

State of Colorado  
**Oil and Gas Conservation Commission**

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



FOR OGCC USE ONLY

REM 9750  
Document 2526564  
Date 04/15/2016

**SITE INVESTIGATION AND REMEDIATION WORKPLAN**

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

**CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED**

Spill or Release    Plug & Abandon    Central Facility Closure    Site/Facility Closure    Other (describe): \_\_\_\_\_

OGCC Operator Number: _____	Contact Name and Telephone: _____
Name of Operator: _____	_____
Address: _____	No: _____
City: _____ State: _____ Zip: _____	Fax: _____
API Number: _____	County: _____
Facility Name: _____	Facility Number: _____
Well Name: _____	Well Number: _____
Location: (QtrQtr, Sec, Twp, Rng, Meridian): _____ Latitude: _____ Longitude: _____	

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): \_\_\_\_\_

Site Conditions: Is location within a sensitive area (according to Rule 901e)?      Y      N      If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): \_\_\_\_\_

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: \_\_\_\_\_

Potential receptors (water wells within 1/4 mi, surface waters, etc.): \_\_\_\_\_

\_\_\_\_\_

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
Soils	_____	_____
Vegetation	_____	_____
Groundwater	_____	_____
Surface Water	_____	_____

**REMEDIATION WORKPLAN**

Describe initial action taken (if previously provided, refer to that form or document):

\_\_\_\_\_

Describe how source is to be removed:

\_\_\_\_\_

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

\_\_\_\_\_





Tracking Number: \_\_\_\_\_  
Name of Operator: \_\_\_\_\_  
OGCC Operator No: \_\_\_\_\_  
Received Date: \_\_\_\_\_  
Well Name & No: \_\_\_\_\_  
Facility Name & No: \_\_\_\_\_

OGCC Employee: \_\_\_\_\_

**If groundwater has been impacted, describe proposed monitoring plan** (# of wells or sample points, sampling schedule, analytical methods, etc.):

This F27 is for a partially burried produced water vault removal. Please see attached Summary Report and Closure Request for additional details.

**Describe reclamation plan.** Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

This facility is currently under production. A reclamation plan will be submitted in the event that the facility is closed.

**Attach samples and analytical results taken to verify remediation of impacts.** Show locations of samples on an onsite schematic or drawing.

**Is further site investigation required?** ☐ Y ☒ N If yes, describe:

This F27 is for a partially burried produced water vault removal. Please see attached Summary Report and Closure Request for additional details.

**Final disposition of E&P waste** (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

This F27 is for a partially burried produced water vault removal. Please see attached Summary Report and Closure Request for additional details.

### IMPLEMENTATION SCHEDULE

Date Site Investigation Began: <u>3/15/2016</u>	Date Site Investigation Completed: <u>3/16/2016</u>	Date Remediation Plan Submitted: <u>NA</u>
Remediation Start Date: <u>NA</u>	Anticipated Completion Date: <u>3/29/2016</u>	Actual Completion Date: <u>3/29/2016</u>

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: David Pennington

Signed: \_\_\_\_\_

Title: EHS Construction Superintendent

Date: 3/31 2016

OGCC Approved: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_





March 31, 2016

Mr. Chris Canfield  
Environmental Protection Specialist  
Colorado Oil and Gas Conservation Commission  
1120 Lincoln Street, Suite 801  
Denver, Colorado 80203

**RE: Morrison 2 Tank Battery (Facility ID – 102349)  
Form 27 Partially Buried Produced Water Vault Excavation and Request for Closure  
Synergy Resources Corporation  
Platteville, Colorado**

Dear Mr. Canfield:

LT Environmental, Inc. (LTE) has prepared this document on behalf of Synergy Resources Corporation (Synergy), to provide the Colorado Oil and Gas Conservation Commission (COGCC) with partially buried produced water vault removal and closure documentation for the Morrison 2 Tank Battery location, (Facility ID – 102349) (Site). This work has been conducted in accordance with the COGCC Regulation 905.b.4. The Site legal location is the southeast quarter of the southeast quarter of Section 1, Township 1 South, Range 68 West, 6<sup>th</sup> Principal Meridian. The Site Location Map is provided as Figure 1.

On March 23, 2015 Synergy removed a partially buried produced water vault from the Site. The vault was removed and confirmation sampling was conducted in accordance with the work plan identified below.

### **Partially Buried Tank Removal and Closure**

The COGCC Rule 900 Series regulates the closure of pits not used exclusively for drilling operations, buried or partially buried produced water vessels, and emergency pits. Synergy followed the requirements identified in the COGCC Rule 905.b.(1-4) when performing tank closure activities. Excavation oversight, soil and groundwater sampling, and analytical procedures were performed as follows:

- Synergy pumped liquids out of produced water vessels prior to removal. The produced water was handled in accordance with COGCC Rule 907.c.(1-4) Produced Water Disposal;
- Synergy observed and documented the tank-grave sidewalls and floor for evidence of environmental impacts including hydrocarbon staining, odor, or volatile organic carbon (VOC) using a photoionization detector (PID);
- Synergy excavated soils suspected to contain hydrocarbon concentrations higher than the COGCC Table 910-1. The excavated soils were handled and transported in accordance with COGCC Rule 907.a General Requirements and 907.b Waste transportation.
- Synergy collected confirmation soil and/or groundwater samples from the excavation in accordance with the following:
  - Observed and documented the extent of the excavation including length, width, and depth;





- Observed and documented the presence of groundwater in the excavation;
- Screened and documented VOCs in the sidewall and floor soils using a PID;
- Collected representative soil samples from the sidewalls of the excavation for COGCC Table 910-1 organic compounds in soil including; benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbon (TPH)-gasoline range organics (GRO), and TPH-diesel range organics (DRO) analysis. The soil samples were collected from soils with the highest PID reading or from soils that have evidence of hydrocarbon impacts including staining or odor;
- Collected a representative soil sample from the floor of the excavation for COGCC Table 910-1 organic compounds in soil including; BTEX, TPH-GRO, and TPH-DRO; and
- In the event that groundwater was encountered in the excavation, Synergy collected 1 groundwater sample in lieu of a representative soil sample. The groundwater sample was analyzed for COGCC Table 910-1 organic compounds in groundwater including BTEX.

## Results and Summary

Groundwater was observed in the vault excavation. No impacts were observed in the tank grave and, therefore, no soil was excavated. Four soil samples (N01@2', E01@1.5', S01@2', and W01@1.5') were collected from the excavation sidewalls, and one groundwater sample (GW01) was collected from the groundwater in the excavation. The analytical results for the soil samples were non-detect above laboratory detection limits and below the COGCC Table 910-1 standards for BTEX and TPH. The analytical results for the groundwater sample was non-detect above laboratory detection limits and below the COGCC Table 910-1 limits for BTEX. The analytical results are provided in Table 1, and on Figure 2, and the laboratory report is attached.

Table 1: Analytical Results Summary

Sample ID	Units	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	TPH
N01@2'	mg/kg	<0.01	<0.01	<0.01	<0.01	<50
E01@2'	mg/kg	<0.01	<0.01	<0.01	<0.01	<50
S01@2'	mg/kg	<0.01	<0.01	<0.01	<0.01	<50
W01@2'	mg/kg	<0.01	<0.01	<0.01	<0.01	<50
GW01	ug/L	<1.0	<1.0	<1.0	<1.0	NA
<b>COGCC Table 910-1 Soil Standards</b>	mg/kg	0.17	85	100	175	500
<b>COGCC Table 910-1 GW Standards</b>	ug/kg	5	560	700	1400	NA

Notes:

mg/kg – milligrams per kilogram

ug/L – micrograms per liter

< - analytical results below laboratory reporting limits

NA – not analyzed

**BOLD** – indicates sample analytical results exceeded applicable standards





Based on the field observations and analytical results of the samples, LTE respectfully requests that the COGCC grant a decision of no further action for this Site. Should you have any questions or comments please feel free to contact the undersigned at 303-433-9788 or Synergy at 970-230-0435.

Sincerely,

LT Environmental, Inc.

A handwritten signature in blue ink that reads "Jess Alexander".

Jess Alexander  
Project Environmental Scientist

A handwritten signature in blue ink that reads "Steve Kahn".

Steve Kahn P.E.  
Vice President

#### Figures

Figure 1	Site Location Map
Figure 2	Site Map

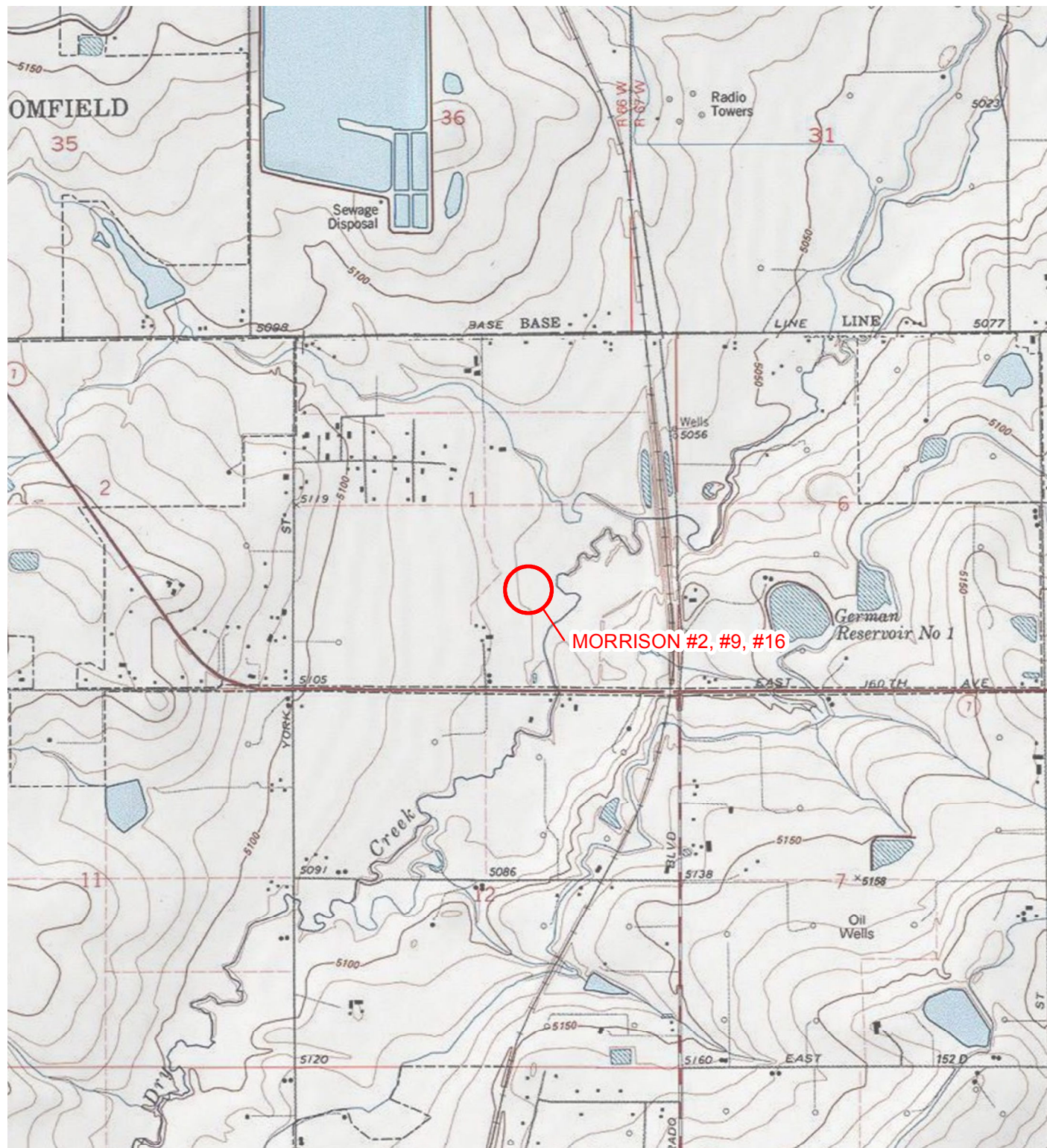
#### Attachment

Laboratory Analytical Reports



## FIGURES





# LEGEND

IMAGE COURTESY OF ESRI/USGS

○ SITE LOCATION

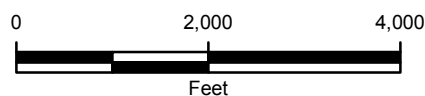
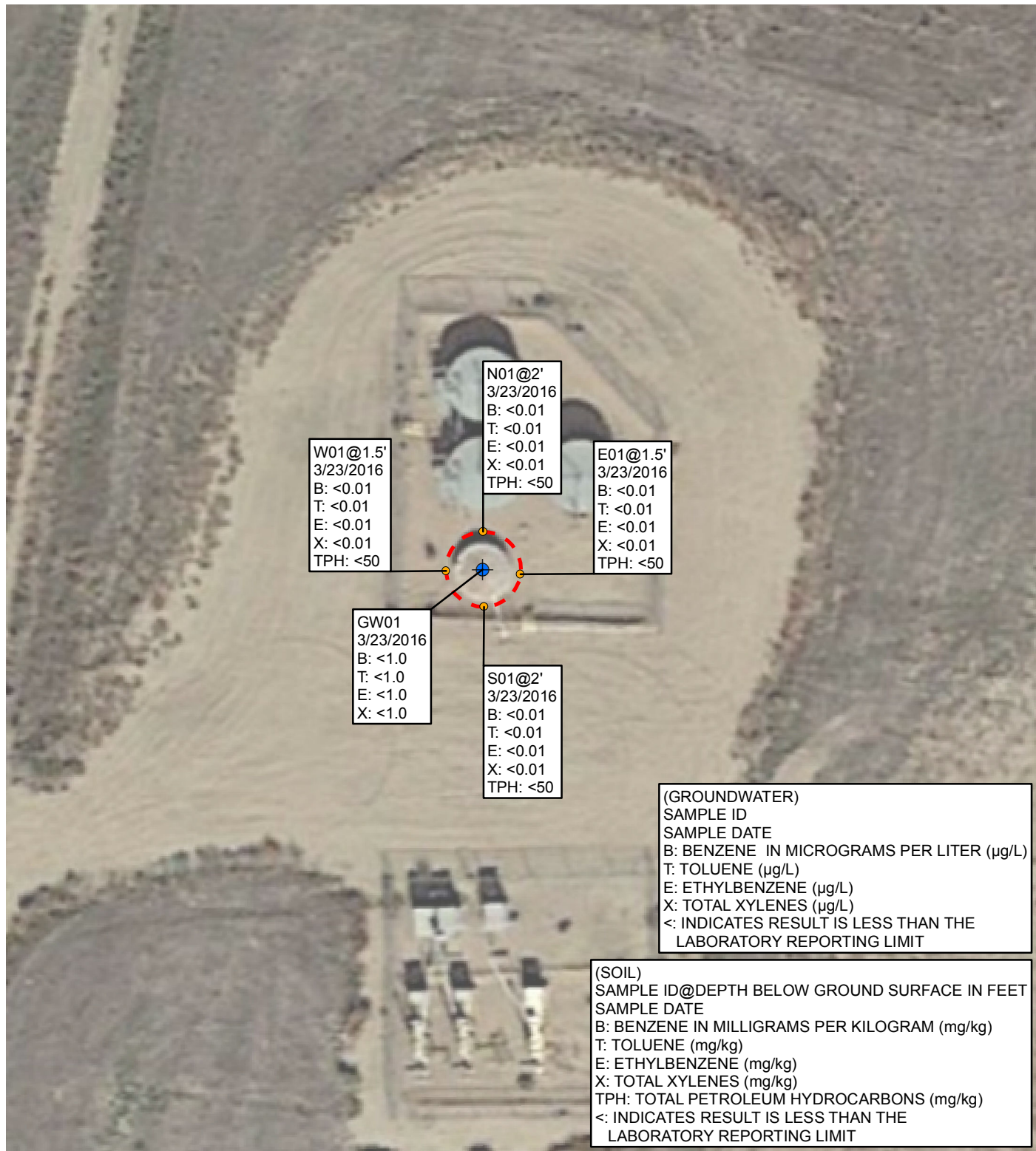


FIGURE 1  
SITE LOCATION MAP  
MORRISON #2, #9, #16  
NWSE SEC 1-T1S-R68W  
ADAMS COUNTY, COLORADO  
SYNERGY RESOURCES CORPORATION



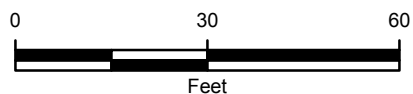




## LEGEND

IMAGE COURTESY OF GOOGLE EARTH 2015

- SOIL SAMPLE
- ⊕ GROUNDWATER SAMPLE
- ⊖ EXCAVATION EXTENT



**FIGURE 2**  
**SITE MAP**  
 MORRISON #2, #9, #16  
 NWSE SEC 1-T1S-R68W  
 ADAMS COUNTY, COLORADO  
 SYNERGY RESOURCES CORPORATION





**ATTACHMENT**  
**LABORATORY ANALYTICAL REPORT**





# Test Report



March 28, 2016

Client: LT Environmental

Project: Morrison #2, #9, #16

Lab ID: 4871

Date Samples Received: 3/25/2016

Number of Samples: 1

Sample Condition: Samples arrived intact and in appropriate sample containers

Sample Temperature: Samples arrived within the acceptable temperature range as specified in the test method

Comments:

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

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

**eAnalytics Laboratory**

4130 Clydesdale Parkway Loveland CO 80538



## Chain of Custody

**e**ANALYTICS  
LABORATORY

Chain of Custody Form

[illegible]



**e**ANALYTICS  
LABORATORY

Client: LT Environmental

Lab ID: 4871

Project: Morrison #2, #9, #16

Analysis: Volatile Organics

Method: EPA8260

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Date Sampled	Date Analyzed	Lab ID	
	ug/L	ug/L	ug/L	ug/L				
GW01	<1.0	<1.0	<1.0	<1.0	03/25/16	03/26/16	4871	1

**eAnalytics Laboratory**

4130 Clydesdale Parkway Loveland CO 80538



**e**ANALYTICS  
LABORATORY

Client: LT Environmental

Lab ID: 4871

Project: Morrison #2, #9, #16

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
GW01	102	97	102	97	03/25/16	03/26/16	4871 1

**eAnalytics Laboratory**

4130 Clydesdale Parkway Loveland CO 80538



**e**ANALYTICS  
LABORATORY

Client: LT Environmental

Lab ID: 4871

Project: Morrison #2, #9, #16

Analysis: Volatile Organics

Method: EPA8260

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	Date Analyzed	Lab ID	
	% Rec	% Rec	% Rec	% Rec			
Laboratory Control Sample	105	105	96	102	03/26/16	LCS	4871 1
(70-130%)							
Method Blank	<1.0	<1.0	<1.0	<1.0	03/26/16	MB	4871 1
	ug/L	ug/L	ug/L	ug/L			

**eAnalytics Laboratory**

4130 Clydesdale Parkway Loveland CO 80538



# Test Report



March 28, 2016

Client: LT Environmental

Project: Morrison #2, #9, #16

Lab ID: 4870

Date Samples Received: 3/25/2016

Number of Samples: 4

Sample Condition: Samples arrived intact and in appropriate sample containers

Sample Temperature: Samples arrived within the acceptable temperature range as specified in the test method

Comments:

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

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

**eAnalytics Laboratory**

4130 Clydesdale Parkway Loveland CO 80538



## Chain of Custody

**e**ANALYTICS  
LABORATORY

Chain of Custody Form

[illegible]

## eAnalytics Laboratory

4130 Clydesdale Parkway Loveland CO 80538

The results contained within this report relate only to the items analyzed



**e**ANALYTICS  
LABORATORY

Client: LT Environmental

Lab ID: 4870

Project: Morrison #2, #9, #16

Analysis: Volatile Organics  
TPH-GRO/DROMethod: EPA8260  
EPA8260/8015

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	TPH- GRO	TPH- DRO	Date Sampled	Date Analyzed	Lab ID	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				
N01 @ 2'	<0.010	<0.010	<0.010	<0.010	<50.0	<50.0	03/25/16	03/28/16	4870	1
E01 @ 1.5'	<0.010	<0.010	<0.010	<0.010	<50.0	<50.0	03/25/16	03/28/16	4870	2
S01 @ 2'	<0.010	<0.010	<0.010	<0.010	<50.0	<50.0	03/25/16	03/28/16	4870	3
W01 @ 1.5'	<0.010	<0.010	<0.010	<0.010	<50.0	<50.0	03/25/16	03/28/16	4870	4

**eAnalytics Laboratory**

4130 Clydesdale Parkway Loveland CO 80538



**e**ANALYTICS  
L A B O R A T O R Y

Client: LT Environmental

Lab ID: 4870

Project: Morrison #2, #9, #16

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
N01 @ 2'	100	98	106	105	03/25/16	03/28/16	4870 1
E01 @ 1.5'	105	107	103	91	03/25/16	03/28/16	4870 2
S01 @ 2'	99	101	103	100	03/25/16	03/28/16	4870 3
W01 @ 1.5'	99	104	114	95	03/25/16	03/28/16	4870 4

**eAnalytics Laboratory**

4130 Clydesdale Parkway Loveland CO 80538



# eANALYTICS

## LABORATORY

Client: LT Environmental

Lab ID: 4870

Project: Morrison #2, #9, #16

Analysis: Volatile Organics  
TPH-GRO/DROMethod: EPA8260  
EPA8260/8015

Sample Name	Benzene % Rec	Toluene % Rec	Ethyl- benzene % Rec	Total Xylenes % Rec	TPH- GRO % Rec	TPH- DRO % Rec	Date Analyzed	Lab ID	
Laboratory Control Sample	90	108	91	106	98	92	03/28/16	LCS	4870 1
(70-130%)									
Method Blank	<0.010	<0.010	<0.010	<0.010	<50.0	<50.0	03/28/16	MB	4870 1
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg			

**eAnalytics Laboratory**

4130 Clydesdale Parkway Loveland CO 80538