

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 9751  
Document 2526566  
Date 04/01/2016

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OGCC Employee:

Spill       Complaint  
 Inspection       NOAV

Tracking No:

**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): TANK PULL

OGCC Operator Number: <u>10311</u>	Contact Name and Telephone: <u>David Pennington</u>
Name of Operator: <u>Synergy Resources Corporation</u>	No: <u>970-230-0435</u>
Address: <u>20203 Highway 60</u>	Fax: <u>970-737-1045</u>
City: <u>Platteville</u> State: <u>CO</u> Zip: <u>80651</u>	

API Number: <u>05-123-16082</u>	County: <u>Weld #123</u>
Facility Name: <u>Struck</u>	Facility Number: <u>61N67W36NWNE</u>
Well Name: <u>Struck</u>	Well Number: <u>1</u>
Location: (QtrQtr, Sec, Twp, Rng, Meridian): <u>NWNE 36 1N 67W 6</u> Latitude: <u>40.011804</u> Longitude: <u>-104.838930</u>	

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): N/A

**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.): Non-developed

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Altvan loam, 1-3% slope

Potential receptors (water wells within 1/4 mi, surface waters, etc.): 7 DWR Wells within 1/4 miles, PEMC Freshwater Emergent Wetland 0.1 mile northeast of facility

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

Impacted Media (check):	Extent of Impact:	How Determined:
<input type="checkbox"/> Soils	<u>N/A</u>	<u>Excavation</u>
<input type="checkbox"/> Vegetation	_____	_____
<input type="checkbox"/> Groundwater	_____	_____
<input type="checkbox"/> Surface Water	_____	_____

**REMEDATION WORKPLAN**

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

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

**Describe how source is to be removed:**

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

**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.:

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



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

Page 2  
**REMEDIATION WORKPLAN (Cont.)**

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.v

**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: 3/15/2016 Date Site Investigation Completed: 3/16/2016 Date Remediation Plan Submitted: NA  
Remediation Start Date: NA Anticipated Completion Date: 3/29/2016 Actual Completion Date: 3/29/2016

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: David Pennington

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: Struck #1 Tank Battery (API # 05-123-16082)  
Form 27 - Summary Report and Closure Request  
Synergy Resources Corporation  
Platteville, Colorado**

Dear Mr. Canfield;

LT Environmental, Inc. (LTE) has prepared this Summary Report and Closure Request on behalf of Synergy Resources Corporation (Synergy) to provide the Colorado Oil and Gas Conservation Commission (COGCC) with partially buried produced water tank removal and closure documentation for the Struck #1 Tank Battery (Site). This work has been conducted in accordance with the COGCC Regulation 905.b.4. The Site legal location is the northwest quarter of the northeast quarter of Section 36, Township 1 North, Range 67 West, 6<sup>th</sup> Principal Meridian. The Site Location Map is provided as Figure 1.

In December 2015, Synergy removed a partially buried produced water tank from the Site. The tank 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 removing. 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 photo ionization 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

LTE did not observe groundwater in the excavation. Synergy excavated approximately 40 cubic yards of impacted soil from the tank grave and transported it, under waste manifest protocol, to a licensed disposal facility. LTE collected one soil sample from each of the sidewalls of the excavation (SS01@2', SS02@4', SS03@3', and SS04@2') and one soil sample from the floor of the excavation (SS05@5.5'). The soil sample analytical results were within the COGCC Table 910-1 limits for BTEX and TPH. The analytical results are provided in Table 1 and the laboratory report is attached.

Table 1: Analytical Results Summary

Sample ID	Units	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	TPH
SS01@2'	mg/kg	<0.01	<0.01	<0.01	<0.01	<50
SS02@4'	mg/kg	<0.01	<0.01	<0.01	<0.01	490
SS03@3'	mg/kg	<0.01	<0.01	<0.01	<0.01	<50
SS04@2'	mg/kg	<0.01	<0.01	<0.01	<0.01	<50
SS05@5.5'	mg/kg	<0.01	<0.01	<0.01	0.052	449
<b>COGCC Table 910-1 Standards</b>	mg/kg	0.17	85	100	175	500

Notes:

mg/kg – milligrams per kilogram

< - Analytical results below laboratory reporting limits

TPH – Total Petroleum Hydrocarbons

**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 970-230-0435.

Sincerely,

LT Environmental, Inc.;

A handwritten signature in blue ink that reads "Jess Alexander". The signature is written in a cursive, flowing style.

Jess Alexander  
Project Environmental Scientist

A handwritten signature in blue ink that reads "Steve Kahn". The signature is written in a cursive, flowing style.

Steve Kahn, P.E.  
Vice President

cc: Mr. Jerry Brian, Director EHS, Synergy Resources Corporation

Figures

Figure 1 – Site Location Map

Figure 2 – Site Map

Attachment 1 – Laboratory Analytical Report

## FIGURES

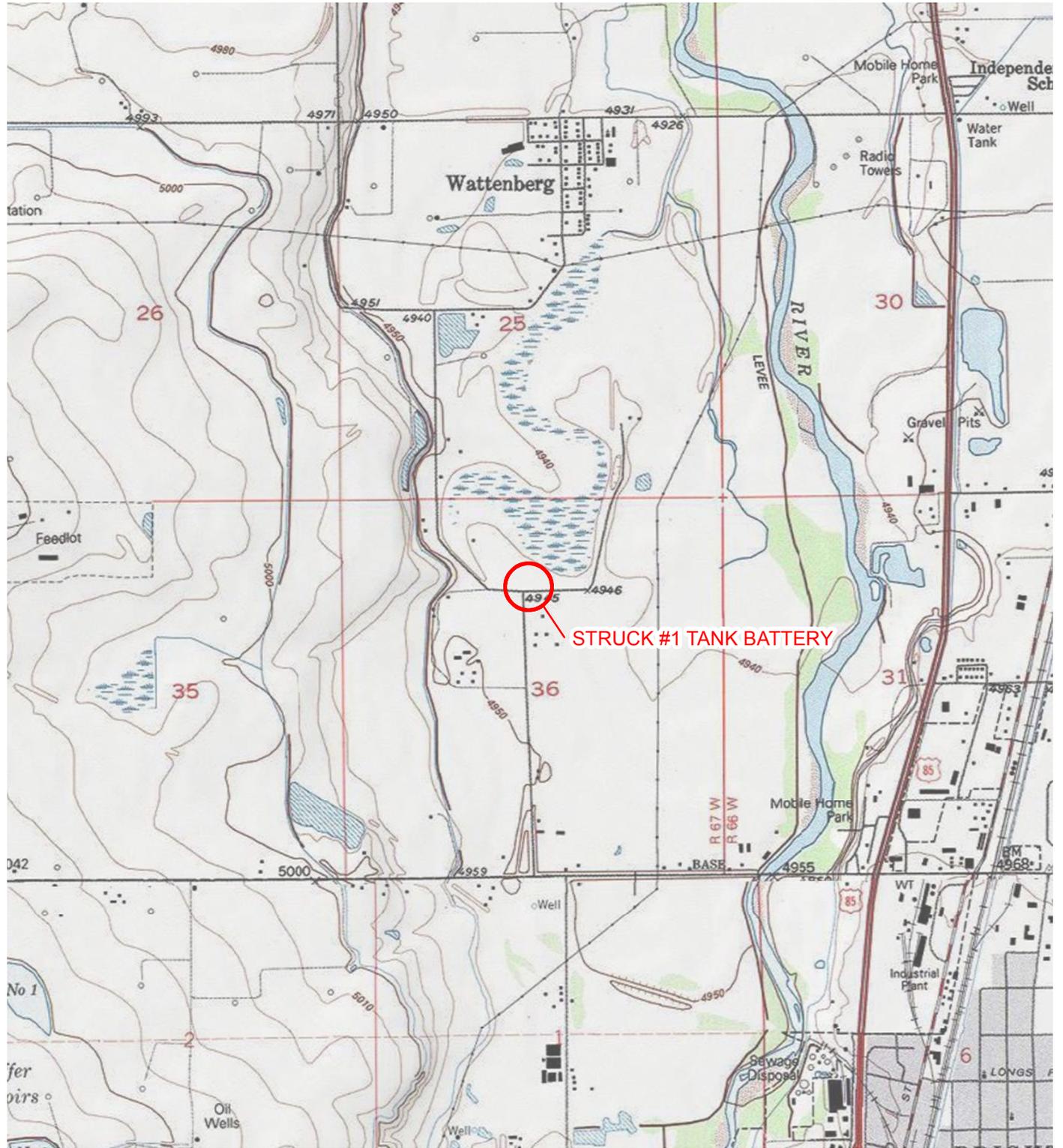
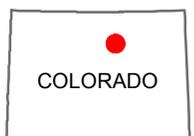
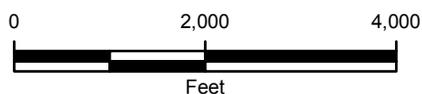


IMAGE COURTESY OF ESRI/USGS

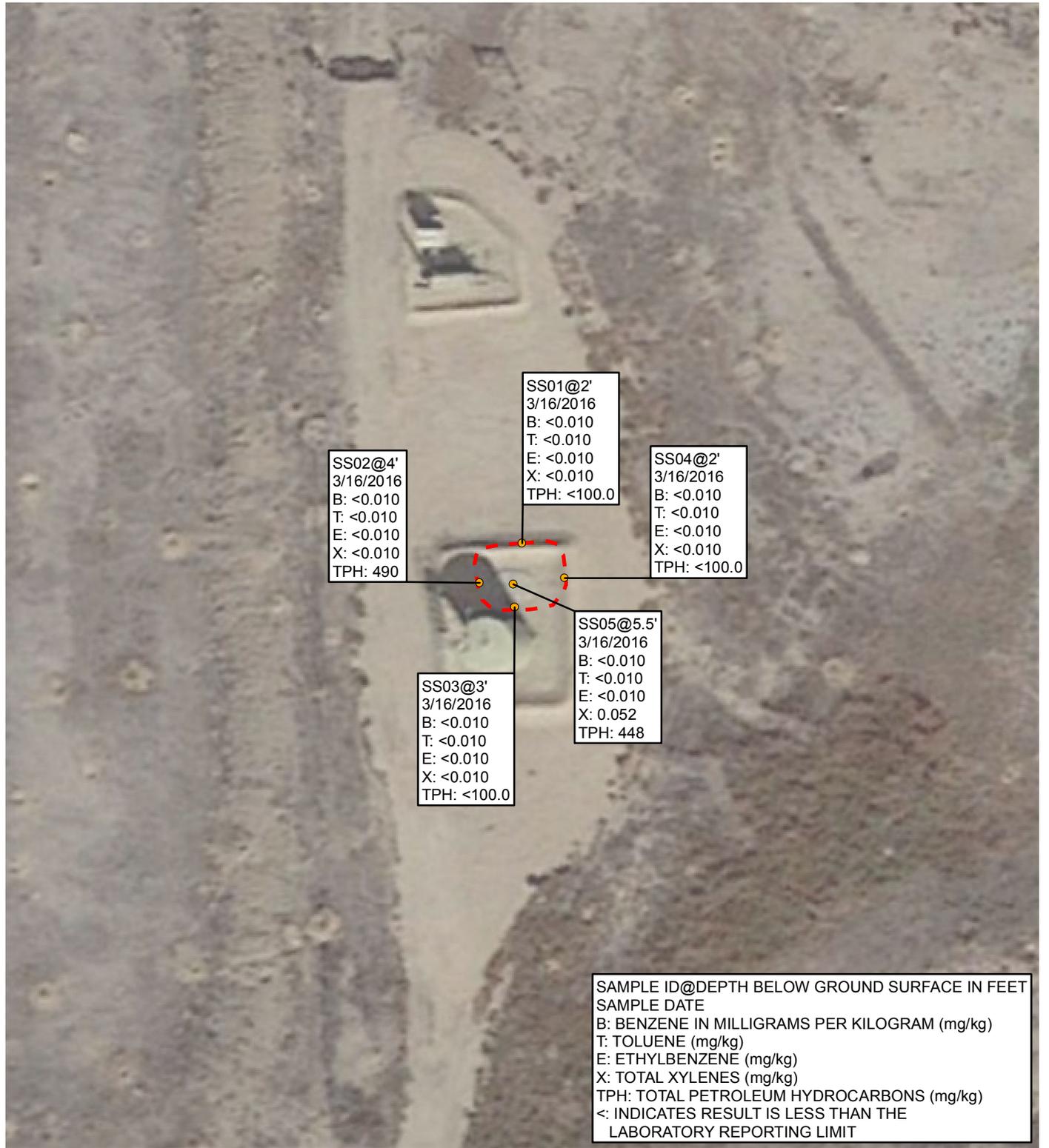
**LEGEND**

 SITE LOCATION



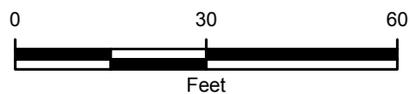
**FIGURE 1**  
**SITE LOCATION MAP**  
**STRUCK #1 TANK BATTERY**  
**NENW SEC 36-T1N-R67W**  
**WELD COUNTY, COLORADO**  
**SYNERGY RESOURCES CORPORATION**





**LEGEND**

- SOIL SAMPLE
- [---] EXCAVATION EXTENT



**FIGURE 2**  
**SITE MAP**  
 STRUCK #1 TANK BATTERY  
 NENW SEC 36-T1N-R67W  
 WELD COUNTY, COLORADO  
 SYNERGY RESOURCES CORPORATION



**ATTACHMENT 1**



# Test Report

## eANALYTICS LABORATORY

March 17, 2016

Client: LT Environmental

Project: Struck #1

Lab ID: 4826

Date Samples Received: 3/17/2016

Number of Samples: 5

Sample Condition: Samples arrived intact and in appropriate sample containers

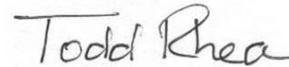
Sample Temperature: Samples arrived within the acceptable temperature range as specified in the test method

Comments:

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



Christopher Dieken  
Quality Assurance Manager



Todd Rhea  
Laboratory Manager

**eAnalytics Laboratory**

4130 Clydesdale Parkway Loveland CO 80538

Chain of Custody

# eANALYTICS

## LABORATORY

Chain of Custody Form

eANALYTICS LABORATORY			ANALYSIS INFORMATION												
1767 Rocky Mountain Avenue Loveland CO 80538   Phone: (970) 667-6975   Fax: (970) 669-0941   www.eAnalyticsLab.com			(Select analysis by checking box on corresponding sample line)												
CLIENT INFORMATION			ANALYSIS INFORMATION												
(*New Clients please fill out completely)			(Select analysis by checking box on corresponding sample line)												
Company: <u>LT ENVIRONMENTAL</u>			Number of Containers	Matrix (S) Soil (W) Water (V) Vapor (O) Other	TPH-GR0	TPH-DR0	BTEX								Other Instructions
Project: <u>STRUM #1</u>															
Project Manager: <u>J. ALEXANDER</u>															
Sampler: <u>JEREMY PIKE</u>															
Phone/Email: <u>720-202-8879 JALEXANDER@LTENV.CO.M</u>															
Address: <u>4600 WEST 60TH AVENUE ARVADA CO, 80003</u>															
Lab ID	Sample Name	Sampling Date/Time													
1	SS01 @ 2'	3/16/16 1010 AM	1	S	X	X	X								
2	SS02 @ 4'	3/16/16 1015 AM	1	S	X	X	X								
3	SS03 @ 3'	3/16/16 1020 AM	1	S	X	X	X								
4	SS04 @ 2'	3/16/16 1025 AM	1	S	X	X	X								
5	SS05 @ 5.5'	3/16/16 1030 AM	1	S	X	X	X								
				AM / PM											
				AM / PM											
				AM / PM											
				AM / PM											
				AM / PM											
				AM / PM											
				AM / PM											
				AM / PM											
				AM / PM											
Comments:															
<b>Turnaround Time (Business Days)</b> TAT begins when sample is received by eANALYTICS <input type="radio"/> Normal (5-10 Days) <input type="radio"/> 3 Day (25%) <input type="radio"/> 2 Day (50%) <input checked="" type="radio"/> 1 Day (100%) <input type="radio"/> Same Day (300%)			<b>Record of Custody</b> Relinquished by: <u>Jess Alexander</u> Date: <u>3/17/16</u> Company: <u>LTE</u> Time: <u>9:55 AM</u> Received by: <u>Russell Messer</u> Date: <u>3/17/16</u> Company: <u>Executive Courier</u> Time: <u>09:55 AM</u> Relinquished by: <u>Russell Messer</u> Date: <u>3/17/16</u> Company: <u>LTE</u> Time: <u>11:25 AM</u> Received by: <u>[Signature]</u> Date: <u>3/17/16</u> Company: <u>eANALYTICS</u> Time: <u>11:25 AM</u>												
Colorado OPS Project: Yes / No															
Samples Received Intact: Yes / No															
Received Within Temperature Range (2-6°C): Yes / No															
Sample Preservative: Ice / Acid / Other															

WO # 4826

eANALYTICS: Environmental testing made Easy

Page    of

**eANALYTICS**  
LABORATORY

Client: LT Environmental Lab ID: 4826

Project: Struck #1

Analysis: Volatile Organics Method: EPA8260  
TPH-GRO/DRO EPA8260/8015

Sample Name	Benzene mg/kg	Toluene mg/kg	Ethyl- benzene mg/kg	Total Xylenes mg/kg	TPH- GRO mg/kg	TPH- DRO mg/kg	Date Sampled	Date Analyzed	Lab ID
SS01 @ 2'	<0.010	<0.010	<0.010	<0.010	<50.0	<50.0	03/16/16	03/17/16	4826 1
SS02 @ 4'	<0.010	<0.010	<0.010	<0.010	<50.0	490	03/16/16	03/17/16	4826 2
SS03 @ 3'	<0.010	<0.010	<0.010	<0.010	<50.0	<50.0	03/16/16	03/17/16	4826 3
SS04 @ 2'	<0.010	<0.010	<0.010	<0.010	<50.0	<50.0	03/16/16	03/17/16	4826 4
SS05 @ 5.5'	<0.010	<0.010	<0.010	0.052	<50.0	448	03/16/16	03/17/16	4826 5

**eAnalytics Laboratory**

4130 Clydesdale Parkway Loveland CO 80538



Client: LT Environmental

Lab ID: 4826

Project: Struck #1

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
SS01 @ 2'	104	108	102	92	03/16/16	03/17/16	4826 1
SS02 @ 4'	100	109	95	88	03/16/16	03/17/16	4826 2
SS03 @ 3'	107	103	98	89	03/16/16	03/17/16	4826 3
SS04 @ 2'	96	89	108	84	03/16/16	03/17/16	4826 4
SS05 @ 5.5'	105	106	104	94	03/16/16	03/17/16	4826 5

**eAnalytics Laboratory**

4130 Clydesdale Parkway Loveland CO 80538

**eANALYTICS**  
LABORATORY

Client: LT Environmental Lab ID: 4826  
 Project: Struck #1  
 Analysis: Volatile Organics Method: EPA8260  
 TPH-GRO/DRO 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 (70-130%)	99	99	102	93	92	95	03/17/16	LCS 4826 1
Method Blank	<0.010 mg/kg	<0.010 mg/kg	<0.010 mg/kg	<0.010 mg/kg	<50.0 mg/kg	<50.0 mg/kg	03/17/16	MB 4826 1