

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 31, 2019

Jeremy Pike  
LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada, CO 80003  
RE: State 36-1

Enclosed are the results of analyses for samples received by Summit Scientific on 01/22/19 16:44. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury For Ben Shrewsbury  
Laboratory Manager



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

Project: State 36-1

Project Number: [none]  
Project Manager: Jeremy Pike

**Reported:**  
01/31/19 13:51

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NW01@1'	1901269-01	Soil	01/22/19 10:10	01/22/19 16:44
FS01@2'	1901269-02	Soil	01/22/19 10:20	01/22/19 16:44
BG01	1901269-03	Soil	01/22/19 10:40	01/22/19 16:44

Summit Scientific

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Sampler Name: Drew Bullinger

Project Number:

[www.s2scientific.com](http://www.s2scientific.com)

# Sample Receipt Checklist

S2 Work Order 269

Client: LTE Client Project ID: State 36-1

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>2.3°</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 <sup>(1)</sup> ? 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 <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<u>PS</u> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<u>submitted as water soil is the matrix</u>
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" 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) <sup>(1)</sup> ? 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 <sup>(1)</sup> ? 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):

<sup>(1)</sup> 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

1-22-19 16:44  
Date/Time



LT Environmental, Inc.  
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Arvada CO, 80003

Project: State 36-1

Project Number: [none]  
Project Manager: Jeremy Pike

**Reported:**  
01/31/19 13:51

**NW01@1'**  
**1901269-01 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/22/19 10:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	0.0020	mg/kg	1	1901264	01/23/19	01/24/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/22/19 10:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.9 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/22/19 10:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1901263	"	01/25/19	EPA 8015M	

Date Sampled: **01/22/19 10:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		90.9 %	30-150		"	"	"	"	

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Project: State 36-1

Project Number: [none]  
Project Manager: Jeremy Pike

**Reported:**  
01/31/19 13:51

**FS01@2'**  
**1901269-02 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **01/22/19 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901264	01/23/19	01/24/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/22/19 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		96.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **01/22/19 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901263	"	01/25/19	EPA 8015M	

Date Sampled: **01/22/19 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		117 %	30-150		"	"	"	"	

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

Date Sampled: **01/22/19 10:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Calcium	5790	12.0	mg/kg dry	1	1901267	01/23/19	01/23/19	EPA 6020B	
Magnesium	480	6.00	"	"	"	"	"	"	

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**FS01@2'**  
**1901269-02 (Soil)**

**Summit Scientific**

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

Sodium	150	6.00	mg/kg dry	1	1901267	01/23/19	01/23/19	EPA 6020B
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**Calculated Analysis**

Date Sampled: **01/22/19 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.509	0.100	units	1	1901340	01/28/19	01/28/19	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **01/22/19 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	83.3		%	1	1901279	01/24/19	01/24/19	Calculation	
pH	8.00		pH Units	"	1901282	01/24/19	01/24/19	EPA 9045D	

**Specific Conductance by EPA Method 120.1**

Date Sampled: **01/22/19 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.998	0.0100	mmhos/cm	1	1901281	01/24/19	01/24/19	EPA 120.1	

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Project: State 36-1

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**Reported:**  
01/31/19 13:51

**BG01**  
**1901269-03 (Soil)**

**Summit Scientific**

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

Date Sampled: **01/22/19 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	312	11.4	mg/kg dry	1	1901267	01/23/19	01/23/19	EPA 6020B	
Magnesium	178	5.69	"	"	"	"	"	"	
Sodium	125	5.69	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **01/22/19 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	1.40	0.100	units	1	1901340	01/28/19	01/28/19	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **01/22/19 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	87.9		%	1	1901279	01/24/19	01/24/19	Calculation	
pH	7.95		pH Units	"	1901282	01/24/19	01/24/19	EPA 9045D	

**Specific Conductance by EPA Method 120.1**

Date Sampled: **01/22/19 10:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Specific Conductance (EC)	0.962	0.0100	mmhos/cm	1	1901281	01/24/19	01/24/19	EPA 120.1	

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**Reported:**  
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## Volatile Organic Compounds by EPA Method 8260B - Quality Control

### Summit Scientific

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

#### Batch 1901264 - EPA 5030 Soil MS

##### Blank (1901264-BLK1)

Prepared: 01/23/19 Analyzed: 01/24/19

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0496		"	0.0400		124	23-173			
Surrogate: Toluene-d8	0.0408		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0438		"	0.0400		110	21-167			

##### LCS (1901264-BS1)

Prepared: 01/23/19 Analyzed: 01/24/19

Benzene	0.0925	0.0020	mg/kg	0.100		92.5	70-130			
Toluene	0.0941	0.0050	"	0.100		94.1	70-130			
Ethylbenzene	0.0847	0.0050	"	0.100		84.7	70-130			
m,p-Xylene	0.171	0.010	"	0.200		85.6	70-130			
o-Xylene	0.0854	0.0050	"	0.100		85.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0475		"	0.0400		119	23-173			
Surrogate: Toluene-d8	0.0408		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400		100	21-167			

##### Matrix Spike (1901264-MS1)

Source: 1901247-02

Prepared: 01/23/19 Analyzed: 01/24/19

Benzene	0.0586	0.0020	mg/kg	0.100	ND	58.6	70-130			QM-07
Toluene	0.0560	0.0050	"	0.100	ND	56.0	70-130			QM-07
Ethylbenzene	0.0533	0.0050	"	0.100	ND	53.3	70-130			QM-07
m,p-Xylene	0.109	0.010	"	0.200	ND	54.5	70-130			QM-07
o-Xylene	0.0640	0.0050	"	0.100	ND	64.0	70-130			QM-07
Surrogate: 1,2-Dichloroethane-d4	0.0496		"	0.0400		124	23-173			
Surrogate: Toluene-d8	0.0378		"	0.0400		94.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0554		"	0.0400		138	21-167			

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**Reported:**  
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**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

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

**Batch 1901264 - EPA 5030 Soil MS**

Matrix Spike Dup (1901264-MSD1)		Source: 1901247-02			Prepared: 01/23/19 Analyzed: 01/24/19					
Benzene	0.0730	0.0020	mg/kg	0.100	ND	73.0	70-130	21.8	30	
Toluene	0.0689	0.0050	"	0.100	ND	68.9	70-130	20.7	30	QM-07
Ethylbenzene	0.0628	0.0050	"	0.100	ND	62.8	70-130	16.4	30	QM-07
m,p-Xylene	0.142	0.010	"	0.200	ND	71.0	70-130	26.3	30	
o-Xylene	0.0739	0.0050	"	0.100	ND	73.9	70-130	14.4	30	
Surrogate: 1,2-Dichloroethane-d4	0.0469		"	0.0400		117	23-173			
Surrogate: Toluene-d8	0.0401		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0487		"	0.0400		122	21-167			

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**Reported:**  
01/31/19 13:51

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1901263 - EPA 3550A**

**Blank (1901263-BLK1)**

Prepared: 01/23/19 Analyzed: 01/24/19

C10-C28 (DRO) ND 50 mg/kg

**LCS (1901263-BS1)**

Prepared: 01/23/19 Analyzed: 01/24/19

C10-C28 (DRO) 541 50 mg/kg 500 108 70-130

**Matrix Spike (1901263-MS1)**

**Source: 1901280-01**

Prepared: 01/23/19 Analyzed: 01/24/19

C10-C28 (DRO) 523 50 mg/kg 500 21.3 100 70-130

**Matrix Spike Dup (1901263-MSD1)**

**Source: 1901280-01**

Prepared: 01/23/19 Analyzed: 01/24/19

C10-C28 (DRO) 536 50 mg/kg 500 21.3 103 70-130 2.42 20

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

Project: State 36-1

Project Number: [none]

Project Manager: Jeremy Pike

**Reported:**  
01/31/19 13:51

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

**Summit Scientific**

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

**Batch 1901267 - General Preparation**

**Blank (1901267-BLK1)**

Prepared & Analyzed: 01/23/19

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

**LCS (1901267-BS1)**

Prepared & Analyzed: 01/23/19

Calcium	505	10.0	mg/kg wet	500	101	70-130
Magnesium	521	5.00	"	500	104	70-130
Sodium	531	5.00	"	500	106	70-130

**Duplicate (1901267-DUP1)**

Source: 1901251-03

Prepared & Analyzed: 01/23/19

Calcium	657	11.7	mg/kg dry	642	2.45	20
Magnesium	137	5.87	"	139	1.29	20
Sodium	37.1	5.87	"	40.7	9.40	20

**Matrix Spike (1901267-MS1)**

Source: 1901251-03

Prepared & Analyzed: 01/23/19

Calcium	1080	11.7	mg/kg dry	587	642	74.6	70-130
Magnesium	675	5.87	"	587	139	91.4	70-130
Sodium	591	5.87	"	587	40.7	93.7	70-130

**Matrix Spike Dup (1901267-MSD1)**

Source: 1901251-03

Prepared & Analyzed: 01/23/19

Calcium	1140	11.7	mg/kg dry	587	642	85.1	70-130	5.56	25
Magnesium	686	5.87	"	587	139	93.1	70-130	1.52	25
Sodium	599	5.87	"	587	40.7	95.0	70-130	1.37	25

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Project: State 36-1

Project Number: [none]  
Project Manager: Jeremy Pike

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

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

**Batch 1901279 - General Preparation**

**Duplicate (1901279-DUP1)**

**Source: 1901269-02**

Prepared & Analyzed: 01/24/19

% Solids	82.6	%		83.3		0.844	20
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**Batch 1901282 - General Preparation**

**LCS (1901282-BS1)**

Prepared & Analyzed: 01/24/19

pH	9.26	pH Units	9.23	100	95-105
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**Duplicate (1901282-DUP1)**

**Source: 1901269-02**

Prepared & Analyzed: 01/24/19

pH	8.05	pH Units	8.00	0.623	20
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Project: State 36-1

Project Number: [none]  
Project Manager: Jeremy Pike

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**Specific Conductance by EPA Method 120.1 - Quality Control**  
**Summit Scientific**

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

**Batch 1901281 - General Preparation**

**Blank (1901281-BLK1)**

Prepared & Analyzed: 01/24/19

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (1901281-BS1)**

Prepared & Analyzed: 01/24/19

Specific Conductance (EC) 0.792 0.0100 mmhos/cm 0.750 106 90-110

**Duplicate (1901281-DUP1)**

**Source: 1901269-02**

Prepared & Analyzed: 01/24/19

Specific Conductance (EC) 1.00 0.0100 mmhos/cm 0.998 0.450 20

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Project: State 36-1

Project Number: [none]  
Project Manager: Jeremy Pike

**Reported:**  
01/31/19 13:51

### 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