



June 28, 2018

REM 8179

REM 8209

Document 2496416

Colorado Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801
Denver, Colorado 80203

Attention: John E. Axelson, P.G.

Subject: Former CM Production – Oliver-Warren & SJ Warren Oil Impacted Soil
Characterization Documentation Report

SMA Project No.: 5D27325

Dear Mr. Axelson:

At your direction, Souder, Miller and Associates (SMA) conducted characterization sampling of soils contained within land treatment areas at the above referenced locations. This letter report documents methods and findings of our sampling efforts.

On June 12, 2018 SMA personnel collected 15 composite soil samples from three apparent oil impacted soil treatment areas at the Oliver-Warren and SJ Warren locations in Washington County, CO. Six composite soil samples were collected at each of the two land treatment areas at the Oliver-Warren Location, and three composite soil samples were collected at the land treatment area at the SJ Warren Location. Each composite soil sample was collected from an area representing approximately 100 cubic yards of soil and composed of four to five individual component samples. Each component soil sample was collected from a depth of six to 18 inches below the soil surface. Component samples were mixed and composited in the field, and delivered to an analytical laboratory for analysis of:

- Total petroleum hydrocarbons (TPH) gasoline range organics (GRO);
- TPH diesel range organics (DRO);
- Benzene, toluene, ethylbenzene, and xylenes (BTEX);
- Sodium adsorption ratio (SAR);
- pH; and
- conductivity.

Figure 1 displays the individual sample locations and the area represented by the composite samples for all three oily waste piles.

A summary of soil sample analytical results is presented on attached Table 1, with the complete laboratory report also attached. Soil sample results indicate that in all samples TPH-DRO levels are in excess of COGCC Table 910-1 allowable levels. Soil sample analytical results also indicate that samples North-9, North-1, North-12, and South-1 contain SAR values in excess of COGCC Table 910-1 allowable levels.

If you have any questions regarding this documentation report, please feel free to contact Greg Knell at 303-239-9011, or by e-mail at greg.knell@soudermiller.com.

Sincerely,

SOUDER, MILLER & ASSOCIATES



Graham Cottle, EI
Staff EIT



Gregory W. Knell, C.P.G.
Project Scientist II

ATTACHMENTS:

Table 1 Sample Analytical Results
Figure 1 Sample Locations
Laboratory Analytical Report

cc: Souder, Miller & Associates File

Table 1
Sample Analytical Results

(Samples Collected From Former CM Production – Oliver-Warren & SJ Warren Oil Soil Treatment Areas - see Figure 1)

Samples	Analytical Parameters									
	TPH (GRO) (mg/kg)	TPH (DRO) (mg/kg)	TPH (GRO+DRO) (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	xylene (total) (mg/kg)	SAR	pH	EC (mmhos/cm)
North -1	ND (0.3)	6,200	6,200	ND (.005)	ND (.005)	ND (.005)	ND (.005)	9.0	8.7	1.11
North -2	ND (0.05)	4,300	4,300	ND (.001)	ND (.001)	ND (.001)	ND (.002)	11	8.5	1.14
North -3	ND (0.3)	3,700	3,700	ND (.005)	ND (.005)	ND (.005)	ND (.010)	11	8.7	1.02
North -4	ND (0.05)	5,100	5,100	ND (.001)	ND (.001)	ND (.001)	ND (.002)	7.2	8.9	0.923
North -5	ND (0.3)	2,300	2,300	ND (.005)	ND (.005)	ND (.005)	ND (.010)	9.1	8.9	0.897
North -6	ND (0.05)	1,100	1,100	ND (.001)	ND (.001)	ND (.001)	ND (.002)	8.9	9.0	0.976
North -7	ND (0.5)	2,900	2,900	ND (.010)	ND (.010)	ND (.010)	ND (.020)	7.8	8.9	0.898
North -8	ND (0.5)	2,600	2,600	ND (.010)	ND (.010)	ND (.010)	ND (.020)	11	8.8	1.04
North -9	ND (0.5)	2,900	2,900	ND (.010)	ND (.010)	ND (.010)	ND (.020)	15	9	1.03
North -10	ND (0.05)	2,200	2,200	ND (.001)	ND (.001)	ND (.001)	ND (.002)	4.8	8.7	0.689
North -11	ND (0.05)	800	800	ND (.001)	ND (.001)	ND (.001)	ND (.002)	14	8.8	0.884
North -12	ND (0.3)	1,200	1,200	ND (.005)	ND (.005)	ND (.005)	ND (.010)	13	9	0.875
South -1	ND (0.5)	4,900	4,900	ND (.010)	ND (.010)	ND (.010)	ND (.020)	17	8.6	1.15
South -2	ND (0.05)	5,100	5,100	ND (.001)	ND (.001)	ND (.001)	ND (.002)	3.2	8.9	0.822
South -3	ND (0.5)	4,800	4,800	ND (.010)	ND (.010)	ND (.010)	ND (.020)	6.9	8.8	0.608
COGCC Table 910-1 Allowable Soil Levels	-	-	500	0.17	85	100	175	<12	6-9	<4

Notes:

- 1) ND = not detectable at the laboratory method detection limit shown in parentheses.
- 2) Results highlighted in yellow exceed Table 910-1 allowable levels.

June 20, 2018

Report to:
Greg Knell
Souder, Miller, & Associates
8000 W. 14th. Ave
Lakewood, CO 80214

Bill to:
Christie Rachak
Souder Miller & Associates
8000 W. 14th Ave. Suite 200
Lakewood, CO 80214

cc: Graham Cottle

Project ID:
ACZ Project ID: L44953

Greg Knell:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 14, 2018. This project has been assigned to ACZ's project number, L44953. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L44953. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after July 20, 2018. If the samples are determined to be hazardous, additional charges apply for disposal (typically \$11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.



Sue Webber has reviewed and approved this report.



Souder, Miller, Associates

June 20, 2018

Project ID:

ACZ Project ID: L44953

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 15 soil samples from Souder, Miller, & Associates on June 14, 2018. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L44953. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic, organic parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The following required further explanation not provided by the Extended Qualifier Report:

1. TPH (N1) - One of the MS concentrates was lost during the concentration step. Based on the sample result being approximately 6x greater than our spike level, we would have not obtained any real usable data from the second MS sample. Therefore, the second MS sample was not re-extracted. Batch only includes one MS sample, and LCSS, LCSSD and PBS for QC.

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-1

ACZ Sample ID: **L44953-01**

Date Sampled: 06/12/18 09:35

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	10	2.04			meq/L	0.0499	0.25	06/20/18 11:24	aeh
Magnesium, soluble (Sat. Paste)	M6010B ICP	10	1.32		*	meq/L	0.165	0.823	06/20/18 11:24	aeh
Sodium Adsorption Ratio	Calculation		9.0						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	10	11.6			meq/L	0.087	0.435	06/20/18 11:24	aeh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	1.11		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	22.1		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	8.7		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 15:40	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 15:35	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 10:52	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-2

ACZ Sample ID: **L44953-02**

Date Sampled: 06/12/18 09:45

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	5	1.11			meq/L	0.025	0.125	06/20/18 11:28	aeH
Magnesium, soluble (Sat. Paste)	M6010B ICP	5	0.742		*	meq/L	0.082	0.411	06/20/18 11:28	aeH
Sodium Adsorption Ratio	Calculation		11						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	5	11.0			meq/L	0.0435	0.218	06/20/18 11:28	aeH

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	1.14		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	22.0		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	8.5		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 15:43	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 15:40	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 10:58	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-3

ACZ Sample ID: **L44953-03**

Date Sampled: 06/12/18 09:55

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	5	0.907			meq/L	0.025	0.125	06/20/18 11:31	aeh
Magnesium, soluble (Sat. Paste)	M6010B ICP	5	0.666		*	meq/L	0.082	0.411	06/20/18 11:31	aeh
Sodium Adsorption Ratio	Calculation		11						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	5	9.58			meq/L	0.0435	0.218	06/20/18 11:31	aeh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	1.02		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	22.1		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	8.7		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 15:47	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 15:45	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 11:04	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-4

ACZ Sample ID: **L44953-04**

Date Sampled: 06/12/18 10:05

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	10	1.92			meq/L	0.0499	0.25	06/20/18 11:39	aeH
Magnesium, soluble (Sat. Paste)	M6010B ICP	10	1.02		*	meq/L	0.165	0.823	06/20/18 11:39	aeH
Sodium Adsorption Ratio	Calculation		7.2						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	10	8.76			meq/L	0.087	0.435	06/20/18 11:39	aeH

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	0.923		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	21.5		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	8.9		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 15:50	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 15:55	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 11:10	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-5

ACZ Sample ID: **L44953-05**

Date Sampled: 06/12/18 10:15

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	5	1.01			meq/L	0.025	0.125	06/20/18 11:43	aeH
Magnesium, soluble (Sat. Paste)	M6010B ICP	5	0.593		*	meq/L	0.082	0.411	06/20/18 11:43	aeH
Sodium Adsorption Ratio	Calculation		9.1						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	5	8.11			meq/L	0.0435	0.218	06/20/18 11:43	aeH

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	0.897		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	21.6		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	8.9		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 15:54	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 16:00	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 11:16	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-6

ACZ Sample ID: **L44953-06**

Date Sampled: 06/12/18 10:25

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	5	1.14			meq/L	0.025	0.125	06/20/18 11:47	aeh
Magnesium, soluble (Sat. Paste)	M6010B ICP	5	0.696		*	meq/L	0.082	0.411	06/20/18 11:47	aeh
Sodium Adsorption Ratio	Calculation		8.9						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	5	8.52			meq/L	0.0435	0.218	06/20/18 11:47	aeh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	0.976		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	21.6		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	9.0		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 15:57	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 16:05	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 11:23	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-7

ACZ Sample ID: **L44953-07**

Date Sampled: 06/12/18 10:35

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	5	1.57			meq/L	0.025	0.125	06/20/18 11:51	aeh
Magnesium, soluble (Sat. Paste)	M6010B ICP	5	0.630		*	meq/L	0.082	0.411	06/20/18 11:51	aeh
Sodium Adsorption Ratio	Calculation		7.8						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	5	8.13			meq/L	0.0435	0.218	06/20/18 11:51	aeh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	0.898		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	21.7		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	8.9		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 16:01	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 16:10	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 11:29	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-8

ACZ Sample ID: **L44953-08**

Date Sampled: 06/12/18 10:50

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	5	1.03			meq/L	0.025	0.125	06/20/18 11:55	aeH
Magnesium, soluble (Sat. Paste)	M6010B ICP	5	0.472		*	meq/L	0.082	0.411	06/20/18 11:55	aeH
Sodium Adsorption Ratio	Calculation		11						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	5	9.46			meq/L	0.0435	0.218	06/20/18 11:55	aeH

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	1.04		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	21.8		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	8.8		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 16:04	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 16:15	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 11:35	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-9

ACZ Sample ID: **L44953-09**

Date Sampled: 06/12/18 10:53

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	2	0.635			meq/L	0.01	0.0499	06/20/18 11:59	aeH
Magnesium, soluble (Sat. Paste)	M6010B ICP	2	0.176		*	meq/L	0.033	0.165	06/20/18 11:59	aeH
Sodium Adsorption Ratio	Calculation		15						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	2	9.30			meq/L	0.0174	0.087	06/20/18 11:59	aeH

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	1.03		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	21.9		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	9.0		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 16:08	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 16:20	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 11:41	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-10

ACZ Sample ID: **L44953-10**

Date Sampled: 06/12/18 10:57

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	10	2.70			meq/L	0.0499	0.25	06/20/18 12:11	aeh
Magnesium, soluble (Sat. Paste)	M6010B ICP	10	1.01		*	meq/L	0.165	0.823	06/20/18 12:11	aeh
Sodium Adsorption Ratio	Calculation		4.8						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	10	6.52			meq/L	0.087	0.435	06/20/18 12:11	aeh

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	0.689		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	22.3		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	8.7		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 16:12	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 16:25	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 11:47	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-11

ACZ Sample ID: **L44953-11**

Date Sampled: 06/12/18 11:00

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	2	0.460			meq/L	0.01	0.0499	06/20/18 12:15	aeH
Magnesium, soluble (Sat. Paste)	M6010B ICP	2	0.158	B	*	meq/L	0.033	0.165	06/20/18 12:15	aeH
Sodium Adsorption Ratio	Calculation		14						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	2	7.69			meq/L	0.0174	0.087	06/20/18 12:15	aeH

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	0.884		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	22.1		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	8.8		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 16:15	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 16:30	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 11:54	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-12

ACZ Sample ID: **L44953-12**

Date Sampled: 06/12/18 11:05

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	2	0.506			meq/L	0.01	0.0499	06/20/18 12:19	aeH
Magnesium, soluble (Sat. Paste)	M6010B ICP	2	0.191		*	meq/L	0.033	0.165	06/20/18 12:19	aeH
Sodium Adsorption Ratio	Calculation		13						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	2	7.78			meq/L	0.0174	0.087	06/20/18 12:19	aeH

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	0.875		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	22.1		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	9.0		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 16:19	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 16:35	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 12:00	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: SOUTH-1

ACZ Sample ID: **L44953-13**

Date Sampled: 06/12/18 13:20

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	2	0.657			meq/L	0.01	0.0499	06/20/18 12:22	aeH
Magnesium, soluble (Sat. Paste)	M6010B ICP	2	0.174		*	meq/L	0.033	0.165	06/20/18 12:22	aeH
Sodium Adsorption Ratio	Calculation		17						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	2	10.8			meq/L	0.0174	0.087	06/20/18 12:22	aeH

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	1.15		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	22.3		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	8.6		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 16:22	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 16:40	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 12:06	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: SOUTH-2

ACZ Sample ID: **L44953-14**

Date Sampled: 06/12/18 13:20

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	50	16.5			meq/L	0.25	1.25	06/20/18 12:26	aeH
Magnesium, soluble (Sat. Paste)	M6010B ICP	50	6.15		*	meq/L	0.823	4.11	06/20/18 12:26	aeH
Sodium Adsorption Ratio	Calculation		3.2						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	50	10.8			meq/L	0.435	2.18	06/20/18 12:26	aeH

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	0.822		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	22.4		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	8.9		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 16:26	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 16:45	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 12:12	rtb

Souder, Miller, & Associates

Project ID:

Sample ID: SOUTH-3

ACZ Sample ID: **L44953-15**

Date Sampled: 06/12/18 13:15

Date Received: 06/14/18

Sample Matrix: Soil

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Calcium, soluble (Sat. Paste)	M6010B ICP	5	0.957			meq/L	0.025	0.125	06/20/18 12:30	aeH
Magnesium, soluble (Sat. Paste)	M6010B ICP	5	0.334	B	*	meq/L	0.082	0.411	06/20/18 12:30	aeH
Sodium Adsorption Ratio	Calculation		6.9						06/20/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010B ICP	5	5.57			meq/L	0.0435	0.218	06/20/18 12:30	aeH

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	0.608		*	mmhos/cm	0.001	0.01	06/19/18 0:00	gkh
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
Temperature		1	22.1		*	C	0.1	0.1	06/19/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			06/19/18 0:00	gkh
pH		1	8.8		*	units	0.1	0.1	06/19/18 0:00	gkh

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972								06/14/18 16:29	gkh
Saturated Paste Extraction	USDA No. 60 (2)								06/18/18 16:50	gkh
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2								06/18/18 12:19	rtb

Report Header Explanations

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>Sample</i>	Value of the Sample of interest

QC Sample Types

<i>AS</i>	Analytical Spike (Post Digestion)	<i>LCSWD</i>	Laboratory Control Sample - Water Duplicate
<i>ASD</i>	Analytical Spike (Post Digestion) Duplicate	<i>LFB</i>	Laboratory Fortified Blank
<i>CCB</i>	Continuing Calibration Blank	<i>LFM</i>	Laboratory Fortified Matrix
<i>CCV</i>	Continuing Calibration Verification standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>ICB</i>	Initial Calibration Blank	<i>MS</i>	Matrix Spike
<i>ICV</i>	Initial Calibration Verification standard	<i>MSD</i>	Matrix Spike Duplicate
<i>ICSAB</i>	Inter-element Correction Standard - A plus B solutions	<i>PBS</i>	Prep Blank - Soil
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>PBW</i>	Prep Blank - Water
<i>LCSSD</i>	Laboratory Control Sample - Soil Duplicate	<i>PQV</i>	Practical Quantitation Verification standard
<i>LCSW</i>	Laboratory Control Sample - Water	<i>SDL</i>	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
- (3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
- (4) EPA SW-846. Test Methods for Evaluating Solid Waste.
- (5) Standard Methods for the Examination of Water and Wastewater.

Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
- (3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
- (4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
- (5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:

<http://www.acz.com/public/extquallist.pdf>

Souder, Miller, & Associates

ACZ Project ID: **L44953**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L44953-01	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-02	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-03	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-04	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-05	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-06	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-07	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-08	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-09	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-10	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-11	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP M6010B ICP M6010B ICP	D1 DD RA	Sample required dilution due to matrix. Sample required dilution due to matrix color or odor. Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-12	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-13	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-14	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
L44953-15	WG449927	Magnesium, soluble (Sat. Paste)	M6010B ICP M6010B ICP M6010B ICP	D1 DD RA	Sample required dilution due to matrix. Sample required dilution due to matrix color or odor. Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-1

ACZ Sample ID: **L44953-01**

Date Sampled: 06/12/18 9:35

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: **WG449613**

Analyst: itm

Extract Date: 06/18/18 17:33

Analysis Date: 06/18/18 17:33

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	5	*	ug/Kg	5	5
Ethylbenzene	100-41-4		U	5	*	ug/Kg	5	5
m p Xylene	1330-20-7		U	5	*	ug/Kg	10	10
o Xylene	95-47-6		U	5	*	ug/Kg	5	5
Toluene	108-88-3		U	5	*	ug/Kg	5	5
TVH C6 to C10	TVH		U	5	*	mg/Kg	0.3	0.3
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	79.3		5	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	77.2		5	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-1

ACZ Sample ID: **L44953-01**

Date Sampled: 06/12/18 9:35

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 17:28

Analysis Date: 06/18/18 16:31

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		6200		1.98	*	mg/Kg	198	992
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	114.6		1.98	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-2

ACZ Sample ID: **L44953-02**

Date Sampled: 06/12/18 9:45

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG449613

Analyst: itm

Extract Date: 06/15/18 20:05

Analysis Date: 06/15/18 20:05

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	1	*	ug/Kg	1	1
Ethylbenzene	100-41-4		U	1	*	ug/Kg	1	1
m p Xylene	1330-20-7		U	1	*	ug/Kg	2	2
o Xylene	95-47-6		U	1	*	ug/Kg	1	1
Toluene	108-88-3		U	1	*	ug/Kg	1	1
TVH C6 to C10	TVH		U	1	*	mg/Kg	0.05	0.05

Surrogate Recoveries	CAS	% Recovery	Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	87.6	1	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	84.1	1	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-2

ACZ Sample ID: **L44953-02**

Date Sampled: 06/12/18 9:45

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 17:47

Analysis Date: 06/18/18 17:18

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		4300		1.99	*	mg/Kg	199	994
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	108.8		1.99	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-3

ACZ Sample ID: **L44953-03**

Date Sampled: 06/12/18 9:55

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG449613

Analyst: itm

Extract Date: 06/18/18 19:01

Analysis Date: 06/18/18 19:01

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	5	*	ug/Kg	5	5
Ethylbenzene	100-41-4		U	5	*	ug/Kg	5	5
m p Xylene	1330-20-7		U	5	*	ug/Kg	10	10
o Xylene	95-47-6		U	5	*	ug/Kg	5	5
Toluene	108-88-3		U	5	*	ug/Kg	5	5
TVH C6 to C10	TVH		U	5	*	mg/Kg	0.3	0.3
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	74		5	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	71.5		5	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-3

ACZ Sample ID: **L44953-03**

Date Sampled: 06/12/18 9:55

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 17:54

Analysis Date: 06/18/18 17:41

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		3700		1.99	*	mg/Kg	199	994
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	111.8		1.99	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-4

ACZ Sample ID: **L44953-04**

Date Sampled: 06/12/18 10:05

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG449613

Analyst: itm

Extract Date: 06/15/18 21:34

Analysis Date: 06/15/18 21:34

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	1	*	ug/Kg	1	1
Ethylbenzene	100-41-4		U	1	*	ug/Kg	1	1
m p Xylene	1330-20-7		U	1	*	ug/Kg	2	2
o Xylene	95-47-6		U	1	*	ug/Kg	1	1
Toluene	108-88-3		U	1	*	ug/Kg	1	1
TVH C6 to C10	TVH		U	1	*	mg/Kg	0.05	0.05
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	72.3		1	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	70.1		1	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-4

ACZ Sample ID: **L44953-04**

Date Sampled: 06/12/18 10:05

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 18:00

Analysis Date: 06/18/18 18:05

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		5100		2	*	mg/Kg	200	1000
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	100.7		2	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-5

ACZ Sample ID: **L44953-05**

Date Sampled: 06/12/18 10:15

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: **WG449613**

Analyst: itm

Extract Date: 06/18/18 19:31

Analysis Date: 06/18/18 19:31

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	5	*	ug/Kg	5	5
Ethylbenzene	100-41-4		U	5	*	ug/Kg	5	5
m p Xylene	1330-20-7		U	5	*	ug/Kg	10	10
o Xylene	95-47-6		U	5	*	ug/Kg	5	5
Toluene	108-88-3		U	5	*	ug/Kg	5	5
TVH C6 to C10	TVH		U	5	*	mg/Kg	0.3	0.3
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	83.8		5	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	81		5	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-5

ACZ Sample ID: **L44953-05**

Date Sampled: 06/12/18 10:15

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 18:06

Analysis Date: 06/18/18 18:28

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		2300		2.02	*	mg/Kg	202	1010
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	99.09		2.02	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-6

ACZ Sample ID: **L44953-06**

Date Sampled: 06/12/18 10:25

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG449613

Analyst: itm

Extract Date: 06/15/18 22:34

Analysis Date: 06/15/18 22:34

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	1	*	ug/Kg	1	1
Ethylbenzene	100-41-4		U	1	*	ug/Kg	1	1
m p Xylene	1330-20-7		U	1	*	ug/Kg	2	2
o Xylene	95-47-6		U	1	*	ug/Kg	1	1
Toluene	108-88-3		U	1	*	ug/Kg	1	1
TVH C6 to C10	TVH		U	1	*	mg/Kg	0.05	0.05
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	73		1	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	70.2		1	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-6

ACZ Sample ID: **L44953-06**

Date Sampled: 06/12/18 10:25

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 18:13

Analysis Date: 06/18/18 18:52

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		1100		2.02	*	mg/Kg	202	1010
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	100.1		2.02	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-7

ACZ Sample ID: **L44953-07**

Date Sampled: 06/12/18 10:35

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG449613

Analyst: itm

Extract Date: 06/19/18 18:54

Analysis Date: 06/19/18 18:54

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	10	*	ug/Kg	10	10
Ethylbenzene	100-41-4		U	10	*	ug/Kg	10	10
m p Xylene	1330-20-7		U	10	*	ug/Kg	20	20
o Xylene	95-47-6		U	10	*	ug/Kg	10	10
Toluene	108-88-3		U	10	*	ug/Kg	10	10
TVH C6 to C10	TVH		U	10	*	mg/Kg	0.5	0.5
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	81.9		10	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	79.8		10	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-7

ACZ Sample ID: **L44953-07**

Date Sampled: 06/12/18 10:35

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 18:19

Analysis Date: 06/18/18 19:38

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		2900		2	*	mg/Kg	200	1000
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	107.5		2	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-8

ACZ Sample ID: **L44953-08**

Date Sampled: 06/12/18 10:50

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG449613

Analyst: itm

Extract Date: 06/19/18 19:24

Analysis Date: 06/19/18 19:24

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	10	*	ug/Kg	10	10
Ethylbenzene	100-41-4		U	10	*	ug/Kg	10	10
m p Xylene	1330-20-7		U	10	*	ug/Kg	20	20
o Xylene	95-47-6		U	10	*	ug/Kg	10	10
Toluene	108-88-3		U	10	*	ug/Kg	10	10
TVH C6 to C10	TVH		U	10	*	mg/Kg	0.5	0.5

Surrogate Recoveries	CAS	% Recovery	Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	79.8	10	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	78.3	10	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-8

ACZ Sample ID: **L44953-08**

Date Sampled: 06/12/18 10:50

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 18:25

Analysis Date: 06/18/18 20:02

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		2600		2	*	mg/Kg	200	998
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	106.1		2	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-9

ACZ Sample ID: **L44953-09**

Date Sampled: 06/12/18 10:53

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG449613

Analyst: itm

Extract Date: 06/19/18 19:54

Analysis Date: 06/19/18 19:54

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	10	*	ug/Kg	10	10
Ethylbenzene	100-41-4		U	10	*	ug/Kg	10	10
m p Xylene	1330-20-7		U	10	*	ug/Kg	20	20
o Xylene	95-47-6		U	10	*	ug/Kg	10	10
Toluene	108-88-3		U	10	*	ug/Kg	10	10
TVH C6 to C10	TVH		U	10	*	mg/Kg	0.5	0.5
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	82.1		10	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	78.9		10	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-9

ACZ Sample ID: **L44953-09**

Date Sampled: 06/12/18 10:53

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 18:32

Analysis Date: 06/18/18 20:26

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		2900		1.99	*	mg/Kg	199	996
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	108.6		1.99	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-10

ACZ Sample ID: **L44953-10**

Date Sampled: 06/12/18 10:57

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG449613

Analyst: itm

Extract Date: 06/16/18 0:33

Analysis Date: 06/16/18 0:33

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	1	*	ug/Kg	1	1
Ethylbenzene	100-41-4		U	1	*	ug/Kg	1	1
m p Xylene	1330-20-7		U	1	*	ug/Kg	2	2
o Xylene	95-47-6		U	1	*	ug/Kg	1	1
Toluene	108-88-3		U	1	*	ug/Kg	1	1
TVH C6 to C10	TVH		U	1	*	mg/Kg	0.05	0.05

Surrogate Recoveries	CAS	% Recovery	Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	86.4	1	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	84.2	1	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-10

ACZ Sample ID: **L44953-10**

Date Sampled: 06/12/18 10:57

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 18:38

Analysis Date: 06/18/18 20:49

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		2200		2.01	*	mg/Kg	201	1010
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	104.1		2.01	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-11

ACZ Sample ID: **L44953-11**

Date Sampled: 06/12/18 11:00

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG449613

Analyst: itm

Extract Date: 06/16/18 1:03

Analysis Date: 06/16/18 1:03

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	1	*	ug/Kg	1	1
Ethylbenzene	100-41-4		U	1	*	ug/Kg	1	1
m p Xylene	1330-20-7		U	1	*	ug/Kg	2	2
o Xylene	95-47-6		U	1	*	ug/Kg	1	1
Toluene	108-88-3		U	1	*	ug/Kg	1	1
TVH C6 to C10	TVH		U	1	*	mg/Kg	0.05	0.05

Surrogate Recoveries	CAS	% Recovery	Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	73.6	1	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	71.3	1	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-11

ACZ Sample ID: **L44953-11**

Date Sampled: 06/12/18 11:00

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 18:44

Analysis Date: 06/18/18 21:12

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		800	J	1.99	*	mg/Kg	199	996
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	97.7		1.99	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-12

ACZ Sample ID: **L44953-12**

Date Sampled: 06/12/18 11:05

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG449613

Analyst: itm

Extract Date: 06/18/18 21:30

Analysis Date: 06/18/18 21:30

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	5	*	ug/Kg	5	5
Ethylbenzene	100-41-4		U	5	*	ug/Kg	5	5
m p Xylene	1330-20-7		U	5	*	ug/Kg	10	10
o Xylene	95-47-6		U	5	*	ug/Kg	5	5
Toluene	108-88-3		U	5	*	ug/Kg	5	5
TVH C6 to C10	TVH		U	5	*	mg/Kg	0.3	0.3
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	75.6		5	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	73.1		5	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: NORTH-12

ACZ Sample ID: **L44953-12**

Date Sampled: 06/12/18 11:05

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**

Extract Method: **M3540**

Workgroup: **WG449722**

Analyst: jmm

Extract Date: 06/14/18 18:51

Analysis Date: 06/18/18 21:36

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		1200		2	*	mg/Kg	200	1000
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	99.09		2	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: SOUTH-1

ACZ Sample ID: **L44953-13**

Date Sampled: 06/12/18 13:20

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG449613

Analyst: itm

Extract Date: 06/19/18 20:23

Analysis Date: 06/19/18 20:23

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	10	*	ug/Kg	10	10
Ethylbenzene	100-41-4		U	10	*	ug/Kg	10	10
m p Xylene	1330-20-7		U	10	*	ug/Kg	20	20
o Xylene	95-47-6		U	10	*	ug/Kg	10	10
Toluene	108-88-3		U	10	*	ug/Kg	10	10
TVH C6 to C10	TVH		U	10	*	mg/Kg	0.5	0.5
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	71.3		10	*	%	70	130
Bromofluorobenzene (TVH)	460-00 4	67.6		10	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: SOUTH-1

ACZ Sample ID: **L44953-13**

Date Sampled: 06/12/18 13:20

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 18:57

Analysis Date: 06/18/18 21:59

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		4900		1.99	*	mg/Kg	199	994
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	110		1.99	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: SOUTH-2

ACZ Sample ID: **L44953-14**

Date Sampled: 06/12/18 13:20

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG449613

Analyst: itm

Extract Date: 06/18/18 23:58

Analysis Date: 06/18/18 23:58

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	1	*	ug/Kg	1	1
Ethylbenzene	100-41-4		U	1	*	ug/Kg	1	1
m p Xylene	1330-20-7		U	1	*	ug/Kg	2	2
o Xylene	95-47-6		U	1	*	ug/Kg	1	1
Toluene	108-88-3		U	1	*	ug/Kg	1	1
TVH C6 to C10	TVH		U	1	*	mg/Kg	0.05	0.05
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	76.6		1	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	73.1		1	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: SOUTH-2

ACZ Sample ID: **L44953-14**

Date Sampled: 06/12/18 13:20

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 19:03

Analysis Date: 06/18/18 22:23

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		5100		2	*	mg/Kg	200	998
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	109.6		2	*	%	60	115

Souder, Miller, & Associates

Project ID:

Sample ID: SOUTH-3

ACZ Sample ID: **L44953-15**

Date Sampled: 06/12/18 13:15

Date Received: 06/14/18

Sample Matrix: Soil

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**

Extract Method: **5035A**

Workgroup: WG449613

Analyst: itm

Extract Date: 06/19/18 20:53

Analysis Date: 06/19/18 20:53

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2		U	10	*	ug/Kg	10	10
Ethylbenzene	100-41-4		U	10	*	ug/Kg	10	10
m p Xylene	1330-20-7		U	10	*	ug/Kg	20	20
o Xylene	95-47-6		U	10	*	ug/Kg	10	10
Toluene	108-88-3		U	10	*	ug/Kg	10	10
TVH C6 to C10	TVH		U	10	*	mg/Kg	0.5	0.5
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
Bromofluorobenzene	460-00-4	77.1		10	*	%	70	130
Bromofluorobenzene (TVH)	460-00-4	75.4		10	*	%	70	130

Souder, Miller, & Associates

Project ID:

Sample ID: SOUTH-3

ACZ Sample ID: **L44953-15**

Date Sampled: 06/12/18 13:15

Date Received: 06/14/18

Sample Matrix: Soil

Diesel Range Organics (C10-C28)Analysis Method: **M8015D GC/FID**Extract Method: **M3540****Workgroup:** WG449722

Analyst: jmm

Extract Date: 06/14/18 19:10

Analysis Date: 06/18/18 22:46

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		4800		1.98	*	mg/Kg	198	990
Surrogate Recoveries	CAS	% Recovery		Dilution	XQ	Units	LCL	UCL
OTP	84-15-1	111.6		1.98	*	%	60	115

Report Header Explanations

<i>Batch</i>	A distinct set of samples analyzed at a specific time
<i>Found</i>	Value of the QC Type of interest
<i>Limit</i>	Upper limit for RPD, in %.
<i>Lower</i>	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
<i>LCL</i>	Lower Control Limit
<i>MDL</i>	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #4) Allows for instrument and annual fluctuations.
<i>PCN/SCN</i>	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
<i>PQL</i>	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
<i>QC</i>	True Value of the Control Sample or the amount added to the Spike
<i>Rec</i>	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
<i>RPD</i>	Relative Percent Difference, calculation used for Duplicate QC Types
<i>Upper</i>	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
<i>UCL</i>	Upper Control Limit
<i>Sample</i>	Value of the Sample of interest

QC Sample Types

<i>SURR</i>	Surrogate	<i>LFM</i>	Laboratory Fortified Matrix
<i>INTS</i>	Internal Standard	<i>LFMD</i>	Laboratory Fortified Matrix Duplicate
<i>DUP</i>	Sample Duplicate	<i>LRB</i>	Laboratory Reagent Blank
<i>LCSS</i>	Laboratory Control Sample - Soil	<i>MS/MSD</i>	Matrix Spike/Matrix Spike Duplicate
<i>LCSW</i>	Laboratory Control Sample - Water	<i>PBS</i>	Prep Blank - Soil
<i>LFB</i>	Laboratory Fortified Blank	<i>PBW</i>	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
O	Analyte concentration is estimated due to result exceeding calibration range.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
J	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

- (1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
- (2) EPA 600/4-90/020. Methods for the Determination of Organic Compounds in Drinking Water (I), July 1990.
- (3) EPA 600/R-92/129. Methods for the Determination of Organic Compounds in Drinking Water (II), July 1990.
- (4) EPA SW-846. Test Methods for Evaluating Solid Waste.
- (5) Standard Methods for the Examination of Water and Wastewater.

Comments

- (1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
- (2) Excluding Oil & Grease, solid & biological matrices for organic analyses are reported on a wet weight basis.
- (3) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
- (4) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:

<http://www.acz.com/public/extquallist.pdf>

ACZ Project ID: **L44953**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L44953-01	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
			M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
		Ethylbenzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
			M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
		m p Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
			M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
		o Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
			M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
		Toluene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
			M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
			M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.	
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-02	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.	
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-03	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
		Ethylbenzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-04	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-05	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-06	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-07	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
		Toluene	M8021B/8015D GC/PID/FID	D1	described in method 5035. Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-08	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-09	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-10	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-11	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	DD	Sample required dilution due to matrix color or odor.

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ACZ Project ID: **L44953**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
			M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-12	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-13	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Bromofluorobenzene (TVH)	M8021B/8015D GC/PID/FID	S6	Surrogate recovery was below laboratory and method acceptance limits. Reextraction and/or reanalysis confirms low recovery caused by matrix effect.
		Ethylbenzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.

ACZ Project ID: **L44953**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
		TVH C6 to C10	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-14	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.
L44953-15	WG449613	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Ethylbenzene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		m p Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		o Xylene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		Toluene	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
		TVH C6 to C10	M8021B/8015D GC/PID/FID	D1	Sample required dilution due to matrix.
			M8021B/8015D GC/PID/FID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as described in method 5035.
	WG449722	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.

ACZ Project ID: **L44953**

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
		TPH C10 to C28	M8015D GC/FID	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M8015D GC/FID	N1	See Case Narrative.

Souder, Miller, & Associates

ACZ Project ID: **L44953**

Soil Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Conductivity @25C	SM2510B
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2

Souder, Miller, & Associates

ACZ Project ID: L44953
 Date Received: 06/14/2018 14:19
 Received By:
 Date Printed: 6/14/2018

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples? A change was made in the Pg. 2 Copy of Report to and Invoice to section prior to ACZ custody.	X		

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? ¹			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?		X	
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Temp Criteria (°C)	Rad (µR/Hr)	Custody Seal Intact?
NA28537	23.3	<=6.0	14	Yes

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

Souder, Miller, & Associates

ACZ Project ID: L44953

Date Received: 06/14/2018 14:19

Received By:

Date Printed: 6/14/2018

¹ The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na₂S₂O₃ preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).



Laboratories, Inc. 224953

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Greg Knell
Company: SMA
E-mail: greg.knell@southernillco.com

Address: 8000 W 14th Ave
Lakewood, CO 80244
Telephone: 303-239-9011

Copy of Report to:

Name: GRAHAM COTLE
Company: SMA

E-mail: GRAHAM.COTLE@southernillco.com
Telephone: 303-239-9011

Invoice to:

Name: Christie Pachak
Company: SMA
E-mail: Christie.Pachak@southernillco.com

Address: 8000 W 14th Ave
Lakewood, CO 80244
Telephone: 303-239-9011

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO []

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Graham COTLE Sampler's Site Information State CO Zip code 80743 Time Zone MT

*Sampler's Signature: [Signature] I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Table with columns: Quote #, PO#, Reporting state, Check box, SAMPLE IDENTIFICATION, DATE:TIME, Matrix, # of Containers, and various analysis codes (TFAH, B20, BRET, SAR, EC, PFT).

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

Table with columns: RELINQUISHED BY, DATE:TIME, RECEIVED BY, DATE:TIME. Includes signatures and dates.

224953 Chain of Custody

1



Laboratories, Inc. L44953

CHAIN of CUSTODY

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Report to:

Name: Greg Knell
Company: SMA
E-mail: greg.knell@sandemiller.com

Address: 8000 W 14th Ave
Lakewood, CO 80214
Telephone: 303-239-9011

Copy of Report to:

Name: John Axelsson Graham Cottle
Company: COTTE SMA

E-mail: john.axelsson.graham.cottle@sandemiller.com
Telephone: 303-239-9011

Invoice to:

Name: Sande, Miller Assoc
Company: Christie Rachak
E-mail: Christie.Rachak@sandemiller.com

Address: 8000 W 14th Ave
Lakewood, CO 80214
Telephone: 303-239-9011

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO []

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Graham Cottle Sampler's Site Information State CO Zip code 80703 Time Zone MT

*Sampler's Signature: [Signature] I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

ANALYSES REQUESTED (attach list or use quote number)

Quote #: ROTH B040033
PO#:
Reporting state for compliance testing: Colorado
Check box if samples include NRC licensed material?

Table with columns: # of Containers, TPH, GEO-DO, BTEX, SAR, EC, PH. Rows for samples North-7 to South-3.

Table with columns: SAMPLE IDENTIFICATION, DATE:TIME, Matrix. Rows for samples North-7 to South-3.

Matrix SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

North-10 & 11 only have A LABEL on 1 container.
South-1 & 2 only have A LABEL on 1 container.
South-3 has NO ACZ LABEL; has been LABELED on the Manufacturer's label.
Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY: [Signature] DATE:TIME 6-12 1633 RECEIVED BY: [Signature] DATE:TIME 6/14/18 14:19

