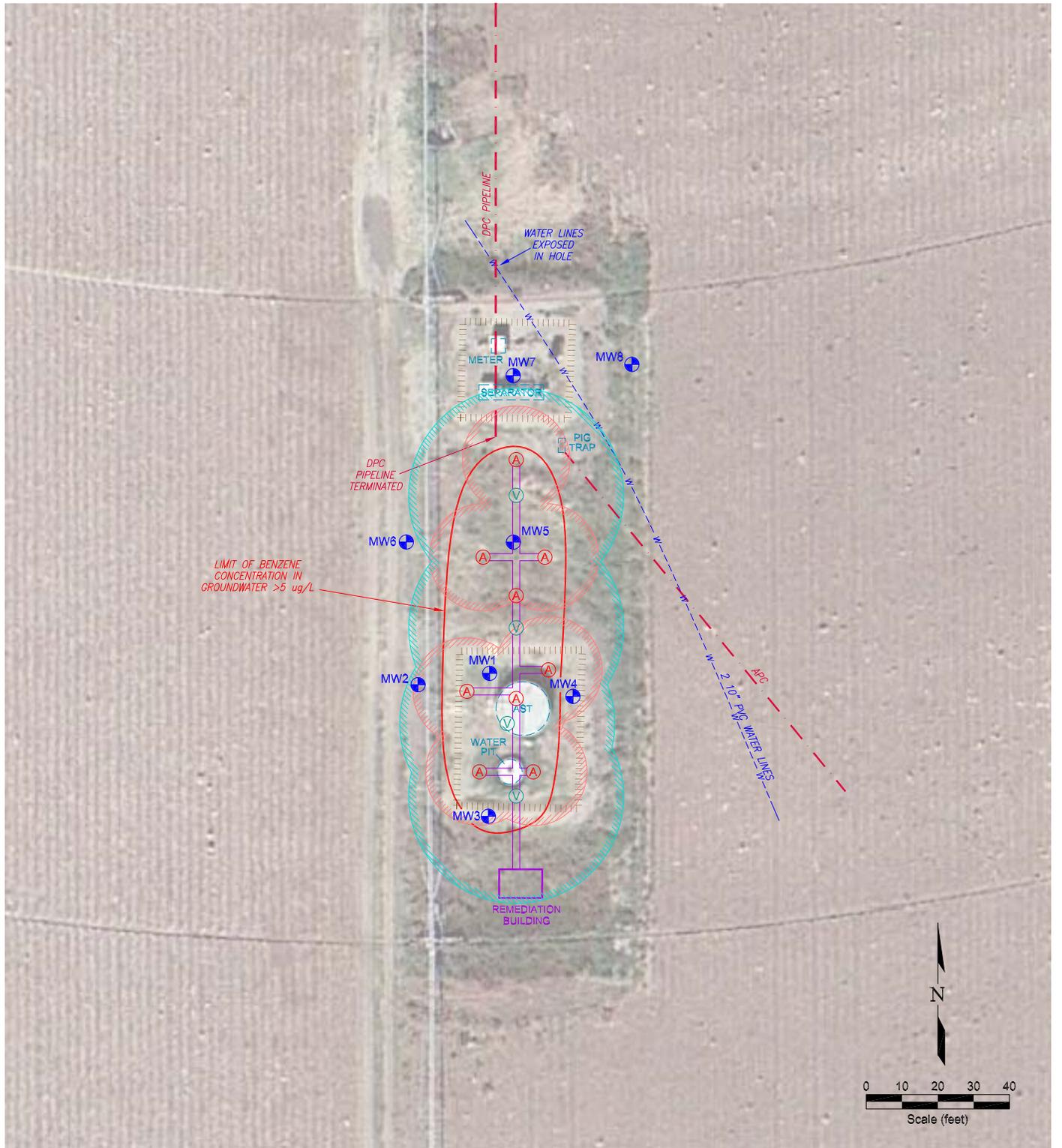
B	<1.0	BENZENE (ug/L)
T	<1.0	TOLUENE (ug/L)
E	<1.0	ETHYLBENZENE (ug/L)
X	<1.0	TOTAL XYLENES (ug/L)

Figure 4  
**GROUND WATER CHEMISTRY MAP**  
 APRIL 7, 2015

**Homestead Oil - Stephens 1**  
 SW NW Section 15, T4N, R66W  
 Weld County, Colorado

Project No. <b>C014-027</b>	Prepared by	Drawn by <b>JMA</b>
Date <b>4/17/15</b>	Reviewed by	Filename <b>14027Q</b>





**LEGEND**

-  MONITORING WELL
-  CONTAINMENT
-  FORMER FACILITY
-  PIPELINE
-  WATER LINE (buried)
-  AIR SPARGE WELL  
Radius of influence
-  SOIL VAPOR EXTRACTION WELL  
Radius of influence

Figure 5  
**AS/SVE REMEDIATION SYSTEM LAYOUT**

**Homestead Oil - Stephens 1**  
SW NW Section 15, T4N, R66W  
Weld County, Colorado

Project No. <b>C014-027</b>	Prepared by	Drawn by <b>JMA</b>
Date <b>9/12/14</b>	Reviewed by	Filename <b>14027Q</b>



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.

<u>Chemical Parameter</u>	<u>Method</u>
Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX)	EPA Method - 8260B

**APPENDIX B**

**LABORATORY DOCUMENTATION**

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 15, 2015

Paul Henehan  
Fremont Environmental  
1630 South College Avenue  
Ft. Collins, CO 80525  
RE: Homestead Oil Stephens 1

Enclosed are the results of analyses for samples received by Summit Scientific on 04/07/15 15:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



Fremont Environmental  
1630 South College Avenue  
Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
Project Manager: Paul Henehan

**Reported:**  
04/15/15 07:06

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW1	1504054-01	Water	04/07/15 00:00	04/07/15 15:00
MW2	1504054-02	Water	04/07/15 00:00	04/07/15 15:00
MW3	1504054-03	Water	04/07/15 00:00	04/07/15 15:00
MW4	1504054-04	Water	04/07/15 00:00	04/07/15 15:00
MW5	1504054-05	Water	04/07/15 00:00	04/07/15 15:00
MW6	1504054-06	Water	04/07/15 00:00	04/07/15 15:00
MW7	1504054-07	Water	04/07/15 00:00	04/07/15 15:00
MW8	1504054-08	Water	04/07/15 00:00	04/07/15 15:00

Summit Scientific

*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.*



Fremont Environmental  
1630 South College Avenue  
Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
Project Manager: Paul Henehan

Reported:  
04/15/15 07:06

# Summit Scientific

1504054

S<sub>2</sub>

741 Corporate Circle, Suite J&K ♦ Golden, Colorado 80401  
303-277-9310 ♦ 303-374-5933

Page 1 of 1

Client: Homestead Oil / Fremont Enviro Project Manager: Paul Henehan  
Address: PO Box 1289 E-Mail: Paul.H@Fremontenvi.com  
City/State/Zip: Wellington CO mark.a.taylor@hottmail.com  
Phone: 903.956.8714 Fax: Project Name: Homestead Oil Stephens 1  
Sampler Name: Mark T Project Number: C014-027

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested				Special Instructions
					HCl	HNO3	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)				
1	MW1	4/7/15		2			X		X							
2	2						X		X							
3	3						X		X							
4	4						X		X							
5	5						X		X							
6	6						X		X							
7	7						X		X							
8	8						X		X							
9																
10																
Relinquished by: <u>Mark Taylor</u>		Date/Time: <u>4/7/15</u>		Received by: <u>Mark Taylor</u>		Date/Time: <u>4/7/15 15:00</u>		Turn Around Time (Check)		Same Day <input type="checkbox"/> 72 hours		24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>		48 hours <input type="checkbox"/>		Notes:
Relinquished by: <u>Mark Taylor</u>		Date/Time: <u>4/7/15 16:40</u>		Received by: <u>Mark Taylor</u>		Date/Time: <u>4-7-15 16:40</u>		Sample Integrity:		Temperature Upon Receipt: <u>19.2°C</u>		Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				
Relinquished by:		Date/Time:		Received by:		Date/Time:										

www.s2scientific.com



Fremont Environmental  
1630 South College Avenue  
Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
Project Manager: Paul Henehan

Reported:  
04/15/15 07:06

**Sample Receipt Checklist**

S2 Work Order: 1504054

Client: Fremont

Client Project ID: Homestead Oil / Stephens 1

Shipped Via: P4

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: \_\_\_\_\_

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_ (Describe)

Cooler ID				
Temp (°C)	<u>19.2</u>			

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, etc.				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				
<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.				

Brian Shamberger  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

4/9/15  
Date/Time

[Signature]



Fremont Environmental  
1630 South College Avenue  
Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
Project Manager: Paul Henehan

**Reported:**  
04/15/15 07:06

**MW1**  
**1504054-01 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>30</b>	1.0	ug/l	1	1504098	04/13/15	04/13/15	EPA 8260B	
<b>Toluene</b>	<b>2.2</b>	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>8800</b>	100	"	100	"	"	"	"	

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		89.3 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		87.5 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		129 %	45-146		"	"	"	"	

Summit Scientific

*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.*



Fremont Environmental  
 1630 South College Avenue  
 Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
 Project Manager: Paul Henehan

**Reported:**  
 04/15/15 07:06

**MW2**  
**1504054-02 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504098	04/13/15	04/13/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>11</b>	1.0	"	"	"	"	"	"	

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		90.2 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		95.2 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		94.5 %	45-146		"	"	"	"	

Summit Scientific

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Fremont Environmental  
 1630 South College Avenue  
 Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
 Project Manager: Paul Henehan

**Reported:**  
 04/15/15 07:06

**MW3**  
**1504054-03 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504098	04/13/15	04/13/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		89.3 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		95.9 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		89.3 %	45-146		"	"	"	"	

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Fremont Environmental  
1630 South College Avenue  
Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
Project Manager: Paul Henehan

**Reported:**  
04/15/15 07:06

**MW4**  
**1504054-04 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504098	04/13/15	04/13/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		89.8 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.6 %	45-146		"	"	"	"	

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Fremont Environmental  
1630 South College Avenue  
Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
Project Manager: Paul Henehan

**Reported:**  
04/15/15 07:06

**MW5**  
**1504054-05 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>31</b>	1.0	ug/l	1	1504098	04/13/15	04/13/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>6.3</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>560</b>	1.0	"	"	"	"	"	"	

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		93.3 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		94.7 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		102 %	45-146		"	"	"	"	

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Fremont Environmental  
1630 South College Avenue  
Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
Project Manager: Paul Henehan

**Reported:**  
04/15/15 07:06

**MW6**  
**1504054-06 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504098	04/13/15	04/13/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		93.5 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.1 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		92.3 %	45-146		"	"	"	"	

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Fremont Environmental  
1630 South College Avenue  
Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
Project Manager: Paul Henehan

**Reported:**  
04/15/15 07:06

**MW7**  
**1504054-07 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504098	04/13/15	04/13/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		87.8 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.1 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		90.8 %	45-146		"	"	"	"	

Summit Scientific

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Fremont Environmental  
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 Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
 Project Manager: Paul Henehan

**Reported:**  
 04/15/15 07:06

**MW8**  
**1504054-08 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1504098	04/13/15	04/13/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/07/15 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		88.2 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		95.3 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		91.8 %	45-146		"	"	"	"	

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Fremont Environmental  
1630 South College Avenue  
Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
Project Manager: Paul Henehan

Reported:  
04/15/15 07:06

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**

**Summit Scientific**

Analyte	Reporting			Spike Level	Source		%REC		RPD		Notes
	Result	Limit	Units		Result	%REC	Limits	RPD	Limit		

**Batch 1504098 - EPA 5030 Water MS**

**Blank (1504098-BLK1)**

Prepared & Analyzed: 04/09/15

Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	1.0	"								
Surrogate: 1,2-Dichloroethane-d4	12.4		"	13.2		93.6		37-154			
Surrogate: Toluene-d8	13.0		"	13.3		97.1		45-149			
Surrogate: 4-Bromofluorobenzene	14.6		"	13.3		110		45-146			

**LCS (1504098-BS1)**

Prepared & Analyzed: 04/09/15

Benzene	30.7	1.0	ug/l	33.3		92.0		51-132			
Toluene	28.3	1.0	"	33.3		84.9		51-138			
Ethylbenzene	30.9	1.0	"	33.1		93.5		58-146			
m,p-Xylene	62.7	2.0	"	66.5		94.2		57-144			
o-Xylene	30.3	1.0	"	32.8		92.3		53-146			
Surrogate: 1,2-Dichloroethane-d4	12.9		"	13.2		98.0		37-154			
Surrogate: Toluene-d8	13.0		"	13.3		97.1		45-149			
Surrogate: 4-Bromofluorobenzene	14.1		"	13.3		106		45-146			

**Matrix Spike (1504098-MS1)**

Source: 1504093-05

Prepared & Analyzed: 04/09/15

Benzene	88.6	1.0	ug/l	33.3	81.8	20.6		34-141			QM-07
Toluene	40.1	1.0	"	33.3	19.8	61.0		27-151			
Ethylbenzene	31.4	1.0	"	33.1	ND	95.0		29-160			
m,p-Xylene	64.8	2.0	"	66.5	6.14	88.2		20-166			
o-Xylene	31.6	1.0	"	32.8	1.66	91.2		33-159			
Surrogate: 1,2-Dichloroethane-d4	13.1		"	13.2		99.3		37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.5		45-149			
Surrogate: 4-Bromofluorobenzene	14.3		"	13.3		107		45-146			

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Fremont Environmental  
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Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
Project Manager: Paul Henehan

**Reported:**  
04/15/15 07:06

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch 1504098 - EPA 5030 Water MS**

<b>Matrix Spike Dup (1504098-MSD1)</b>	<b>Source: 1504093-05</b>			<b>Prepared &amp; Analyzed: 04/09/15</b>						
Benzene	75.0	1.0	ug/l	33.3	81.8	NR	34-141	16.6	32	QM-07
Toluene	37.5	1.0	"	33.3	19.8	53.1	27-151	6.81	25	
Ethylbenzene	31.4	1.0	"	33.1	ND	95.1	29-160	0.127	50	
m,p-Xylene	63.7	2.0	"	66.5	6.14	86.5	20-166	1.70	36	
o-Xylene	31.2	1.0	"	32.8	1.66	90.2	33-159	1.05	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>13.7</i>		<i>"</i>	<i>13.2</i>		<i>104</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.2</i>		<i>"</i>	<i>13.3</i>		<i>99.4</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>14.5</i>		<i>"</i>	<i>13.3</i>		<i>109</i>	<i>45-146</i>			

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Fremont Environmental  
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Ft. Collins CO, 80525

Project: Homestead Oil Stephens 1

Project Number: C014-027  
Project Manager: Paul Henehan

**Reported:**  
04/15/15 07:06

### Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- 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
- RPD Relative Percent Difference

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