

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 03, 2019

Jeremy Pike

LT Environmental, Inc.

4600 West 60th Avenue

Arvada, CO 80003

RE: Garden Creek 16-2314H

Work Order # 1905289

Enclosed are the results of analyses for samples received by Summit Scientific on 05/24/19 17:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large, stylized 'M' and 'P'.

Muri Premer For Ben Shrewsbury

Laboratory Manager



LT Environmental, Inc.
4600 West 60th Avenue
Arvada CO, 80003

Project: Garden Creek 16-2314H

Project Number: 027318135
Project Manager: Jeremy Pike

Reported:
06/03/19 12:49

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@18"-24"	1905289-01	Soil	05/24/19 10:30	05/24/19 17:15
SS02@18"-24"	1905289-02	Soil	05/24/19 10:25	05/24/19 17:15

Summit Scientific

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1905289

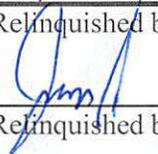
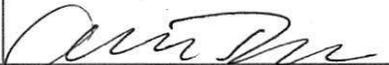
Summit Scientific

S₂

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310 ♦ 303-374-5933 (f)

Client: LT Environmental, Inc.	Project Manager: Jeremy Pike
Address: 4600 West 60th Avenue	E-Mail: jpike@ltenv.com
City/State/Zip: Arvada, Colorado 80003	
Phone: 303-433-9788	Project Name: Garden Creek 16-2314H
Sampler Name: <u>Jeremy Pike / Ben Baych</u>	Project Number: 027318135

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	GBTEX	TPH-DRO	EC	pH	SAR		
1	SS01@18"-24"	5/24/17	1030	1			x			x				x	x	x	x	x	
2	SS02@18"-24"	5/24/19	1025	1			x			x				x	x	x	x	x	
3	SS03@18"-24"						x			x				x	x	x	x	x	
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by: 	Date/Time: 5/24/19 1715	Received by: 	Date/Time: 5-24-19 17:15	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/> 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> Sample Integrity: Temperature Upon Receipt: 11.1° Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No
Relinquished by:	Date/Time:	Received by:	Date/Time:	
Relinquished by:	Date/Time:	Received by:	Date/Time:	

Sample Receipt Checklist

S2 Work Order 1905-289

Client: LTE Client Project ID: Garden Creek 16-231411

Shipped Via (H.D.) /P.U./FedEx/UPS/USPS/Other _____ Airbill #: _____

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

Temp (°C)	11.1
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Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			on ice
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are samples with holding times due within 48 hours sample due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	✓			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			✓	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			✓	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	

Additional Comments (if any):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

AT
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

5-24-19 17:15
Date/Time



LT Environmental, Inc.
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Arvada CO, 80003

Project: Garden Creek 16-2314H

Project Number: 027318135
Project Manager: Jeremy Pike

Reported:
06/03/19 12:49

SS01@18"-24"
1905289-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/24/19 10:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1905353	05/28/19	05/29/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/24/19 10:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.8 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/24/19 10:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1905356	05/28/19	05/29/19	EPA 8015M	

Date Sampled: **05/24/19 10:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		98.0 %	30-150		"	"	"	"	

Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **05/24/19 10:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	5310	11.5	mg/kg dry	1	1905414	05/30/19	05/31/19	EPA 6020B	
Magnesium	541	5.75	"	"	"	"	"	"	

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SS01@18"-24"
1905289-01 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis

Sodium	50.3	5.75	mg/kg dry	1	1905414	05/30/19	05/31/19	EPA 6020B
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Calculated Analysis

Date Sampled: **05/24/19 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.176	0.100	units	1	1906004	06/03/19	06/03/19	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/24/19 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.0		%	1	1905372	05/29/19	05/29/19	Calculation	
pH	8.50		pH Units	"	1905374	05/29/19	05/29/19	EPA 9045D	

Specific Conductance by EPA Method 120.1

Date Sampled: **05/24/19 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.548	0.0100	mmhos/cm	1	1905373	05/29/19	05/29/19	EPA 120.1	

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Project: Garden Creek 16-2314H

Project Number: 027318135
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SS02@18"-24"
1905289-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/24/19 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1905353	05/28/19	05/29/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/24/19 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.5 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/24/19 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1905356	05/28/19	05/29/19	EPA 8015M	

Date Sampled: **05/24/19 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.2 %	30-150		"	"	"	"	

Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **05/24/19 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	7160	11.6	mg/kg dry	1	1905414	05/30/19	05/31/19	EPA 6020B	
Magnesium	611	5.82	"	"	"	"	"	"	
Sodium	18.2	5.82	"	"	"	"	"	"	

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SS02@18"-24"
1905289-02 (Soil)

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Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis

Calculated Analysis

Date Sampled: **05/24/19 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	ND	0.100	units	1	1906004	06/03/19	06/03/19	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/24/19 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.9		%	1	1905372	05/29/19	05/29/19	Calculation	
pH	8.49		pH Units	"	1905374	05/29/19	05/29/19	EPA 9045D	

Specific Conductance by EPA Method 120.1

Date Sampled: **05/24/19 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.590	0.0100	mmhos/cm	1	1905373	05/29/19	05/29/19	EPA 120.1	

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06/03/19 12:49

Volatile Organic Compounds by EPA Method 8260B - Quality Control

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

Batch 1905353 - EPA 5030 Soil MS

Blank (1905353-BLK1)

Prepared & Analyzed: 05/28/19

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0368		"	0.0400		92.0	23-173			
Surrogate: Toluene-d8	0.0395		"	0.0400		98.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0384		"	0.0400		96.0	21-167			

LCS (1905353-BS1)

Prepared & Analyzed: 05/28/19

Benzene	0.0951	0.0020	mg/kg	0.100		95.1	70-130			
Toluene	0.0957	0.0050	"	0.100		95.7	70-130			
Ethylbenzene	0.0818	0.0050	"	0.100		81.8	70-130			
m,p-Xylene	0.168	0.010	"	0.200		83.9	70-130			
o-Xylene	0.0843	0.0050	"	0.100		84.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0358		"	0.0400		89.4	23-173			
Surrogate: Toluene-d8	0.0463		"	0.0400		116	20-170			
Surrogate: 4-Bromofluorobenzene	0.0364		"	0.0400		90.9	21-167			

Matrix Spike (1905353-MS1)

Source: 1905288-01

Prepared & Analyzed: 05/28/19

Benzene	0.108	0.0020	mg/kg	0.100	ND	108	70-130			
Toluene	0.115	0.0050	"	0.100	ND	115	70-130			
Ethylbenzene	0.110	0.0050	"	0.100	ND	110	70-130			
m,p-Xylene	0.221	0.010	"	0.200	ND	111	70-130			
o-Xylene	0.111	0.0050	"	0.100	ND	111	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0362		"	0.0400		90.6	23-173			
Surrogate: Toluene-d8	0.0425		"	0.0400		106	20-170			
Surrogate: 4-Bromofluorobenzene	0.0369		"	0.0400		92.3	21-167			

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Project Number: 027318135
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Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

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

Batch 1905353 - EPA 5030 Soil MS

Matrix Spike Dup (1905353-MSD1)	Source: 1905288-01			Prepared & Analyzed: 05/28/19						
Benzene	0.118	0.0020	mg/kg	0.100	ND	118	70-130	8.53	30	
Toluene	0.124	0.0050	"	0.100	ND	124	70-130	6.88	30	
Ethylbenzene	0.122	0.0050	"	0.100	ND	122	70-130	9.81	30	
m,p-Xylene	0.245	0.010	"	0.200	ND	122	70-130	10.1	30	
o-Xylene	0.124	0.0050	"	0.100	ND	124	70-130	11.1	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.7</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0369</i>		<i>"</i>	<i>0.0400</i>		<i>92.2</i>	<i>21-167</i>			

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Project Number: 027318135
Project Manager: Jeremy Pike

Reported:
06/03/19 12:49

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1905356 - EPA 3550A

Blank (1905356-BLK1)

Prepared: 05/28/19 Analyzed: 05/29/19

C10-C28 (DRO) ND 50 mg/kg

LCS (1905356-BS1)

Prepared: 05/28/19 Analyzed: 05/29/19

C10-C28 (DRO) 554 50 mg/kg 500 111 70-130

Matrix Spike (1905356-MS1)

Source: 1905288-01

Prepared: 05/28/19 Analyzed: 05/29/19

C10-C28 (DRO) 549 50 mg/kg 500 19.5 106 70-130

Matrix Spike Dup (1905356-MSD1)

Source: 1905288-01

Prepared: 05/28/19 Analyzed: 05/29/19

C10-C28 (DRO) 572 50 mg/kg 500 19.5 111 70-130 4.22 20

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Project: Garden Creek 16-2314H

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Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis - Quality Control

Summit Scientific

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

Batch 1905414 - General Preparation

Blank (1905414-BLK1)

Prepared & Analyzed: 05/30/19

Calcium	ND	10.0	mg/kg wet						
Magnesium	ND	5.00	"						
Sodium	ND	5.00	"						

LCS (1905414-BS1)

Prepared & Analyzed: 05/30/19

Calcium	515	10.0	mg/kg wet	500	103	70-130			
Magnesium	563	5.00	"	500	113	70-130			
Sodium	516	5.00	"	500	103	70-130			

Duplicate (1905414-DUP1)

Source: 1905287-01

Prepared & Analyzed: 05/30/19

Calcium	3710	11.0	mg/kg dry	3660			1.55	20	
Magnesium	264	5.51	"	265			0.491	20	
Sodium	361	5.51	"	360			0.452	20	

Matrix Spike (1905414-MS1)

Source: 1905287-01

Prepared & Analyzed: 05/30/19

Calcium	4160	11.0	mg/kg dry	551	3660	91.1	70-130		
Magnesium	843	5.51	"	551	265	105	70-130		
Sodium	888	5.51	"	551	360	95.9	70-130		

Matrix Spike Dup (1905414-MSD1)

Source: 1905287-01

Prepared: 05/30/19 Analyzed: 05/31/19

Calcium	4190	11.0	mg/kg dry	551	3660	96.2	70-130	0.663	25
Magnesium	751	5.51	"	551	265	88.2	70-130	11.6	25
Sodium	819	5.51	"	551	360	83.4	70-130	8.02	25

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Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

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

Batch 1905372 - General Preparation

Duplicate (1905372-DUP1)		Source: 1905188-01			Prepared & Analyzed: 05/29/19						
% Solids	66.5		%		66.4				0.147	20	

Batch 1905374 - General Preparation

LCS (1905374-BS1)		Prepared & Analyzed: 05/29/19									
pH	9.40		pH Units	9.23		102	95-105				
Duplicate (1905374-DUP1)		Source: 1905287-01			Prepared & Analyzed: 05/29/19						
pH	7.74		pH Units	7.82				1.03	20		

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Project: Garden Creek 16-2314H

Project Number: 027318135
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Reported:
 06/03/19 12:49

Specific Conductance by EPA Method 120.1 - Quality Control
Summit Scientific

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

Batch 1905373 - General Preparation

Blank (1905373-BLK1)

Prepared & Analyzed: 05/29/19

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (1905373-BS1)

Prepared & Analyzed: 05/29/19

Specific Conductance (EC) 0.734 0.0100 mmhos/cm 0.750 97.8 90-110

Duplicate (1905373-DUP1)

Source: 1905287-01

Prepared & Analyzed: 05/29/19

Specific Conductance (EC) 2.51 0.0100 mmhos/cm 2.51 0.359 20

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Project Number: 027318135
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Reported:
06/03/19 12:49

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference