ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 09, 2018

Report to:
Randall Miller
North Park Engineering & Consulting, Inc
P.O. Box 395
Walden, CO 80480

Bill to:
Randall Miller
North Park Engineering & Consulting, Inc
P.O. Box 395
Walden, CO 80480

Project ID: Marcus Production St. 1-36 Wel
ACZ Project ID: L47392

Randall Miller:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 05, 2018. This project has been assigned to ACZ's project number, L47392. 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 L47392. 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 December 09, 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.

Max Janicek has reviewed and approved this report.

North Park Engineering Consulting, Inc

November 09, 2018

Project ID: Marcus Production St. 1-36 Wel
ACZ Project ID: L47392

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 7 miscellaneous samples from North Park Engineering & Consulting, Inc on October 5, 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 L47392. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

Any analyses not performed within EPA recommended holding times have been qualified with an "H" flag.

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 extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

The Mercury results for L47392 (samples -01, -02 and -06) have been qualified with the H1 flag on the extended qualifier report. The chemist noted that analysis was performed outside the EPA-recommended hold time. The associated instrument for method 7473 was out of operation; analysis was performed via an alternative method after the recommended 28-day hold time for Mercury had expired.

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Well Project
Sample ID: STATE 1-36 PIT BOTTOM

ACZ Sample ID: ***L47392-01***
Date Sampled: *10/02/18 15:30*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	515	1.3			mg/Kg	0.1	0.5	10/19/18 11:52	bsu
Barium, total (3050)	M6010D ICP	103	312			mg/Kg	0.3	2	10/20/18 0:32	dcm
Cadmium, total (3050)	M6010D ICP	103		U		mg/Kg	0.5	2	10/20/18 0:32	dcm
Calcium, soluble (Sat. Paste)	M6010D ICP	1	1.03			meq/L	0.005	0.025	10/24/18 10:56	aeh
Chromium, total (3050)	M6010D ICP	103	57			mg/Kg	1	5	10/20/18 0:32	dcm
Chromium, Trivalent	Calculation (Total - Hexavalent)		57			mg/Kg	1	5	11/09/18 0:00	calc
Copper, total (3050)	M6010D ICP	103	29		*	mg/Kg	1	5	10/20/18 0:32	dcm
Lead, total (3050)	M6010D ICP	103	23		*	mg/Kg	3	20	10/20/18 0:32	dcm
Magnesium, soluble (Sat. Paste)	M6010D ICP	1	0.473			meq/L	0.017	0.082	10/24/18 10:56	aeh
Mercury, total	M7471A CVAA	240		UH	*	mg/Kg	0.05	0.2	11/08/18 15:57	che
Nickel, total (3050)	M6010D ICP	103	13.1			mg/Kg	0.8	4	10/20/18 0:32	dcm
Selenium, total (3050)	M6010D ICP	103		U		mg/Kg	5	30	10/20/18 0:32	dcm
Silver, total (3050)	M6010D ICP	103		U		mg/Kg	1	3	10/20/18 0:32	dcm
Sodium Adsorption Ratio	Calculation		39						11/09/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010D ICP	2	33.5			meq/L	0.0174	0.087	10/24/18 11:16	aeh
Zinc, total (3050)	M6010D ICP	103	58		*	mg/Kg	1	5	10/20/18 0:32	dcm

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	3.99		*	mmhos/cm	0.001	0.01	10/23/18 0:00	gkh
Max Particle Size		1	250		*	um			10/23/18 0:00	gkh
Temperature		1	22.2		*	C	0.1	0.1	10/23/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	250		*	um			10/23/18 0:00	gkh
pH		1	7.4		*	units	0.1	0.1	10/23/18 0:00	gkh
Solids, Percent	D2216-80	1	77.3		*	%	0.1	0.5	10/09/18 19:20	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/09/18 16:00	ajm
Crush and Pulverize	EPA-600/2-78-054 3.1.3				*				10/12/18 13:45	ajm
Digestion - Alkaline	M3060A								10/14/18 16:44	jlw
Digestion - Hot Plate	M3050B ICP								10/18/18 13:46	dbt
Digestion - Hot Plate	M3050B ICP-MS								10/18/18 13:46	dbt
Saturated Paste Extraction	USDA No. 60 (2)								10/22/18 15:48	gkh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Chromium, Hexavalent (3060)	M7196A	260		U	*	mg/Kg	1	5	10/16/18 9:37	mh

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Well Project
Sample ID: STATE 1-36 PIT N

ACZ Sample ID: ***L47392-02***
Date Sampled: *10/02/18 15:35*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	510	3.8			mg/Kg	0.1	0.5	10/19/18 12:05	bsu
Barium, total (3050)	M6010D ICP	102	521			mg/Kg	0.3	2	10/20/18 0:40	dcm
Cadmium, total (3050)	M6010D ICP	102		U		mg/Kg	0.5	2	10/20/18 0:40	dcm
Calcium, soluble (Sat. Paste)	M6010D ICP	1	0.439			meq/L	0.005	0.025	10/24/18 11:00	aeh
Chromium, total (3050)	M6010D ICP	102	32			mg/Kg	1	5	10/20/18 0:40	dcm
Chromium, Trivalent	Calculation (Total - Hexavalent)		32			mg/Kg	1	5	11/09/18 0:00	calc
Copper, total (3050)	M6010D ICP	102	24		*	mg/Kg	1	5	10/20/18 0:40	dcm
Lead, total (3050)	M6010D ICP	102	12	B	*	mg/Kg	3	20	10/20/18 0:40	dcm
Magnesium, soluble (Sat. Paste)	M6010D ICP	1	0.093			meq/L	0.017	0.082	10/24/18 11:00	aeh
Mercury, total	M7471A CVAA	205		UH	*	mg/Kg	0.04	0.2	11/08/18 16:00	che
Nickel, total (3050)	M6010D ICP	102	19.9			mg/Kg	0.8	4	10/20/18 0:40	dcm
Selenium, total (3050)	M6010D ICP	102		U		mg/Kg	5	30	10/20/18 0:40	dcm
Silver, total (3050)	M6010D ICP	102		U		mg/Kg	1	3	10/20/18 0:40	dcm
Sodium Adsorption Ratio	Calculation		39						11/09/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010D ICP	1	19.9			meq/L	0.0087	0.0435	10/24/18 11:00	aeh
Zinc, total (3050)	M6010D ICP	102	79		*	mg/Kg	1	5	10/20/18 0:40	dcm

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	2.38		*	mmhos/cm	0.001	0.01	10/23/18 0:00	gkh
Max Particle Size		1	250		*	um			10/23/18 0:00	gkh
Temperature		1	22.4		*	C	0.1	0.1	10/23/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	250		*	um			10/23/18 0:00	gkh
pH		1	8.6		*	units	0.1	0.1	10/23/18 0:00	gkh
Solids, Percent	D2216-80	1	82.7		*	%	0.1	0.5	10/10/18 5:20	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/09/18 16:05	ajm
Crush and Pulverize	EPA-600/2-78-054 3.1.3				*				10/12/18 15:07	ajm
Digestion - Alkaline	M3060A								10/14/18 19:46	jlw
Digestion - Hot Plate	M3050B ICP								10/18/18 14:48	dbt
Digestion - Hot Plate	M3050B ICP-MS								10/18/18 14:48	dbt
Saturated Paste Extraction	USDA No. 60 (2)								10/22/18 15:51	gkh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Chromium, Hexavalent (3060)	M7196A	240		U	*	mg/Kg	1	5	10/16/18 9:47	mh

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Well Project
Sample ID: STATE 1-36 SPILL S

ACZ Sample ID: ***L47392-06***
Date Sampled: *10/02/18 15:55*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, total (3050)	M6020B ICP-MS	505	2.8			mg/Kg	0.1	0.5	10/19/18 12:07	bsu
Barium, total (3050)	M6010D ICP	101	256			mg/Kg	0.3	2	10/20/18 0:44	dcm
Cadmium, total (3050)	M6010D ICP	101		U		mg/Kg	0.5	2	10/20/18 0:44	dcm
Calcium, soluble (Sat. Paste)	M6010D ICP	1	9.05			meq/L	0.005	0.025	10/24/18 11:04	aeh
Chromium, total (3050)	M6010D ICP	101	30			mg/Kg	1	5	10/20/18 0:44	dcm
Chromium, Trivalent	Calculation (Total - Hexavalent)		30			mg/Kg	1	5	11/09/18 0:00	calc
Copper, total (3050)	M6010D ICP	101	27		*	mg/Kg	1	5	10/20/18 0:44	dcm
Lead, total (3050)	M6010D ICP	101	12	B	*	mg/Kg	3	20	10/20/18 0:44	dcm
Magnesium, soluble (Sat. Paste)	M6010D ICP	1	1.93			meq/L	0.017	0.082	10/24/18 11:04	aeh
Mercury, total	M7471A CVAA	192		UH	*	mg/Kg	0.04	0.2	11/08/18 16:01	che
Nickel, total (3050)	M6010D ICP	101	19.5			mg/Kg	0.8	4	10/20/18 0:44	dcm
Selenium, total (3050)	M6010D ICP	101		U		mg/Kg	5	30	10/20/18 0:44	dcm
Silver, total (3050)	M6010D ICP	101		U		mg/Kg	1	3	10/20/18 0:44	dcm
Sodium Adsorption Ratio	Calculation		14						11/09/18 0:00	calc
Sodium, soluble (Sat. Paste)	M6010D ICP	2	31.9			meq/L	0.0174	0.087	10/24/18 11:20	aeh
Zinc, total (3050)	M6010D ICP	101	74		*	mg/Kg	1	5	10/20/18 0:44	dcm

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Conductivity @25C	SM2510B									
Conductivity		1	4.64		*	mmhos/cm	0.001	0.01	10/23/18 0:00	gkh
Max Particle Size		1	250		*	um			10/23/18 0:00	gkh
Temperature		1	22.5		*	C	0.1	0.1	10/23/18 0:00	gkh
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	250		*	um			10/23/18 0:00	gkh
pH		1	7.5		*	units	0.1	0.1	10/23/18 0:00	gkh
Solids, Percent	D2216-80	1	95.6		*	%	0.1	0.5	10/10/18 10:20	ajm

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				10/09/18 16:10	ajm
Crush and Pulverize	EPA-600/2-78-054 3.1.3				*				10/12/18 16:30	ajm
Digestion - Alkaline	M3060A								10/15/18 4:52	jlw
Digestion - Hot Plate	M3050B ICP								10/18/18 15:09	dbt
Digestion - Hot Plate	M3050B ICP-MS								10/18/18 15:09	dbt
Saturated Paste Extraction	USDA No. 60 (2)								10/22/18 15:54	gkh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Chromium, Hexavalent (3060)	M7196A	210		U	*	mg/Kg	1	4	10/16/18 10:15	mh

Report Header Explanations

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

QC Sample Types

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

North Park Engineering & Consulting, Inc

ACZ Project ID: ***L47392***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Arsenic, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG458879													
WG458879ICV	ICV	10/19/18 11:11	MS180914-2	.05		.05066	mg/L	101	90	110			
WG458879ICB	ICB	10/19/18 11:12				U	mg/L		-0.0006	0.0006			
WG458785PBS	PBS	10/19/18 11:40				U	mg/Kg		-0.3	0.3			
WG458785LCSS1	LCSS	10/19/18 11:41	PCN56332	161		153.5	mg/Kg		134	188			
WG458785LCSSD1	LCSSD	10/19/18 11:43	PCN56332	161		149.5	mg/Kg		134	188	3	20	
L47392-01MS	MS	10/19/18 11:54	MS180911-2	25.551	1.3	20.38	mg/Kg	75	75	125			
L47392-01MSD	MSD	10/19/18 12:03	MS180911-2	25.551	1.3	23.35	mg/Kg	86	75	125	14	20	

Barium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG458911													
WG458911ICV	ICV	10/19/18 23:13	II181002-1	2		1.925	mg/L	96	90	110			
WG458911ICB	ICB	10/19/18 23:16				.0031	mg/L		-0.009	0.009			
WG458785PBS	PBS	10/19/18 23:41				.42	mg/Kg		-0.9	0.9			
WG458785LCSS1	LCSS	10/19/18 23:45	PCN56332	260		255.9	mg/Kg		215	305			
WG458785LCSSD1	LCSSD	10/19/18 23:49	PCN56332	260		251.2	mg/Kg		215	305	2	20	
L47291-01MS	MS	10/20/18 0:04	II181012-2	51.7575	95.8	158.21	mg/Kg	121	75	125			
L47291-01MSD	MSD	10/20/18 0:08	II181012-2	51.7575	95.8	157.28	mg/Kg	119	75	125	1	20	

Cadmium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG458911													
WG458911ICV	ICV	10/19/18 23:13	II181002-1	2		1.939	mg/L	97	90	110			
WG458911ICB	ICB	10/19/18 23:16				U	mg/L		-0.015	0.015			
WG458785PBS	PBS	10/19/18 23:41				U	mg/Kg		-1.5	1.5			
WG458785LCSS1	LCSS	10/19/18 23:45	PCN56332	211		207.9	mg/Kg		176	264			
WG458785LCSSD1	LCSSD	10/19/18 23:49	PCN56332	211		206.4	mg/Kg		176	264	1	20	
L47291-01MS	MS	10/20/18 0:04	II181012-2	51.706	U	47.22	mg/Kg	91	75	125			
L47291-01MSD	MSD	10/20/18 0:08	II181012-2	51.706	U	47.04	mg/Kg	91	75	125	0	20	

Calcium, soluble (Sat. Paste) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG459143													
WG459143ICV	ICV	10/24/18 10:28	II181009-1	100		97.4	mg/L	97	90	110			
WG459143ICB	ICB	10/24/18 10:32				U	mg/L		-0.3	0.3			
L47448-01DUP	DUP	10/24/18 11:12			0.906	.864	meq/L				5	20	

Chromium, Hexavalent (3060) M7196A

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG458597													
WG458597ICV	ICV	10/16/18 9:00	WC180912-2	.05		.0502	mg/L	100	90	110			
WG458597ICB	ICB	10/16/18 9:09				U	mg/L		-0.005	0.005			
L47392-02MS1	MS	10/16/18 9:56	SI181012-	48.01944	U	37.3	mg/Kg	78	75	125			
L47392-02MS2	MS	10/16/18 10:05	SI160824-	1513.92024	U	1850	mg/Kg	122	75	125			
L47448-01DUP	DUP	10/16/18 11:02			U	U	mg/Kg				0	20	RA
WG458504LCSS	LCSS	10/16/18 11:11	PCN53452	148		140	mg/Kg		83.8	211			
WG458504PBS	PBS	10/16/18 11:21				U	mg/Kg		-1	1			

North Park Engineering & Consulting, Inc

ACZ Project ID: ***L47392***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Chromium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG458911													
WG458911ICV	ICV	10/19/18 23:13	II181002-1	2		1.983	mg/L	99	90	110			
WG458911ICB	ICB	10/19/18 23:16				U	mg/L		-0.03	0.03			
WG458785PBS	PBS	10/19/18 23:41				U	mg/Kg		-3	3			
WG458785LCSS1	LCSS	10/19/18 23:45	PCN56332	136		138.7	mg/Kg		112	160			
WG458785LCSSD1	LCSSD	10/19/18 23:49	PCN56332	136		139.3	mg/Kg		112	160	0	20	
L47291-01MS	MS	10/20/18 0:04	II181012-2	51.5	11	65.1	mg/Kg	105	75	125			
L47291-01MSD	MSD	10/20/18 0:08	II181012-2	51.5	11	64.8	mg/Kg	104	75	125	0	20	

Conductivity @25C SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG459036													
L47448-01DUP	DUP	10/23/18 13:49			1.5	1.502	mmhos/cm				0	20	

Copper, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG458911													
WG458911ICV	ICV	10/19/18 23:13	II181002-1	2		1.933	mg/L	97	90	110			
WG458911ICB	ICB	10/19/18 23:16				U	mg/L		-0.03	0.03			
WG458785PBS	PBS	10/19/18 23:41				U	mg/Kg		-3	3			
WG458785LCSS1	LCSS	10/19/18 23:45	PCN56332	166		165.8	mg/Kg		139	192			
WG458785LCSSD1	LCSSD	10/19/18 23:49	PCN56332	166		161.7	mg/Kg		139	192	3	20	
L47291-01MS	MS	10/20/18 0:04	II181012-2	51.6545	9	59	mg/Kg	97	75	125			
L47291-01MSD	MSD	10/20/18 0:08	II181012-2	51.6545	9	58.9	mg/Kg	97	75	125	0	20	

Lead, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG458911													
WG458911ICV	ICV	10/19/18 23:13	II181002-1	4		3.914	mg/L	98	90	110			
WG458911ICB	ICB	10/19/18 23:16				U	mg/L		-0.09	0.09			
WG458785PBS	PBS	10/19/18 23:41				U	mg/Kg		-9	9			
WG458785LCSS1	LCSS	10/19/18 23:45	PCN56332	111		112.2	mg/Kg		92.1	130			
WG458785LCSSD1	LCSSD	10/19/18 23:49	PCN56332	111		110.7	mg/Kg		92.1	130	1	20	
L47291-01MS	MS	10/20/18 0:04	II181012-2	103.1751	8	108.7	mg/Kg	98	75	125			
L47291-01MSD	MSD	10/20/18 0:08	II181012-2	103.1751	8	108.5	mg/Kg	97	75	125	0	20	

Magnesium, soluble (Sat. Paste) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG459143													
WG459143ICV	ICV	10/24/18 10:28	II181009-1	100		98.7	mg/L	99	90	110			
WG459143ICB	ICB	10/24/18 10:32				U	mg/L		-0.6	0.6			
L47448-01DUP	DUP	10/24/18 11:12			0.189	.174	meq/L				8	20	

North Park Engineering & Consulting, Inc

ACZ Project ID: ***L47392***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Mercury, total M7471A CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG460101													
WG460101ICV1	ICV	11/08/18 15:48	HG181031-6	.00999		.00961	mg/L	96	90	110			
WG460101ICB	ICB	11/08/18 15:50				U	mg/L		-0.0006	0.0006			
WG460101PBS	PBS	11/08/18 15:52				U	mg/Kg		-0.12	0.12			
WG460101LCSS	LCSS	11/08/18 15:53	PCN53451	12.3		10.57	mg/Kg		7.88	16.7			
WG460101LCSSD	LCSSD	11/08/18 15:55	PCN53451	12.3		10.48	mg/Kg		7.88	16.7	1	20	
L47392-01MS	MS	11/08/18 15:58	HG181031-9	1.09109	U	1.107	mg/Kg	101	85	115			
L47392-01MSD	MSD	11/08/18 15:59	HG181031-9	1.116115	U	1.146	mg/Kg	103	85	115	3	20	

Nickel, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG458911													
WG458911ICV	ICV	10/19/18 23:13	II181002-1	2.004		1.97	mg/L	98	90	110			
WG458911ICB	ICB	10/19/18 23:16				U	mg/L		-0.024	0.024			
WG458785PBS	PBS	10/19/18 23:41				U	mg/Kg		-2.4	2.4			
WG458785LCSS1	LCSS	10/19/18 23:45	PCN56332	91.9		93.79	mg/Kg		76.2	108			
WG458785LCSSD1	LCSSD	10/19/18 23:49	PCN56332	91.9		92.37	mg/Kg		76.2	108	2	20	
L47291-01MS	MS	10/20/18 0:04	II181012-2	51.5	10	57.62	mg/Kg	92	75	125			
L47291-01MSD	MSD	10/20/18 0:08	II181012-2	51.5	10	57.76	mg/Kg	93	75	125	0	20	

pH, Saturated Paste EPA 600/2-78-054 section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG459036													
WG459036ICV	ICV	10/23/18 12:47	PCN56119	4		4	units	100	3.9	4.1			
L47448-01DUP	DUP	10/23/18 13:49			8	8.01	units				0	20	

Selenium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG458911													
WG458911ICV	ICV	10/19/18 23:13	II181002-1	4		3.982	mg/L	100	90	110			
WG458911ICB	ICB	10/19/18 23:16				U	mg/L		-0.15	0.15			
WG458785PBS	PBS	10/19/18 23:41				U	mg/Kg		-15	15			
WG458785LCSS1	LCSS	10/19/18 23:45	PCN56332	191		197.3	mg/Kg		152	231			
WG458785LCSSD1	LCSSD	10/19/18 23:49	PCN56332	191		193.1	mg/Kg		152	231	2	20	
L47291-01MS	MS	10/20/18 0:04	II181012-2	103.1751	U	107.7	mg/Kg	104	75	125			
L47291-01MSD	MSD	10/20/18 0:08	II181012-2	103.1751	U	111.8	mg/Kg	108	75	125	4	20	

Silver, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG458911													
WG458911ICV	ICV	10/19/18 23:13	II181002-1	1.001		1.008	mg/L	101	90	110			
WG458911ICB	ICB	10/19/18 23:16				U	mg/L		-0.03	0.03			
WG458785PBS	PBS	10/19/18 23:41				U	mg/Kg		-3	3			
WG458785LCSS1	LCSS	10/19/18 23:45	PCN56332	43.3		41.7	mg/Kg		34.6	51.9			
WG458785LCSSD1	LCSSD	10/19/18 23:49	PCN56332	43.3		42.4	mg/Kg		34.6	51.9	2	20	
L47291-01MS	MS	10/20/18 0:04	II181012-2	51.5	U	49.6	mg/Kg	96	75	125			
L47291-01MSD	MSD	10/20/18 0:08	II181012-2	51.5	U	49.4	mg/Kg	96	75	125	0	20	

North Park Engineering & Consulting, Inc

ACZ Project ID: ***L47392***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Sodium, soluble (Sat. Paste) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG459143													
WG459143ICV	ICV	10/24/18 10:28	II181009-1	100		99.1	mg/L	99	90	110			
WG459143ICB	ICB	10/24/18 10:32				U	mg/L		-0.6	0.6			
L47448-01DUP	DUP	10/24/18 11:12			12.1	11.8	meq/L				3	20	

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG458182													
WG458182PBS	PBS	10/09/18 14:20				U	%		-0.1	0.1			
L47392-01DUP	DUP	10/10/18 0:20			77.3	77.56	%				0	20	

Zinc, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG458911													
WG458911ICV	ICV	10/19/18 23:13	II181002-1	2		1.99	mg/L	100	90	110			
WG458911ICB	ICB	10/19/18 23:16				U	mg/L		-0.03	0.03			
WG458785PBS	PBS	10/19/18 23:41				U	mg/Kg		-3	3			
WG458785LCSS1	LCSS	10/19/18 23:45	PCN56332	199		200.4	mg/Kg		162	237			
WG458785LCSSD1	LCSSD	10/19/18 23:49	PCN56332	199		198.3	mg/Kg		162	237	1	20	
L47291-01MS	MS	10/20/18 0:04	II181012-2	50.9026	38	89.5	mg/Kg	101	75	125			
L47291-01MSD	MSD	10/20/18 0:08	II181012-2	50.9026	38	94.3	mg/Kg	111	75	125	5	20	

North Park Engineering & Consulting, Inc ACZ Project ID: ***L47392***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L47392-01	WG458597	Chromium, Hexavalent (3060)	M7196A	DA	Sample required dilution due to reactivity.
			M7196A	Q6	Sample was received above recommended temperature.
			M7196A	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).
	WG458911	Copper, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Lead, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG460101	Mercury, total	M7471A CVAA	H1	Sample prep or analysis performed past holding time. See case narrative.
			M7471A CVAA	Q6	Sample was received above recommended temperature.
	WG458911	Zinc, total (3050)	M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L47392-02	WG458597	Chromium, Hexavalent (3060)	M7196A	DA	Sample required dilution due to reactivity.
			M7196A	Q6	Sample was received above recommended temperature.
			M7196A	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).
	WG458911	Copper, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Lead, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG460101	Mercury, total	M7471A CVAA	H1	Sample prep or analysis performed past holding time. See case narrative.
			M7471A CVAA	Q6	Sample was received above recommended temperature.
	WG458911	Zinc, total (3050)	M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.
L47392-06	WG458597	Chromium, Hexavalent (3060)	M7196A	DA	Sample required dilution due to reactivity.
			M7196A	Q6	Sample was received above recommended temperature.
			M7196A	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).
	WG458911	Copper, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
		Lead, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG460101	Mercury, total	M7471A CVAA	H1	Sample prep or analysis performed past holding time. See case narrative.
			M7471A CVAA	Q6	Sample was received above recommended temperature.
	WG458911	Zinc, total (3050)	M6010D ICP	ZH	Serial Dilution exceeded the acceptance criteria. Matrix interference [physical or chemical] is suspected.

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 PIT BOTTOM

ACZ Sample ID: ***L47392-01***
Date Sampled: *10/02/18 15:30*
Date Received: *10/05/18*
Sample Matrix: *Soil*

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**
Extract Method: **5035A**

Workgroup: WG458170
Analyst: itm
Extract Date: 10/10/18 20:42
Analysis Date: 10/10/18 20:42

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	106.3		5	*	%	70	130
Bromofluorobenzene (TVH)	460-00 4	107.1		5	*	%	70	130

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 PIT BOTTOM

ACZ Sample ID: ***L47392-01***
Date Sampled: *10/02/18 15:30*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3540**

Workgroup: WG458397
Analyst: kfm
Extract Date: 10/10/18 15:08
Analysis Date: 10/11/18 17:37

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28			U	0.0962	*	mg/Kg	9.62	48.1
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	84.03		0.0962	*	%	60	115

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 PIT BOTTOM

ACZ Sample ID: ***L47392-01***
Date Sampled: *10/02/18 15:30*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Polynuclear Aromatic Hydrocarbons GC/M

Analysis Method: **M8270C GC/MS**
Extract Method: **M3540**

Workgroup: WG458231
Analyst: rgt
Extract Date: 10/08/18 17:20
Analysis Date: 10/09/18 22:31

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
2-Methylnaphthalene	91-57-6		U	287	*	ug/Kg	600	3000
Acenaphthene	83-32-9		U	287	*	ug/Kg	600	3000
Acenaphthylene	208-96-8		U	287	*	ug/Kg	600	3000
Anthracene	120-12-7		U	287	*	ug/Kg	600	3000
Benzo(a)anthracene	56-55-3		U	287	*	ug/Kg	600	3000
Benzo(a)pyrene	50-32-8		U	287	*	ug/Kg	600	3000
Benzo(b)fluoranthene	205-99-2		U	287	*	ug/Kg	600	3000
Benzo(g,h,i)perylene	191-24-2		U	287	*	ug/Kg	600	3000
Benzo(k)fluoranthene	207-08-9		U	287	*	ug/Kg	600	3000
Chrysene	218-01-9		U	287	*	ug/Kg	600	3000
Dibenzo(a,h)anthracene	53-70-3		U	287	*	ug/Kg	600	3000
Fluoranthene	206-44-0		U	287	*	ug/Kg	600	3000
Fluorene	86-73-7		U	287	*	ug/Kg	600	3000
Indeno(1,2,3-cd)pyrene	193-39-5		U	287	*	ug/Kg	600	3000
Naphthalene	91-20-3		U	287	*	ug/Kg	600	3000
Phenanthrene	85-01-8		U	287	*	ug/Kg	600	3000
Pyrene	129-00-0		U	287	*	ug/Kg	600	3000
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
2-Fluorobiphenyl	321-60-8	78.4		287	*	%	45	105
Nitrobenzene-d5	4165-60-0	82		287	*	%	35	100
Terphenyl-d14	1718-51-0	94.7		287	*	%	30	125

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 PIT N

ACZ Sample ID: ***L47392-02***
Date Sampled: *10/02/18 15:35*
Date Received: *10/05/18*
Sample Matrix: *Soil*

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**
Extract Method: **5035A**

Workgroup: WG458170
Analyst: itm
Extract Date: 10/12/18 13:39
Analysis Date: 10/11/18 0:39

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2	620		50	*	ug/Kg	50	50
Ethylbenzene	100-41-4	6090		50	*	ug/Kg	50	50
m p Xylene	1330-20-7	18700		50	*	ug/Kg	100	100
o Xylene	95-47- 6	9570		50	*	ug/Kg	50	50
Toluene	108-88-3	8510		50	*	ug/Kg	50	50
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
Bromofluorobenzene	460-00-4	129.8		50	*	%	70	130

Workgroup: WG458170
Analyst: itm
Extract Date: 10/12/18 13:39
Analysis Date: 10/12/18 13:39

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TVH C6 to C10	TVH	720		250	*	mg/Kg	10	10
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
Bromofluorobenzene (TVH)	460-00 4	172.3		250	*	%	70	130

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 PIT N

ACZ Sample ID: ***L47392-02***
Date Sampled: *10/02/18 15:35*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3540**

Workgroup: WG458397
Analyst: kfm
Extract Date: 10/10/18 17:01
Analysis Date: 10/11/18 18:48

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		3300		1	*	mg/Kg	100	500
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	78.8		1	*	%	60	115

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 PIT N

ACZ Sample ID: ***L47392-02***
Date Sampled: *10/02/18 15:35*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Polynuclear Aromatic Hydrocarbons GC/M

Analysis Method: **M8270C GC/MS**
Extract Method: **M3540**

Workgroup: WG458231
Analyst: rgt
Extract Date: 10/08/18 17:30
Analysis Date: 10/09/18 23:05

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
2-Methylnaphthalene	91-57-6	6000	J	1150	*	ug/Kg	2000	10000
Acenaphthene	83-32-9		U	1150	*	ug/Kg	2000	10000
Acenaphthylene	208-96-8		U	1150	*	ug/Kg	2000	10000
Anthracene	120-12-7		U	1150	*	ug/Kg	2000	10000
Benzo(a)anthracene	56-55-3		U	1150	*	ug/Kg	2000	10000
Benzo(a)pyrene	50-32-8		U	1150	*	ug/Kg	2000	10000
Benzo(b)fluoranthene	205-99-2		U	1150	*	ug/Kg	2000	10000
Benzo(g,h,i)perylene	191-24-2		U	1150	*	ug/Kg	2000	10000
Benzo(k)fluoranthene	207-08-9		U	1150	*	ug/Kg	2000	10000
Chrysene	218-01-9		U	1150	*	ug/Kg	2000	10000
Dibenzo(a,h)anthracene	53-70-3		U	1150	*	ug/Kg	2000	10000
Fluoranthene	206-44-0		U	1150	*	ug/Kg	2000	10000
Fluorene	86-73-7		U	1150	*	ug/Kg	2000	10000
Indeno(1,2,3-cd)pyrene	193-39-5		U	1150	*	ug/Kg	2000	10000
Naphthalene	91-20-3		U	1150	*	ug/Kg	2000	10000
Phenanthrene	85-01-8		U	1150	*	ug/Kg	2000	10000
Pyrene	129-00-0		U	1150	*	ug/Kg	2000	10000

Surrogate Recoveries	CAS	% Recovery	Dilution	XQ	Units	LCL	UCL
2-Fluorobiphenyl	321-60-8	88.3	1150	*	%	45	105
Nitrobenzene-d5	4165-60-0	67.5	1150	*	%	35	100
Terphenyl-d14	1718-51-0	96.9	1150	*	%	30	125

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 PIT E

ACZ Sample ID: ***L47392-03***
Date Sampled: *10/02/18 15:40*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **5035A**

Workgroup: WG458170
Analyst: itm
Extract Date: 10/10/18 22:10
Analysis Date: 10/10/18 22:10

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
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
Bromofluorobenzene	460-00-4	107.7		5	*	%	70	130

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 PIT E

ACZ Sample ID: ***L47392-03***
Date Sampled: *10/02/18 15:40*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3540**

Workgroup: WG458397
Analyst: kfm
Extract Date: 10/10/18 18:16
Analysis Date: 10/11/18 19:34

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		70	J	0.164	*	mg/Kg	16.4	82.1
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	83.18		0.164	*	%	60	115

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 PIT S

ACZ Sample ID: ***L47392-04***
Date Sampled: *10/02/18 15:45*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **5035A**

Workgroup: WG458170
Analyst: itm
Extract Date: 10/11/18 1:08
Analysis Date: 10/11/18 1:08

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2	1090		50	*	ug/Kg	50	50
Ethylbenzene	100-41-4	5460		50	*	ug/Kg	50	50
m p Xylene	1330-20-7	15800		50	*	ug/Kg	100	100
o Xylene	95-47- 6	8180		50	*	ug/Kg	50	50
Toluene	108-88-3	9870		50	*	ug/Kg	50	50
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
Bromofluorobenzene	460-00-4	99.3		50	*	%	70	130

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 PIT S

ACZ Sample ID: ***L47392-04***
Date Sampled: *10/02/18 15:45*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3540**

Workgroup: WG458397
Analyst: kfm
Extract Date: 10/10/18 18:54
Analysis Date: 10/11/18 19:58

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		5400		1.66	*	mg/Kg	166	831
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	76.61		1.66	*	%	60	115

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 PIT W

ACZ Sample ID: ***L47392-05***
Date Sampled: *10/02/18 15:50*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **5035A**

Workgroup: WG458170
Analyst: itm
Extract Date: 10/11/18 1:38
Analysis Date: 10/11/18 1:38

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
Benzene	71-43-2	250		50	*	ug/Kg	50	50
Ethylbenzene	100-41-4	320		50	*	ug/Kg	50	50
m p Xylene	1330-20-7	1300		50	*	ug/Kg	100	100
o Xylene	95-47- 6	760		50	*	ug/Kg	50	50
Toluene	108-88-3	690		50	*	ug/Kg	50	50
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
Bromofluorobenzene	460-00-4	113.4		50	*	%	70	130

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 PIT W

ACZ Sample ID: ***L47392-05***
Date Sampled: *10/02/18 15:50*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3540**

Workgroup: WG458397
Analyst: kfm
Extract Date: 10/10/18 19:32
Analysis Date: 10/11/18 20:45

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		850		0.159	*	mg/Kg	15.9	79.4
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	85.23		0.159	*	%	60	115

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 SPILL S

ACZ Sample ID: ***L47392-06***
Date Sampled: *10/02/18 15:55*
Date Received: *10/05/18*
Sample Matrix: *Soil*

BTEX/Gasoline Range Organics (C6-C10)

Analysis Method: **M8021B/8015D GC/PID/FID**
Extract Method: **5035A**

Workgroup: WG458170
Analyst: itm
Extract Date: 10/10/18 22:40
Analysis Date: 10/10/18 22:40

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	7		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	91.2		5	*	%	70	130
Bromofluorobenzene (TVH)	460-00 4	90.5		5	*	%	70	130

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 SPILL S

ACZ Sample ID: ***L47392-06***
Date Sampled: *10/02/18 15:55*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3540**

Workgroup: WG458397
Analyst: kfm
Extract Date: 10/10/18 20:09
Analysis Date: 10/11/18 21:08

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		4800		1.33	*	mg/Kg	133	666
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	72.03		1.33	*	%	60	115

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 SPILL S

ACZ Sample ID: ***L47392-06***
Date Sampled: *10/02/18 15:55*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Polynuclear Aromatic Hydrocarbons GC/M

Analysis Method: **M8270C GC/MS**
Extract Method: **M3540**

Workgroup: WG458231
Analyst: rgt
Extract Date: 10/08/18 17:40
Analysis Date: 10/10/18 1:20

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
2-Methylnaphthalene	91-57-6		U	1380	*	ug/Kg	3000	10000
Acenaphthene	83-32-9		U	1380	*	ug/Kg	3000	10000
Acenaphthylene	208-96-8		U	1380	*	ug/Kg	3000	10000
Anthracene	120-12-7		U	1380	*	ug/Kg	3000	10000
Benzo(a)anthracene	56-55-3		U	1380	*	ug/Kg	3000	10000
Benzo(a)pyrene	50-32-8		U	1380	*	ug/Kg	3000	10000
Benzo(b)fluoranthene	205-99-2		U	1380	*	ug/Kg	3000	10000
Benzo(g,h,i)perylene	191-24-2		U	1380	*	ug/Kg	3000	10000
Benzo(k)fluoranthene	207-08-9		U	1380	*	ug/Kg	3000	10000
Chrysene	218-01-9		U	1380	*	ug/Kg	3000	10000
Dibenzo(a,h)anthracene	53-70-3		U	1380	*	ug/Kg	3000	10000
Fluoranthene	206-44-0		U	1380	*	ug/Kg	3000	10000
Fluorene	86-73-7		U	1380	*	ug/Kg	3000	10000
Indeno(1,2,3-cd)pyrene	193-39-5		U	1380	*	ug/Kg	3000	10000
Naphthalene	91-20-3		U	1380	*	ug/Kg	3000	10000
Phenanthrene	85-01-8		U	1380	*	ug/Kg	3000	10000
Pyrene	129-00-0		U	1380	*	ug/Kg	3000	10000
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
2-Fluorobiphenyl	321-60-8	100.2		1380	*	%	45	105
Nitrobenzene-d5	4165-60-0	77.6		1380	*	%	35	100
Terphenyl-d14	1718-51-0	114.2		1380	*	%	30	125

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 SPILL N

ACZ Sample ID: ***L47392-07***
Date Sampled: *10/02/18 16:00*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Benzene, Toluene, Ethylbenzene & Xylene

Analysis Method: **M8021B GC/PID**
Extract Method: **5035A**

Workgroup: WG458170
Analyst: itm
Extract Date: 10/10/18 23:10
Analysis Date: 10/10/18 23:10

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
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
Bromofluorobenzene	460-00-4	106.6		5	*	%	70	130

North Park Engineering & Consulting, Inc
Project ID: Marcus Production St. 1-36 Wel
Sample ID: STATE 1-36 SPILL N

ACZ Sample ID: ***L47392-07***
Date Sampled: *10/02/18 16:00*
Date Received: *10/05/18*
Sample Matrix: *Soil*

Diesel Range Organics (C10-C28)

Analysis Method: **M8015D GC/FID**
Extract Method: **M3540**

Workgroup: WG458397
Analyst: kfm
Extract Date: 10/10/18 20:47
Analysis Date: 10/11/18 21:32

Compound	CAS	Result	QUAL	Dilution	XQ	Units	MDL	PQL
TPH C10 to C28		39		0.0668	*	mg/Kg	6.68	33.4
Surrogate Recoveries	**CAS**	**% Recovery**		**Dilution**	**XQ**	**Units**	**LCL**	**UCL**
OTP	84-15-1	83.67		0.0668	*	%	60	115

Report Header Explanations

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

QC Sample Types

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

North Park Engineering & Consulting, Inc ACZ Project ID: ***L47392***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Benzene, Toluene, Ethylbenzene & Xylenes

M8021B GC/PID

WG458170

AS **Sample ID: L47392-01AS** **PCN/SCN: B180822-2-ICV** **Analyzed: 10/10/18 21:11**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
BENZENE	125.5	U	124.2	ug/Kg	99.0	70	130			
ETHYLBENZENE	125	U	120.6	ug/Kg	96.0	70	130			
M P XYLENE	251.8	U	240	ug/Kg	95.0	70	130			
O XYLENE	251.3	U	243.5	ug/Kg	97.0	70	130			
TOLUENE	376.5	U	354.4	ug/Kg	94.0	70	130			
TVH C6 TO C10	2.3	U	2.15	mg/Kg	95.0	70	130			
BROMOFLUOROBENZENE (surr)				%	106.3	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	107.0	70	130			

ASD **Sample ID: L47392-01ASD** **PCN/SCN: B180822-2-ICV** **Analyzed: 10/10/18 21:41**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
BENZENE	125.5	U	126.1	ug/Kg	100.0	70	130	2	20	
ETHYLBENZENE	125	U	120.8	ug/Kg	97.0	70	130	0	20	
M P XYLENE	251.8	U	241	ug/Kg	96.0	70	130	0	20	
O XYLENE	251.3	U	245.9	ug/Kg	98.0	70	130	1	20	
TOLUENE	376.5	U	357.2	ug/Kg	95.0	70	130	1	20	
TVH C6 TO C10	2.3	U	2.12	mg/Kg	94.0	70	130	1	20	
BROMOFLUOROBENZENE (surr)				%	106.7	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	107.2	70	130			

LCSS **Sample ID: WG458170LCSS** **PCN/SCN: B180822-2-ICV** **Analyzed: 10/10/18 18:43**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
BENZENE	25.1		24.3	ug/Kg	97.0	70	130			
ETHYLBENZENE	25		24.8	ug/Kg	99.0	70	130			
M P XYLENE	50.4		49.2	ug/Kg	98.0	70	130			
O XYLENE	50.3		48.8	ug/Kg	97.0	70	130			
TOLUENE	75.3		71.7	ug/Kg	95.0	70	130			
TVH C6 TO C10	.5		.44	mg/Kg	98.0	70	130			
BROMOFLUOROBENZENE (surr)				%	111.2	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	111.4	70	130			
BENZENE	25.1		27.1	ug/Kg	108.0	70	130			
ETHYLBENZENE	25		27.2	ug/Kg	109.0	70	130			
M P XYLENE	50.4		54	ug/Kg	107.0	70	130			
O XYLENE	50.3		53.6	ug/Kg	107.0	70	130			
TOLUENE	75.3		79.8	ug/Kg	106.0	70	130			
TVH C6 TO C10	.5		.442	mg/Kg	98.0	70	130			
BROMOFLUOROBENZENE (surr)				%	112.3	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	113.0	70	130			

LCSSD **Sample ID: WG458170LCSSD** **PCN/SCN: B180822-2-ICV** **Analyzed: 10/10/18 19:12**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
BENZENE	25.1		24.9	ug/Kg	99.0	70	130	2	20	
ETHYLBENZENE	25		25.1	ug/Kg	100.0	70	130	1	20	
M P XYLENE	50.4		49.9	ug/Kg	99.0	70	130	1	20	

North Park Engineering & Consulting, Inc ACZ Project ID: ***L47392***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

O XYLENE	50.3	50.1	ug/Kg	100.0	70	130	3	20
TOLUENE	75.3	73.2	ug/Kg	97.0	70	130	2	20
TVH C6 TO C10	.5	.439	mg/Kg	97.0	70	130	0	20
BROMOFLUOROBENZENE (surr)			%	110.8	70	130		
BROMOFLUOROBENZENE (TVH) (surr)			%	110.9	70	130		
BENZENE	25.1	27.8	ug/Kg	111.0	70	130	3	20
ETHYLBENZENE	25	27.9	ug/Kg	112.0	70	130	3	20
M P XYLENE	50.4	55.2	ug/Kg	110.0	70	130	2	20
O XYLENE	50.3	54.8	ug/Kg	109.0	70	130	2	20
TOLUENE	75.3	81.9	ug/Kg	109.0	70	130	3	20
TVH C6 TO C10	.5	.454	mg/Kg	101.0	70	130	3	20
BROMOFLUOROBENZENE (surr)			%	112.5	70	130		
BROMOFLUOROBENZENE (TVH) (surr)			%	112.7	70	130		

PBS **Sample ID: WG458170PBS** **Analyzed: 10/10/18 20:12**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
BENZENE			U	ug/Kg		-1	1			
ETHYLBENZENE			U	ug/Kg		-1	1			
M P XYLENE			U	ug/Kg		-2	2			
O XYLENE			U	ug/Kg		-1	1			
TOLUENE			U	ug/Kg		-1	1			
TVH C6 TO C10			U	mg/Kg		-.05	.05			
BROMOFLUOROBENZENE (surr)				%	101.7	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	101.0	70	130			
BENZENE			U	ug/Kg		-1	1			
ETHYLBENZENE			U	ug/Kg		-1	1			
M P XYLENE			U	ug/Kg		-2	2			
O XYLENE			U	ug/Kg		-1	1			
TOLUENE			U	ug/Kg		-1	1			
TVH C6 TO C10			U	mg/Kg		-.05	.05			
BROMOFLUOROBENZENE (surr)				%	112.1	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	110.8	70	130			

North Park Engineering & Consulting, Inc ACZ Project ID: ***L47392***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

BTEX/Gasoline Range Organics (C6-C10)

M8021B/8015D GC/PID/FID

WG458170

AS **Sample ID: L47392-01AS** **PCN/SCN: B180822-2-ICV** **Analyzed: 10/10/18 21:11**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
BENZENE	125.5	U	124.2	ug/Kg	99.0	70	130			
ETHYLBENZENE	125	U	120.6	ug/Kg	96.0	70	130			
M P XYLENE	251.8	U	240	ug/Kg	95.0	70	130			
O XYLENE	251.3	U	243.5	ug/Kg	97.0	70	130			
TOLUENE	376.5	U	354.4	ug/Kg	94.0	70	130			
TVH C6 TO C10	2.3	U	2.15	mg/Kg	95.0	70	130			
BROMOFLUOROBENZENE (surr)				%	106.3	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	107.0	70	130			

ASD **Sample ID: L47392-01ASD** **PCN/SCN: B180822-2-ICV** **Analyzed: 10/10/18 21:41**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
BENZENE	125.5	U	126.1	ug/Kg	100.0	70	130	2	20	
ETHYLBENZENE	125	U	120.8	ug/Kg	97.0	70	130	0	20	
M P XYLENE	251.8	U	241	ug/Kg	96.0	70	130	0	20	
O XYLENE	251.3	U	245.9	ug/Kg	98.0	70	130	1	20	
TOLUENE	376.5	U	357.2	ug/Kg	95.0	70	130	1	20	
TVH C6 TO C10	2.3	U	2.12	mg/Kg	94.0	70	130	1	20	
BROMOFLUOROBENZENE (surr)				%	106.7	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	107.2	70	130			

LCSS **Sample ID: WG458170LCSS** **PCN/SCN: B180822-2-ICV** **Analyzed: 10/10/18 18:43**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
BENZENE	25.1		24.3	ug/Kg	97.0	70	130			
ETHYLBENZENE	25		24.8	ug/Kg	99.0	70	130			
M P XYLENE	50.4		49.2	ug/Kg	98.0	70	130			
O XYLENE	50.3		48.8	ug/Kg	97.0	70	130			
TOLUENE	75.3		71.7	ug/Kg	95.0	70	130			
TVH C6 TO C10	.5		.44	mg/Kg	98.0	70	130			
BROMOFLUOROBENZENE (surr)				%	111.2	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	111.4	70	130			
BENZENE	25.1		27.1	ug/Kg	108.0	70	130			
ETHYLBENZENE	25		27.2	ug/Kg	109.0	70	130			
M P XYLENE	50.4		54	ug/Kg	107.0	70	130			
O XYLENE	50.3		53.6	ug/Kg	107.0	70	130			
TOLUENE	75.3		79.8	ug/Kg	106.0	70	130			
TVH C6 TO C10	.5		.442	mg/Kg	98.0	70	130			
BROMOFLUOROBENZENE (surr)				%	112.3	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	113.0	70	130			

LCSSD **Sample ID: WG458170LCSSD** **PCN/SCN: B180822-2-ICV** **Analyzed: 10/10/18 19:12**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
BENZENE	25.1		24.9	ug/Kg	99.0	70	130	2	20	
ETHYLBENZENE	25		25.1	ug/Kg	100.0	70	130	1	20	
M P XYLENE	50.4		49.9	ug/Kg	99.0	70	130	1	20	

North Park Engineering & Consulting, Inc ACZ Project ID: ***L47392***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

O XYLENE	50.3	50.1	ug/Kg	100.0	70	130	3	20
TOLUENE	75.3	73.2	ug/Kg	97.0	70	130	2	20
TVH C6 TO C10	.5	.439	mg/Kg	97.0	70	130	0	20
BROMOFLUOROBENZENE (surr)			%	110.8	70	130		
BROMOFLUOROBENZENE (TVH) (surr)			%	110.9	70	130		
BENZENE	25.1	27.8	ug/Kg	111.0	70	130	3	20
ETHYLBENZENE	25	27.9	ug/Kg	112.0	70	130	3	20
M P XYLENE	50.4	55.2	ug/Kg	110.0	70	130	2	20
O XYLENE	50.3	54.8	ug/Kg	109.0	70	130	2	20
TOLUENE	75.3	81.9	ug/Kg	109.0	70	130	3	20
TVH C6 TO C10	.5	.454	mg/Kg	101.0	70	130	3	20
BROMOFLUOROBENZENE (surr)			%	112.5	70	130		
BROMOFLUOROBENZENE (TVH) (surr)			%	112.7	70	130		

PBS **Sample ID: WG458170PBS** **Analyzed: 10/10/18 20:12**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
BENZENE			U	ug/Kg		-1	1			
ETHYLBENZENE			U	ug/Kg		-1	1			
M P XYLENE			U	ug/Kg		-2	2			
O XYLENE			U	ug/Kg		-1	1			
TOLUENE			U	ug/Kg		-1	1			
TVH C6 TO C10			U	mg/Kg		-.05	.05			
BROMOFLUOROBENZENE (surr)				%	101.7	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	101.0	70	130			
BENZENE			U	ug/Kg		-1	1			
ETHYLBENZENE			U	ug/Kg		-1	1			
M P XYLENE			U	ug/Kg		-2	2			
O XYLENE			U	ug/Kg		-1	1			
TOLUENE			U	ug/Kg		-1	1			
TVH C6 TO C10			U	mg/Kg		-.05	.05			
BROMOFLUOROBENZENE (surr)				%	112.1	70	130			
BROMOFLUOROBENZENE (TVH) (surr)				%	110.8	70	130			

North Park Engineering & Consulting, Inc ACZ Project ID: ***L47392***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Diesel Range Organics (C10-C28)

M8015D GC/FID

WG458397

MS **Sample ID: L47392-01MS** **PCN/SCN: OPTPH180927-1** **Analyzed: 10/11/18 18:01**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
TPH C10 TO C28	2500	U	185.696	mg/Kg	77.0					
OTP (surr)				%	79.8	60	115			

MSD **Sample ID: L47392-01MSD** **PCN/SCN: OPTPH180927-1** **Analyzed: 10/11/18 18:24**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
TPH C10 TO C28	2500	U	192.722	mg/Kg	80.0	70	130	4	20	
OTP (surr)				%	84.1	60	115			

DUP **Sample ID: L47392-02DUP** **Analyzed: 10/11/18 19:11**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
TPH C10 TO C28		3300	3088.25	mg/Kg				7	20	
OTP (surr)				%	83.2	60	115			

LCSS **Sample ID: WG458227LCSS** **PCN/SCN: OPTPH180927-1** **Analyzed: 10/11/18 16:50**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
TPH C10 TO C28	2500		75.826	mg/Kg	91.0	70	130			
OTP (surr)				%	89.5	60	115			

LCSSD **Sample ID: WG458227LCSSD** **PCN/SCN: OPTPH180927-1** **Analyzed: 10/11/18 17:14**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
TPH C10 TO C28	2500		73.331	mg/Kg	88.0	70	130	3	20	
OTP (surr)				%	88.8	60	115			

PBS **Sample ID: WG458227PBS** **Analyzed: 10/11/18 16:27**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
TPH C10 TO C28			U	mg/Kg		-16.7	16.7			
OTP (surr)				%	83.3	60	115			

North Park Engineering & Consulting, Inc ACZ Project ID: ***L47392***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Polynuclear Aromatic Hydrocarbons GC/MS

M8270C GC/MS

WG458231

MS **Sample ID: L47372-01MS** **PCN/SCN: OPBNA180924-1** **Analyzed: 10/10/18 0:12**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
ACENAPHTHENE	49648	U	3700	ug/Kg	106.0	40	123			
PYRENE	50428	U	3200	ug/Kg	90.0	47	127			
2,4,6-TRIBROMOPHENOL (surr)				%	67.8	35	125			
2-FLUOROBIPHENYL (surr)				%	97.3	45	105			
2-FLUOROPHENOL (surr)				%	72.2	35	105			
NITROBENZENE-D5 (surr)				%	68.8	35	100			
PHENOL-D6 (surr)				%	85.6	40	100			
TERPHENYL-D14 (surr)				%	114.4	30	125			

MSD **Sample ID: L47372-01MSD** **PCN/SCN: OPBNA180924-1** **Analyzed: 10/10/18 0:46**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
ACENAPHTHENE	49648	U	3400	ug/Kg	98.0	40	123	8	20	
PYRENE	50428	U	2900	ug/Kg	82.0	47	127	10	20	
2,4,6-TRIBROMOPHENOL (surr)				%	66.3	35	125			
2-FLUOROBIPHENYL (surr)				%	92.2	45	105			
2-FLUOROPHENOL (surr)				%	70.2	35	105			
NITROBENZENE-D5 (surr)				%	70.8	35	100			
PHENOL-D6 (surr)				%	78.6	40	100			
TERPHENYL-D14 (surr)				%	107.9	30	125			

LCSS **Sample ID: WG458044LCSS** **PCN/SCN: OPBNA180924-1** **Analyzed: 10/09/18 19:09**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
ACENAPHTHENE	49648		1473	ug/Kg	89.0	40	123			
PYRENE	50428		1434	ug/Kg	85.0	47	127			
2,4,6-TRIBROMOPHENOL (surr)				%	85.4	35	125			
2-FLUOROBIPHENYL (surr)				%	86.7	45	105			
2-FLUOROPHENOL (surr)				%	80.6	35	105			
NITROBENZENE-D5 (surr)				%	90.0	35	100			
PHENOL-D6 (surr)				%	82.1	40	100			
TERPHENYL-D14 (surr)				%	102.1	30	125			

LCSSD **Sample ID: WG458044LCSSD** **PCN/SCN: OPBNA180924-1** **Analyzed: 10/09/18 19:43**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
ACENAPHTHENE	49648		1392	ug/Kg	84.0	40	123	6	20	
PYRENE	50428		1352	ug/Kg	80.0	47	127	6	20	
2,4,6-TRIBROMOPHENOL (surr)				%	80.2	35	125			
2-FLUOROBIPHENYL (surr)				%	82.0	45	105			
2-FLUOROPHENOL (surr)				%	76.4	35	105			
NITROBENZENE-D5 (surr)				%	84.7	35	100			
PHENOL-D6 (surr)				%	76.8	40	100			
TERPHENYL-D14 (surr)				%	96.4	30	125			

North Park Engineering & Consulting, Inc

ACZ Project ID: ***L47392***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

PBS **Sample ID: WG458044PBS** **Analyzed: 10/09/18 18:35**

Compound	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
2-METHYLNAPHTHALENE			U	ug/Kg		-300	300			
ACENAPHTHENE			U	ug/Kg		-300	300			
ACENAPHTHYLENE			U	ug/Kg		-300	300			
ANTHRACENE			U	ug/Kg		-300	300			
BENZO(A)ANTHRACENE			U	ug/Kg		-300	300			
BENZO(A)PYRENE			U	ug/Kg		-300	300			
BENZO(B)FLUORANTHENE			U	ug/Kg		-300	300			
BENZO(G,H,I)PERYLENE			U	ug/Kg		-300	300			
BENZO(K)FLUORANTHENE			U	ug/Kg		-300	300			
CHRYSENE			U	ug/Kg		-300	300			
DIBENZO(A,H)ANTHRACENE			U	ug/Kg		-300	300			
FLUORANTHENE			U	ug/Kg		-300	300			
FLUORENE			U	ug/Kg		-300	300			
INDENO(1,2,3-CD)PYRENE			U	ug/Kg		-300	300			
NAPHTHALENE			U	ug/Kg		-300	300			
PHENANTHRENE			U	ug/Kg		-300	300			
PYRENE			U	ug/Kg		-300	300			
2,4,6-TRIBROMOPHENOL (surr)				%	76.5	35	125			
2-FLUOROBIPHENYL (surr)				%	82.8	45	105			
2-FLUOROPHENOL (surr)				%	78.0	35	105			
NITROBENZENE-D5 (surr)				%	86.4	35	100			
PHENOL-D6 (surr)				%	78.4	40	100			
TERPHENYL-D14 (surr)				%	100.0	30	125			

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L47392-01	WG458170	*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.
	WG458397	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	DK	Sample mass used for extraction decreased due to high moisture content.
	WG458231	*All Compounds*	M8270C GC/MS	Q6	Sample was received above recommended temperature.
		2-Methylnaphthalene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Acenaphthene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Acenaphthylene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Anthracene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Benzo(a)anthracene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Benzo(a)pyrene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Benzo(b)fluoranthene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Benzo(g,h,i)perylene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Benzo(k)fluoranthene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Chrysene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Dibenzo(a,h)anthracene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Fluoranthene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Fluorene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Indeno(1,2,3-cd)pyrene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Naphthalene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Phenanthrene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.
		Pyrene	M8270C GC/MS	DK	Sample mass used for extraction decreased due to high moisture content.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L47392-02	WG458170	*All Compounds*	M8021B/8015D GC/PID/FID	Q6	Sample was received above recommended temperature.
		Bromofluorobenzene (TVH)	M8021B/8015D GC/PID/FID	SA	Surrogate recovery was outside acceptance limits due to matrix interference.
	WG458397	*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.
	WG458231	*All Compounds*	M8270C GC/MS	Q6	Sample was received above recommended temperature.
		2-Methylnaphthalene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Acenaphthene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Acenaphthylene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Anthracene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Benzo(a)anthracene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Benzo(a)pyrene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Benzo(b)fluoranthene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Benzo(g,h,i)perylene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Benzo(k)fluoranthene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Chrysene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Dibenzo(a,h)anthracene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Fluoranthene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Fluorene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Indeno(1,2,3-cd)pyrene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Naphthalene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Phenanthrene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Pyrene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
L47392-03	WG458170	*All Compounds*	M8021B GC/PID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B GC/PID	D1	Sample required dilution due to matrix.
			M8021B GC/PID	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 GC/PID	D1	Sample required dilution due to matrix.
			M8021B GC/PID	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 GC/PID	D1	Sample required dilution due to matrix.
			M8021B GC/PID	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 GC/PID	D1	Sample required dilution due to matrix.
			M8021B GC/PID	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 GC/PID	D1	Sample required dilution due to matrix.
			M8021B GC/PID	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.
	WG458397	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.
		TPH C10 to C28	M8015D GC/FID	DK	Sample mass used for extraction decreased due to high moisture content.
L47392-04	WG458170	*All Compounds*	M8021B GC/PID	Q6	Sample was received above recommended temperature.
	WG458397		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.
L47392-05	WG458170	*All Compounds*	M8021B GC/PID	Q6	Sample was received above recommended temperature.
	WG458397		M8015D GC/FID	Q6	Sample was received above recommended temperature.

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L47392-06	WG458170	*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	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.
	WG458397	*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.
	WG458231	*All Compounds*	M8270C GC/MS	Q6	Sample was received above recommended temperature.
		2-Methylnaphthalene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Acenaphthene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Acenaphthylene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Anthracene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Benzo(a)anthracene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Benzo(a)pyrene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Benzo(b)fluoranthene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Benzo(g,h,i)perylene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Benzo(k)fluoranthene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Chrysene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Dibenzo(a,h)anthracene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Fluoranthene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Fluorene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Indeno(1,2,3-cd)pyrene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Naphthalene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Phenanthrene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
		Pyrene	M8270C GC/MS	DD	Sample required dilution due to matrix color or odor.
L47392-07	WG458170	*All Compounds*	M8021B GC/PID	Q6	Sample was received above recommended temperature.
		Benzene	M8021B GC/PID	D1	Sample required dilution due to matrix.
			M8021B GC/PID	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 GC/PID	D1	Sample required dilution due to matrix.
			M8021B GC/PID	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 GC/PID	D1	Sample required dilution due to matrix.
			M8021B GC/PID	ZM	Data is estimated because result is below 200 ug/Kg; ACZ does not have a closed-system purge and trap as

ACZ Project ID: ***L47392***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					described in method 5035.
		o Xylene	M8021B GC/PID	D1	Sample required dilution due to matrix.
			M8021B GC/PID	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 GC/PID	D1	Sample required dilution due to matrix.
			M8021B GC/PID	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.
	WG458397	*All Compounds*	M8015D GC/FID	Q6	Sample was received above recommended temperature.

North Park Engineering & Consulting, Inc ACZ Project ID: ***L47392***

Soil Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Solids, Percent	D2216-80

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
Solids, Percent	D2216-80

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

North Park Engineering & Consulting, Inc
Marcus Production St. 1-36 Well Project

ACZ Project ID: L47392
Date Received: 10/05/2018 11:19
Received By:
Date Printed: 10/8/2018

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?		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?
2367	8.7	<=6.0	14	N/A

Was ice present in the shipment container(s)?

Yes - Gel ice was 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.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

North Park Engineering & Consulting, Inc
Marcus Production St. 1-36 Well Project

ACZ Project ID:	L47392
Date Received:	10/05/2018 11:19
Received By:	
Date Printed:	10/8/2018

[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).

ACZ Laboratories, Inc.

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

L47392

CHAIN of CUSTODY

Report to:

Name: Randy Miller	Address: PO Box 395
Company: North Park Engineering & Consulting, Inc.	Walden, CO 80480
E-mail: randy@npeng.com	Telephone: 970-218-4974

Copy of Report to:

Name:	E-mail:
Company:	Telephone: 307-266-1498

Invoice to:

Name: Randy Miller	Address: PO Box 395
Company: North Park Engineering & Consulting, Inc.	Walden, CO 80480
E-mail: randy@npeng.com	Telephone: 970-218-4974

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 [ ] NO [X]

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 CO DW Compliance Monitoring? YES [ ] NO [X]

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

PROJECT INFORMATION

Quote #: **BTX-TPH, SOIL-910-1+SAR**

Project/PO #: Farleigh Oil - Land Farm

Reporting state for compliance testing: n/a

Sampler's Name: Randy Miller

Are any samples NRC licensable material? Yes No N

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SOIL-910-1+SAR	BTX-TPH						
State 1-36 Pit Bottom	10-2-18 15:30	SO	1	X							
State 1-36 Pit N	10-2-18 15:35	SO	1	X	X						
State 1-36 Pit E	10-2-18 15:40	SO	1		X						
State 1-36 Pit S	10-2-18 15:45	SO	1		X						
State 1-36 Pit W	10-2-18 15:50	SO	1		X						
State 1-36 Spill S	10-2-18 15:55	SO	1	X							
State 1-36 Spill N	10-2-18 16:00	SO	1		X						

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.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Randall Miller	10/4/18 12:00	LAS	10/5/18 11:19

FRMAD050.01.15.09 White - Return with sample. Yellow - Retain for your records.

L47392 Chain of Custod