

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 13, 2018

Jeremy Pike

LT Environmental, Inc.

4600 West 60th Avenue

Arvada, CO 80003

RE: Garden Creek 16-23H

Enclosed are the results of analyses for samples received by Summit Scientific on 11/09/18 17:05. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury For Ben Shrewsbury

Laboratory Manager



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

Project: Garden Creek 16-23H

Project Number: [none]
Project Manager: Jeremy Pike

Reported:
11/13/18 14:10

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01	1811115-01	Soil	11/09/18 12:16	11/09/18 17:05
SS02	1811115-02	Soil	11/09/18 12:21	11/09/18 17:05

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Summit Scientific

1811115

741 Corporate Circle Suite 1 ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: LT Environmental
Address: 4600 W 60th Ave
City/State/Zip: Arvada, Colorado 80003
Phone: 303-433-9788 Fax: _____
Sampler Name: Drew Buller

Project Manager: Jeremy Pike
E-Mail: J Pike @ Ltenv.com
Project Name: Garden Creek 16-234
Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:						Special Instructions	
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	G	BTEX	TPH - DRO	PH	EC		SAR
S501	11/9/18	12:16	3			X			X				X	X	X	X		Hold B901 Pending results
S502	11/9/18	12:21	2			X			X				X	X	X			
S503	11/9/18	12:26	3			X			X				X	X	X			
B901	11/9/18	12:36	2			X			X				X	X	X			
Relinquished by: <u>Drew Buller</u> Date/Time: <u>11/9/18 17:05</u>				Received by: <u>[Signature]</u> Date/Time: <u>11/9/18 17:05</u>				Turn Around Time (Check)						Notes:				
Relinquished by:				Received by:				Same Day <input type="checkbox"/>						72 Hours <input type="checkbox"/>				
Relinquished by:				Received by:				24 Hours <input type="checkbox"/>						Standard <input checked="" type="checkbox"/>				
Relinquished by:				Received in Lab by:				48 Hours <input checked="" type="checkbox"/>						on ice				
Relinquished by:				Received in Lab by:				Sample Integrity:						Temperature Upon Receipt: <u>16.8</u>				
Relinquished by:				Received in Lab by:				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>										

1811115

Sample Receipt Checklist

S2 Work Order _____

Client: LT Environmental Client Project ID: Garden Creek 16-23bt

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

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

Temp (°C)	<u>6.8</u>
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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.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>on ice</u>
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>48 hr</u>
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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

11/9/18 17:05
Date/Time



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

Project: Garden Creek 16-23H

Project Number: [none]
Project Manager: Jeremy Pike

Reported:
11/13/18 14:10

SS01
181115-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/09/18 12:16**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1811149	11/12/18	11/13/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/09/18 12:16**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		83.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/09/18 12:16**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1811147	11/12/18	11/13/18	EPA 8015M	

Date Sampled: **11/09/18 12:16**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		94.3 %	30-150		"	"	"	"	

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

Date Sampled: **11/09/18 12:16**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	3200	10.8	mg/kg dry	1	1811154	11/12/18	11/12/18	EPA 6020B	
Magnesium	257	5.39	"	"	"	"	"	"	

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 Arvada CO, 80003

Project: Garden Creek 16-23H

Project Number: [none]
 Project Manager: Jeremy Pike

Reported:
 11/13/18 14:10

SS01
1811115-01 (Soil)

Summit Scientific

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

Sodium	4570	5.39	mg/kg dry	1	1811154	11/12/18	11/12/18	EPA 6020B
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Calculated Analysis

Date Sampled: **11/09/18 12:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	20.9	0.100	units	1	1811169	11/13/18	11/13/18	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/09/18 12:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	92.7		%	1	1811161	11/12/18	11/13/18	Calculation	
pH	8.20		pH Units	"	1811156	11/12/18	11/12/18	EPA 9045D	

Specific Conductance by EPA Method 120.1

Date Sampled: **11/09/18 12:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	18.3	0.0100	mmhos/cm	1	1811159	11/12/18	11/12/18	EPA 120.1	

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Project: Garden Creek 16-23H

Project Number: [none]
Project Manager: Jeremy Pike

Reported:
11/13/18 14:10

SS02
1811115-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/09/18 12:21**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	1811149	11/12/18	11/13/18	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **11/09/18 12:21**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		82.7 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		96.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/09/18 12:21**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	1811147	11/12/18	11/13/18	EPA 8015M	

Date Sampled: **11/09/18 12:21**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		92.9 %		30-150		"	"	"	"	

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LT Environmental, Inc.
4600 West 60th Avenue
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Project: Garden Creek 16-23H

Project Number: [none]
Project Manager: Jeremy Pike

Reported:
11/13/18 14:10

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1811149 - EPA 5030 Soil MS

Blank (1811149-BLK1)

Prepared: 11/12/18 Analyzed: 11/13/18

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	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0332		"	0.0396		83.9	23-173			
<i>Surrogate: Toluene-d8</i>	0.0393		"	0.0400		98.2	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0396		"	0.0400		99.1	21-167			

LCS (1811149-BS1)

Prepared: 11/12/18 Analyzed: 11/13/18

Benzene	0.102	0.0020	mg/kg	0.100		102	70-130			
Toluene	0.105	0.0050	"	0.100		105	70-130			
Ethylbenzene	0.105	0.0050	"	0.100		105	70-130			
m,p-Xylene	0.211	0.010	"	0.200		106	70-130			
o-Xylene	0.104	0.0050	"	0.100		104	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0336		"	0.0396		84.8	23-173			
<i>Surrogate: Toluene-d8</i>	0.0399		"	0.0400		99.7	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0392		"	0.0400		98.0	21-167			

Matrix Spike (1811149-MS1)

Source: 181114-01

Prepared: 11/12/18 Analyzed: 11/13/18

Benzene	0.0914	0.0020	mg/kg	0.100	ND	91.4	70-130			
Toluene	0.0887	0.0050	"	0.100	ND	88.7	70-130			
Ethylbenzene	0.0859	0.0050	"	0.100	ND	85.9	70-130			
m,p-Xylene	0.169	0.010	"	0.200	ND	84.4	70-130			
o-Xylene	0.0866	0.0050	"	0.100	ND	86.6	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	0.0333		"	0.0396		84.0	23-173			
<i>Surrogate: Toluene-d8</i>	0.0394		"	0.0400		98.4	20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0398		"	0.0400		99.4	21-167			

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LT Environmental, Inc.
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Arvada CO, 80003

Project: Garden Creek 16-23H

Project Number: [none]
Project Manager: Jeremy Pike

Reported:
11/13/18 14:10

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1811149 - EPA 5030 Soil MS

Matrix Spike Dup (1811149-MSD1)

Source: 181114-01

Prepared: 11/12/18 Analyzed: 11/13/18

Benzene	0.100	0.0020	mg/kg	0.100	ND	100	70-130	9.26	30	
Toluene	0.0970	0.0050	"	0.100	ND	97.0	70-130	8.89	30	
Ethylbenzene	0.0920	0.0050	"	0.100	ND	92.0	70-130	6.85	30	
m,p-Xylene	0.181	0.010	"	0.200	ND	90.5	70-130	6.98	30	
o-Xylene	0.0924	0.0050	"	0.100	ND	92.4	70-130	6.40	30	
Surrogate: 1,2-Dichloroethane-d4	0.0332		"	0.0396		83.8	23-173			
Surrogate: Toluene-d8	0.0391		"	0.0400		97.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400		98.4	21-167			

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Project: Garden Creek 16-23H

Project Number: [none]
 Project Manager: Jeremy Pike

Reported:
 11/13/18 14:10

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1811147 - EPA 3550A

Blank (1811147-BLK1)

Prepared & Analyzed: 11/12/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1811147-BS1)

Prepared & Analyzed: 11/12/18

C10-C28 (DRO) 435 50 mg/kg 500 87.0 70-130

Matrix Spike (1811147-MS1)

Source: 181114-01

Prepared & Analyzed: 11/12/18

C10-C28 (DRO) 563 50 mg/kg 500 209 70.7 70-130

Matrix Spike Dup (1811147-MSD1)

Source: 181114-01

Prepared & Analyzed: 11/12/18

C10-C28 (DRO) 540 50 mg/kg 500 209 66.1 70-130 4.19 20 QM-07

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LT Environmental, Inc.
4600 West 60th Avenue
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Project: Garden Creek 16-23H

Project Number: [none]
Project Manager: Jeremy Pike

Reported:
11/13/18 14:10

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

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

Batch 1811154 - General Preparation

Blank (1811154-BLK1)

Prepared & Analyzed: 11/12/18

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

LCS (1811154-BS1)

Prepared & Analyzed: 11/12/18

Calcium	556	10.0	mg/kg wet	500		111	70-130		
Magnesium	559	5.00	"	500		112	70-130		
Sodium	540	5.00	"	500		108	70-130		

Duplicate (1811154-DUP1)

Source: 1811111-16

Prepared & Analyzed: 11/12/18

Calcium	970	10.8	mg/kg dry		964			0.536	20
Magnesium	317	5.41	"		303			4.34	20
Sodium	38.9	5.41	"		32.4			18.2	20

Matrix Spike (1811154-MS1)

Source: 1811111-16

Prepared & Analyzed: 11/12/18

Calcium	1530	10.8	mg/kg dry	541	964	104	70-130		
Magnesium	904	5.41	"	541	303	111	70-130		
Sodium	606	5.41	"	541	32.4	106	70-130		

Matrix Spike Dup (1811154-MSD1)

Source: 1811111-16

Prepared & Analyzed: 11/12/18

Calcium	1550	10.8	mg/kg dry	541	964	108	70-130	1.62	25
Magnesium	906	5.41	"	541	303	112	70-130	0.325	25
Sodium	615	5.41	"	541	32.4	108	70-130	1.64	25

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Project: Garden Creek 16-23H

Project Number: [none]
Project Manager: Jeremy Pike

Reported:
11/13/18 14:10

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

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

Batch 1811156 - General Preparation

LCS (1811156-BS1)

Prepared & Analyzed: 11/12/18

pH 9.1 pH Units 9.18 99.2 95-105

Duplicate (1811156-DUP1)

Source: 1809415-02

Prepared & Analyzed: 11/12/18

pH 10 pH Units 10 0.486 20

Batch 1811161 - General Preparation

Duplicate (1811161-DUP1)

Source: 1809415-02

Prepared: 11/12/18 Analyzed: 11/13/18

% Solids 95.5 % 95.5 0.0503 20

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Project: Garden Creek 16-23H

Project Number: [none]
 Project Manager: Jeremy Pike

Reported:
 11/13/18 14:10

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 1811159 - General Preparation

Blank (1811159-BLK1)

Prepared & Analyzed: 11/12/18

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (1811159-BS1)

Prepared & Analyzed: 11/12/18

Specific Conductance (EC) 0.741 0.0100 mmhos/cm 0.750 98.7 90-110

Duplicate (1811159-DUP1)

Source: 1809415-02

Prepared & Analyzed: 11/12/18

Specific Conductance (EC) 5.94 0.0100 mmhos/cm 6.10 2.49 20

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4600 West 60th Avenue
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Project: Garden Creek 16-23H

Project Number: [none]
Project Manager: Jeremy Pike

Reported:
11/13/18 14:10

Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- 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