Town of Baileyton W.W.T.P.
6530 Horton Highway
Greeneville, TN 37745
Phone #(423) 234-6911
Fax # (423) 234-5442

January 4, 2017

To; Whom it May Concern

I certify, under penalty of law that the Class B pathogen requirements in 503.32(b) and vector attraction requirements in 503.33(b)(1) or (b) (3) have been met. This determination has been under my supervision in accordance with the system design to insure that qualified personnel properly gather and evaluate the information used to determine that the pathogen and vector attraction requirements have been met. I am aware that there are significant penalties for the false certification including the possibility of fines and imprisonment.

W.W.T.P. Operator

Danny P. Neely

Danny P. Neely

I certify under penalty of law that the management practices in CFR 40 Section 503.14 have been met for the site on which the bulk sewage sludge is applied. This determination has been under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information used to determine that the management practices have been met. I am aware that there are significant penalties for the false certification including the possibility of fines and imprisonment.

W.W.T.P. Operator

Danny P. Neely

Danny P. Neely

Town of Baileyton **Year 2016**

W.W.T.P.

Annual Sludge Report

	Tons of Sluge Hauled	S.O.U.R. Test mg/l
January		
February		
March		
April		0.06
May		
June		
July		
August		
September		
October		0.14
November	14.28	
December		
Total	14.28	0.20
Avg	14.28	0.10

Tennessee Department of Environment and Conservation
Division of Water Pollution Control

Exhibit B

Agronomic Application Rate Calculations Based on Nitrogen (N)

WWTP Name	Baileyton	WWTP NPDES Permit Number	TN0063932
Site Name	City Field	County	
E.A.C.	Johnson City	Site Tracking Number	LA
Laboratory Name	TESC	Date of Analysis	

Sludge/Biosolids Analysis	DRY WT.	Units
Total Kjeldahl Nitrogen, (TKN)	2180	mg/kg
Ammonium nitrogen, (NH_4-N)	ND	mg/kg
Nitrate plus Nitrite nitrogen, (NO_3-N + NO_2-N)	17.8	mg/kg

Attach a copy of the laboratory analysis used for these calculations to this report.

Crop Type HAY — 120 lb N/acre/year

To convert milligrams per kilogram to pounds per ton multiply by 0.002.

		Calculated	Units
1.	Available nitrogen from biosolids.		
	a. Total Kjeldahl Nitrogen, (TKN). (TKN(mg/kg) x 0.002)	4.36	lbs/ton
	b. Ammonium nitrogen, (NH_4-N). (NH_4-N (mg/kg) x 0.002)	ND	lbs/ton
	c. Nitrate plus Nitrite nitrogen, (NO_3-N + NO_2-N). (NO_3-N + NO_2-N) mg/kg x 0.002)	17.8	lbs/ton
	d. Total available inorganic nitrogen. (1b x Kv) plus 1c) Obtain Kv from Exhibit C. 0.50	17.8	lbs/ton
	e. Organic nitrogen in biosolids. (Subtract 1b from 1a.)	4.36	lbs/ton
	f. Available organic nitrogen for the first year of application. (Multiply 1e by F_M for anaerobic or aerobic process.) Obtain F_M from Exhibit D. 0.30	1.4	lbs/ton
	g. Total nitrogen available from biosolids. Add 1d and 1f.	19.2	lbs/ton
2.	Available nitrogen in the soil.	0	lbs/ton
	a. Soil test results of background nitrogen in soil.		
	b. or, Estimate of available nitrogen from previous biosolids applications. (If estimate, attach explaination of how estimated.)		
3.	Nitrogen supplied from other sources.		
	a. Nitrogen from supplemental fertilizers. (If appropriate)	0	lbs/ton
	b. Nitrogen from irrigation water. (If appropriate)	0	lbs/ton
	c. Nitrogen from previous crop. (Unless #2 is based in soil testing.)	0	lbs/ton
	d. Other (If appropriate) (specify)_____	0	lbs/ton
	e. Total nitrogen from other sources; add a,b,c and d if available.	0	lbs/ton
4.	Total nitrogen available from existing sources. Add 2. And 3e.	0	lbs/ton
5.	Total nitrogen requirement of crop. (Obtain information from Exhibit E or agricultural extension agents or other agronomy professionals.)	120	lbs/acre
6.	Supplemental nitrogen needed from biosolids. (Subtract 4. from 5.)	0	lbs/ton
7.	Agronomic loading rate. (Divide 6. by 1g.)	6.33	tons/acre

Initial Site approval is for one (1) year. Approved by Danny P. Neely Date 1/9/17

These calculations are required to be updated with new sample analysis and re-submitted on an annual basis on or before, February 19th to the Central office of the Tennessee Division of Water Pollution Control.

COMMENTS

CN - 1179

RDA Pending

Brighton

Wastewater Biosolids: Land Application Checklist. **YEAR** 2016

Metals Test.

Under Ceiling Concentrations. Table 1 OK 503.13
Under Pollutant Concentrations. Table 3 OK

TCLP(full) & PCB, once in 5 years TN Rules & Regs. 0400-40-15-.02(6), 503.6
Date performed _____

Pathogen Reduction.

Class A — Use one of 12 options, 503.32 & appendix B
Process Used. N/A
Test Results. N/A

Class B — Use one of 7 options, 503.32 & appendix B
Process Used. Fecal Coliform
Data or Test 7860 oF w/6
Site Approval. YES — TN NOI
Restrictions Fulfilled. _____

Vector Attraction. Use one of ten options 503.33(b)
Option Used. SOUR
Test Results 0.10 mg/02/hr/g at 20°C

Tons Disposed of per yr., Metric Tons of **Total Solids** 14.28 503.16
Sampling Frequency 1

Management Practices
- Endangered Species
- Soil Conditions
- Set back from water features.
- Agronomic Loading Rate _____ 503.14
  - Test for **NH_3, TKN, NO_2, NO_3**

Reporting.
- TDEC, February 19th
- EPA, Major Plants by Feb 19th 503.18

Exhibit C Volatilization Factors K_v

If the biosolids are:	K_v
Liquid and surface applied	0.50
Liquid and injected into the soil	1.0
Dewatered and applied in any manner	0.50

Exhibit D Mineralization Rates F_M

Time After Biosolids Application (Year)	Fraction (F_M) of Organic Nitrogen Mineralized from Biosolids from an **Anaerobic** process	Fraction (F_M) of Organic Nitrogen Mineralized from Biosolids from an **Aerobic** process
0-1	.20	.30
1-2	.10	.15
2-3	.05	.08

Exhibit E Crop Nitrogen Requirements[1]

(From University of Tennessee Agricultural Extension Service and EPA Guidance for Land Application of Biosolids)

Crop	Expected Yield	Nitrogen Requirement (lb N/acre/year)
Corn (grain)	100-125 bu	120
	125-150 bu	150
Corn (silage)	20 tons	120 - 150
Soybeans	40 bu	0
Wheat	40 bu	60
Summer Annual Grass	6 tons (1 cutting)†	60 - 120
Hybrid hay	8 tons (4 cuttings)†	400[2]
Tall Fescue hay	3 tons (2 cuttings)†	120
Orchard Grass hay	4 tons (2 cuttings)†	60 - 120
Sorghum (grain)	60 bu	60
Cotton	1 bale/acre	50
	1.5 bale/acre	90

†When less than the indicated number of harvests is expected, the total nitrogen rate should be reduced proportionally.

[1] For crops not listed, consult with the University of Tennessee Agricultural Extension Service and the Lime and Fertilizer Recommendations for the Various Crops of Tennessee, Compiled by: Hubert J. Savoy, Jr. and Debbie Jones; Revised: March, 1998; P&SS Info #185.

[2] Highly dependent on field conditions and harvesting schedule.

Sludge Vector Attraction Reduction Analysis

Part #1: Sludge Sample Collection Data

Date of Sampling	Time of Sampling	Opr	Sampling Location	Type of Sample	Preservative Used	Container Type
10/18/16	11:30	DN	Digester	Grab	None	Polyethelene

Part #2: Sludge Solids Contents - Standard Method 2540-B

Date of Analysis	Time of Analysis	Opr Doing Analysis	Size of Sample	Quality Control	Description of Contents
10/18/16	11:34	DN	300mL	Duplicate	Sludge

100 mL

Sample ID#	TARE Weight	TARE & Solids	Net Solids (g/sample)	Percent (%) Solids	Total grams per Liter
Digester	0.3400	2.0371	2.0031 [1]	0.020031 [2]	20.031 [2]

Part #3: Specific Oxygen Uptake Rate (SOUR)-Method 4500-O-G

4 °C
21.51

Duration in Minutes	Dissolved O2 (mg/L)	Duration in Minutes	Dissolved O2 (mg/L)	Duration in Minutes	Dissolved O2 (mg/L)
0	8.74	6	8.53	12	8.21
1	8.72	7	8.48	13	8.14
2	8.70	8	8.43	14	8.08
3	8.68	9	8.37	15	8.02
4	8.65	10	8.32	20	
5	8.58	11	8.26	30	

Ending Temp °C
21.80
0.72/15

SOUR mg/L/min	SOUR mg/L/hr	SOUR mg/g/hr	Date of Analysis	Time of Analysis	Operator
0.048 [3]	2.86 [4]	0.144 [5]	10/18/16	2:00pm	DN

NOTE: Net solids / sample size * 100 = grams per 100 mL or Percent (%) solids.

② Percent (%) solids * 10 = grams per liter.

③ Total O2 uptake (mg/L) / total duration minutes = SOUR (mg/L/min).

④ SOUR (mg/L/min) * 60 = SOUR (mg/L/hr).

⑤ SOUR (mg/L/hr) / grams per liter = SOUR (mg/g/hr).

⑥ SOUR must be < 1.5 mg/g/hr for vector attraction reduction.

Sludge Vector Attraction Reduction Analysis

Part #1: Sludge Sample Collection Data

Date of Sampling	Time of Sampling	Opr	Sampling Location	Type of Sample	Preservative Used	Container Type
4/12/16	10:08	DN	Digester	Grab	None	Polyethelene

Part #2: Sludge Solids Contents - Standard Method 2540-B

Date of Analysis	Time of Analysis	Opr Doing Analysis	Size of Sample	Quality Control	Description of Contents
4/12/16	2:00	DN	30.0 mL	Duplicate	Sludge

Sample ID#	TARE Weight	TARE & Solids	Net Solids (g/sample)	Percent (%) Solids	Total grams per Liter
D. Gesten #2	0.3465	2.5692	2.2227 ①	0.022227 ②	22.227 ②

Part #3: Specific Oxygen Uptake Rate (SOUR)-Method 4500-O-G

4 °C
17.4

Duration in Minutes	Dissolved O2 (mg/L)	Duration in Minutes	Dissolved O2 (mg/L)	Duration in Minutes	Dissolved O2 (mg/L)
0	5.63	6	5.61	12	5.45
1	5.63	7	5.60	13	5.38
2	5.63	8	5.60	14	5.35
3	5.62	9	5.57	15	5.30
4	5.62	10	5.54	20	
5	5.61	11	5.49	30	

Ending Temp °C
17.8

5.63
5.30
0.33

0.33/15=
0.022X60=

SOUR mg/L/min	SOUR mg/L/hr	SOUR mg/g/hr	Date of Analysis	Time of Analysis	Operator
0.022 ③	1.32 ④	0.059 ⑤	4/12/16	2:50	DN

NOTE: Net solids / sample.size * 100 = grams per 100 mL or Percent (%) solids.

② Percent (%) solids * 10 = grams per liter.

③ Total O2 uptake (mg/L) / total duration minutes = SOUR (mg/L/min).

④ SOUR (mg/L/min) * 60 = SOUR (mg/L/hr).

⑤ SOUR (mg/L/hr) / grams per liter = SOUR (mg/g/hr).

⑥ SOUR must be < 1.5 mg/g/hr for vector attraction reduction.

ESC LAB SCIENCES
YOUR LAB OF CHOICE

ANALYTICAL REPORT

April 20, 2016

myESC
REAL TIME DATA ACCESS

Town of Baileyton WWTP

Sample Delivery Group:	L828905
Samples Received:	04/12/2016
Project Number:	
Description:	Annual Sludge

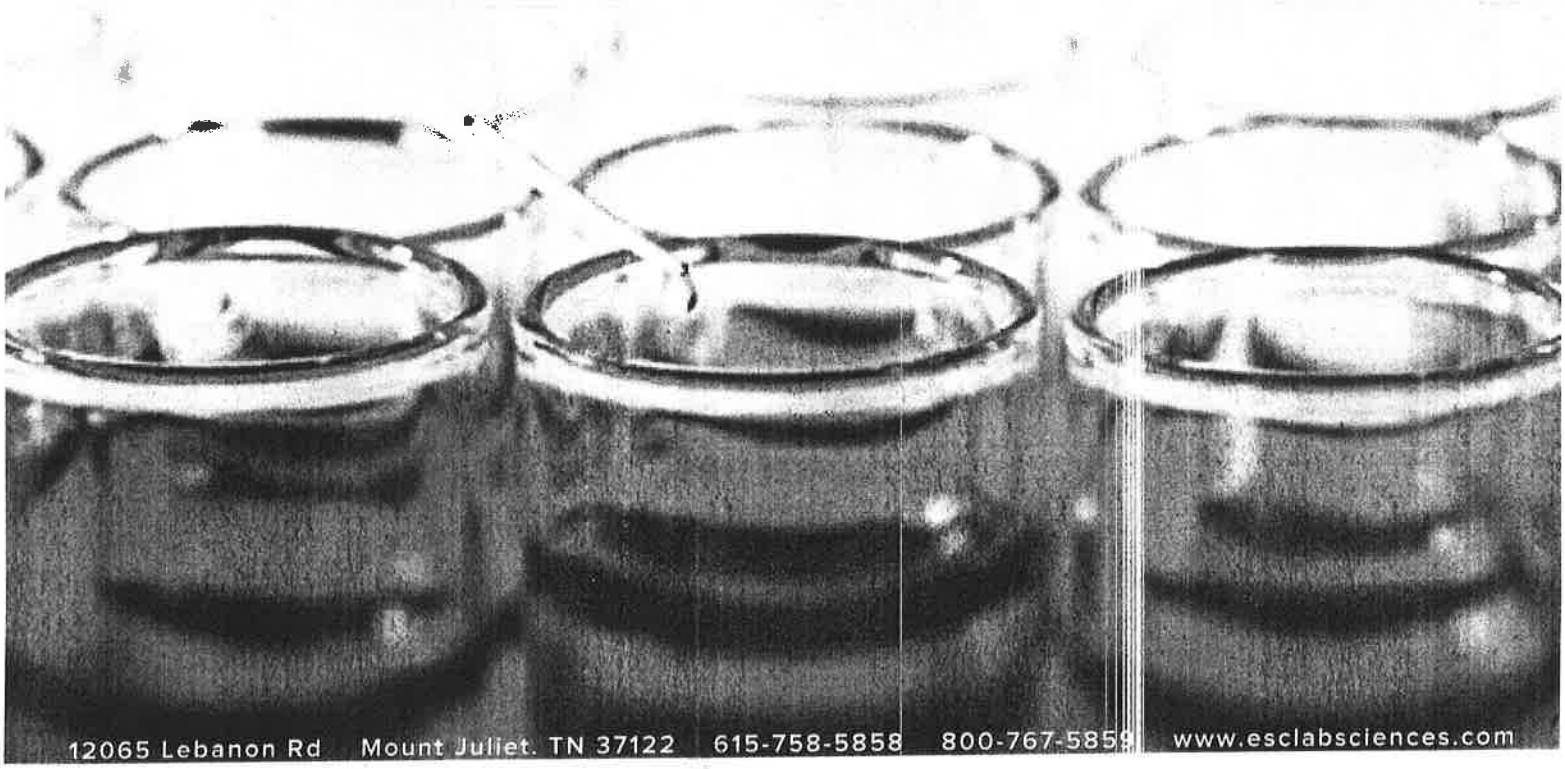
Report To:

Mr. Danny Neely
6530 Horton Highway
Greeneville, TN 37745

Entire Report Reviewed By:

Linda Cashman

Linda Cashman
Technical Service Representative



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SLUDGE L828905-01 Solid

Collected by: A.J. Bernhardt
Collected date/time: 04/11/16 13:45
Received date/time: 04/12/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Mercury by Method 7471A	WG863964	1	04/12/16 14:41	04/13/16 10:06	NJB
Metals (ICP) by Method 6010B	WG864033	.2	04/12/16 18:39	04/13/16 11:27	BRJ
Metals (ICP) by Method 6010B	WG864033	.2	04/12/16 18:39	04/13/16 15:27	RDS
Total Solids by Method 2540 G-2011	WG864388	1	04/14/16 01:57	04/14/16 03:41	JM
Wet Chemistry by Method 350.1	WG864407	1	04/15/16 10:10	04/15/16 17:08	JER
Wet Chemistry by Method 4500NOrg C-2011	WG864818	5	04/16/16 06:40	04/18/16 16:03	JER
Wet Chemistry by Method 9056A	WG864001	1	04/13/16 11:04	04/13/16 23:40	CM

SLUDGE L828905-02 Solid

Collected by: A.J. Bernhardt
Collected date/time: 04/11/16 13:45
Received date/time: 04/12/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Microbiology by Method EPA 1681	WG865137	1	04/12/16 13:45	04/12/16 13:45	BGE

Tc
Ss
Cn
Sr
Qc
GI
Al
Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Linda Cashman

Linda Cashman
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result %	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	2.43		1	04/14/2016 03:41	WG864388

Wet Chemistry by Method 350.1

Analyte	Result (wet) mg/kg	RDL (Wet) mg/kg	Result (dry) mg/kg	RDL (dry) mg/kg	Qualifier	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND	5.00	ND	205		1	04/15/2016 17:08	WG864407

Wet Chemistry by Method 4500NOrg C-2011

Analyte	Result (wet) mg/kg	RDL (Wet) mg/kg	Result (dry) mg/kg	RDL (dry) mg/kg	Qualifier	Dilution	Analysis date / time	Batch
Kjeldahl Nitrogen, TKN	2180	100	89600	4110		5	04/18/2016 16:03	WG864818

Wet Chemistry by Method 9056A

Analyte	Result (wet) mg/kg	RDL (Wet) mg/kg	Result (dry) mg/kg	RDL (dry) mg/kg	Qualifier	Dilution	Analysis date / time	Batch
Nitrate as (N)	17.8	1.00	731	41.1		1	04/13/2016 23:40	WG864001

Mercury by Method 7471A

Analyte	Result (wet) mg/kg	RDL (Wet) mg/kg	Result (dry) mg/kg	RDL (dry) mg/kg	Qualifier	Dilution	Analysis date / time	Batch
Mercury	ND	0.0200	ND	0.822		1	04/13/2016 10:06	WG863964

Metals (ICP) by Method 6010B

Analyte	Result (wet) mg/kg	RDL (Wet) mg/kg	Result (dry) mg/kg	RDL (dry) mg/kg	Qualifier	Dilution	Analysis date / time	Batch
Arsenic	ND	0.400	ND	16.4		.2	04/13/2016 11:27	WG864033
Cadmium	ND	0.100	ND	4.11		.2	04/13/2016 11:27	WG864033
Chromium	0.622	0.200	25.5	8.22		.2	04/13/2016 11:27	WG864033
Lead	0.327	0.100	13.4	4.11		.2	04/13/2016 11:27	WG864033
Molybdenum	0.134	0.100	5.51	4.11		.2	04/13/2016 11:27	WG864033
Nickel	0.408	0.400	16.8	16.4		.2	04/13/2016 11:27	WG864033
Selenium	ND	0.400	ND	16.4		.2	04/13/2016 15:27	WG864033
Zinc	14.2	1.00	583	41.1		.2	04/13/2016 11:27	WG864033

Microbiology by Method EPA 1681

Analyte	Result MPN/g	Qualifier	Dilution	Analysis date / time	Batch
Fecal Coliform -Geom.Mean	<7860		1	04/12/2016 13:45	WG865137
Fecal Coliform -1	8570		1	04/12/2016 13:45	WG865137
Fecal Coliform -2	<7740		1	04/12/2016 13:45	WG865137
Fecal Coliform -3	<7760		1	04/12/2016 13:45	WG865137
Fecal Coliform -4	<7740		1	04/12/2016 13:45	WG865137
Fecal Coliform -5	<7710		1	04/12/2016 13:45	WG865137
Fecal Coliform -6	<7800		1	04/12/2016 13:45	WG865137
Fecal Coliform -7	<7730		1	04/12/2016 13:45	WG865137

Method Blank (MB)

(MB) R3129194-1 04/14/16 03:41

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000			

Original Sample (OS) • Duplicate (DUP)

(OS) L829019-01 04/14/16 03:41 • (DUP) R3129194-4 04/14/16 03:41

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	17.8	17.8	1	0.00867		5

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3129194-2 04/14/16 03:41 • (LCSD) R3129194-3 04/14/16 03:41

Analyte	Spike Amount %	LCS Result %	LCSD Result %	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Total Solids	50.0	50.4	50.0	101	100	85.0-115			0.892	5

Method Blank (MB)

(MB) R3129500-4 04/15/16 16:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Ammonia Nitrogen	U		1.57	5.00

Original Sample (OS) • Duplicate (DUP)

(OS) L828518-01 04/15/16 17:00 • (DUP) R3129500-7 04/15/16 17:01

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	125	128	1	3.00		20

Original Sample (OS) • Duplicate (DUP)

(OS) L829142-01 04/15/16 22:37 • (DUP) R3129500-9 04/15/16 22:38

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	246	292	1	17.0		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3129500-5 04/15/16 16:56 • (LCSD) R3129500-6 04/15/16 16:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	389	351	361	90.0	93.0	70.0-130			3.00	20

Original Sample (OS) • Matrix Spike (MS)

(OS) L828523-01 04/15/16 17:02 • (MS) R3129500-8 04/15/16 17:03

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ammonia Nitrogen	500	132	670	108	1	80.0-120	

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L829142-01 04/15/16 22:37 • (MS) R3129500-10 04/15/16 22:40 • (MSD) R3129500-11 04/15/16 22:41

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	500	246	700	795	91.0	110	1	80.0-120			13.0	20

Method Blank (MB)

(MB) R3129793-1 04/18/16 15:12

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Kjeldahl Nitrogen, TKN	U		4.48	20.0

Original Sample (OS) • Duplicate (DUP)

(OS) L828085-01 04/18/16 15:17 • (DUP) R3129793-4 04/18/16 15:18

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Kjeldahl Nitrogen, TKN	125	153	1	20.0		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3129793-2 04/18/16 15:13 • (LCSD) R3129793-3 04/18/16 15:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD 5	RPD Limits %
Kjeldahl Nitrogen, TKN	882	928	952	105	108	50.0-150			3.00	20

Original Sample (OS) • Matrix Spike (MS)

(OS) L829012-02 04/18/16 15:28 • (MS) R3129793-5 04/18/16 15:29

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Kjeldahl Nitrogen, TKN	400	560	712	38.0	1	90.0-110	J6

Method Blank (MB)

(MB) R3128792-1 04/13/16 12:34

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
Nitrate	U		0.0116	1.00

Original Sample (OS) • Duplicate (DUP)

(OS) L828755-01 04/13/16 16:07 • (DUP) R3128792-4 04/13/16 16:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/kg	mg/kg		%		%
Nitrate	0.811	0.441	1	0		15

Original Sample (OS) • Duplicate (DUP)

(OS) L828757-05 04/14/16 03:28 • (DUP) R3128792-7 04/14/16 03:55

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/kg	mg/kg		%		%
Nitrate	ND	0.000	1	0		15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3128792-2 04/13/16 12:58 • (LCSD) R3128792-3 04/13/16 13:22

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Nitrate	20.0	20.0	19.9	100	99	80-120			0	15

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L828757-04 04/13/16 20:53 • (MS) R3128792-5 04/13/16 21:17 • (MSD) R3128792-6 04/13/16 21:41

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Nitrate	50.0	0.567	54.5	54.1	108	107	1	80-120			1	15

Method Blank (MB)

(MB) R3128472-1 04/13/16 08:50

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.0028	0.0200

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3128472-2 04/13/16 08:52 • (LCSD) R3128472-3 04/13/16 08:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Mercury	0.300	0.280	0.276	93	92	80-120				20

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L828749-01 04/13/16 09:02 • (MS) R3128472-4 04/13/16 09:05 • (MSD) R3128472-5 04/13/16 09:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.300	0.0121	0.285	0.261	91	83	1	75-125			9	20

Method Blank (MB)

(MB) R3128563-1 04/13/16 10:06

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.65	2.00
Cadmium	U		0.07	0.500
Chromium	U		0.14	1.00
Lead	U		0.19	0.500
Molybdenum	U		0.16	0.500
Nickel	U		0.49	2.00
Zinc	0.899		0.59	5.00

Method Blank (MB)

(MB) R3128563-8 04/13/16 14:43

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Selenium	U		0.74	2.00

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3128563-2 04/13/16 10:09 • (LCSD) R3128563-3 04/13/16 10:11

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	100	105	103	105	103	80-120			2	20
Cadmium	100	105	103	105	103	80-120				20
Chromium	100	104	103	104	103	80-120			1	20
Lead	100	105	104	105	104	80-120				20
Molybdenum	100	110	107	110	107	80-120			3	20
Nickel	100	105	104	105	104	80-120			1	20
Zinc	100	104	103	104	103	80-120			1	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3128563-9 04/13/16 14:45 • (LCSD) R3128563-10 04/13/16 14:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Selenium	100	105	103	105	103	80-120			1	20

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L828783-03 04/13/16 10:14 • (MS) R3128563-6 04/13/16 10:23 • (MSD) R3128563-7 04/13/16 10:25

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	7.19	105	102	98	95	1	75-125			3	20
Cadmium	100	0.271	101	98.4	101	98	1	75-125			3	20
Chromium	100	31.4	124	121	93	89	1	75-125			3	20
Lead	100	15.2	120	116	105	101	1	75-125			3	20
Molybdenum	100	ND	91.4	86.9	91	87	1	75-125			5	20
Nickel	100	33.4	136	137	102	104	1	75-125			1	20
Zinc	100	53.3	142	137	89	83	1	75-125			4	20

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L828783-03 04/13/16 14:51 • (MS) R3128563-13 04/13/16 14:59 • (MSD) R3128563-14 04/13/16 15:02

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Selenium	100	0.417	97.9	94.6	98	95	1	75-125			3	20

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [14]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

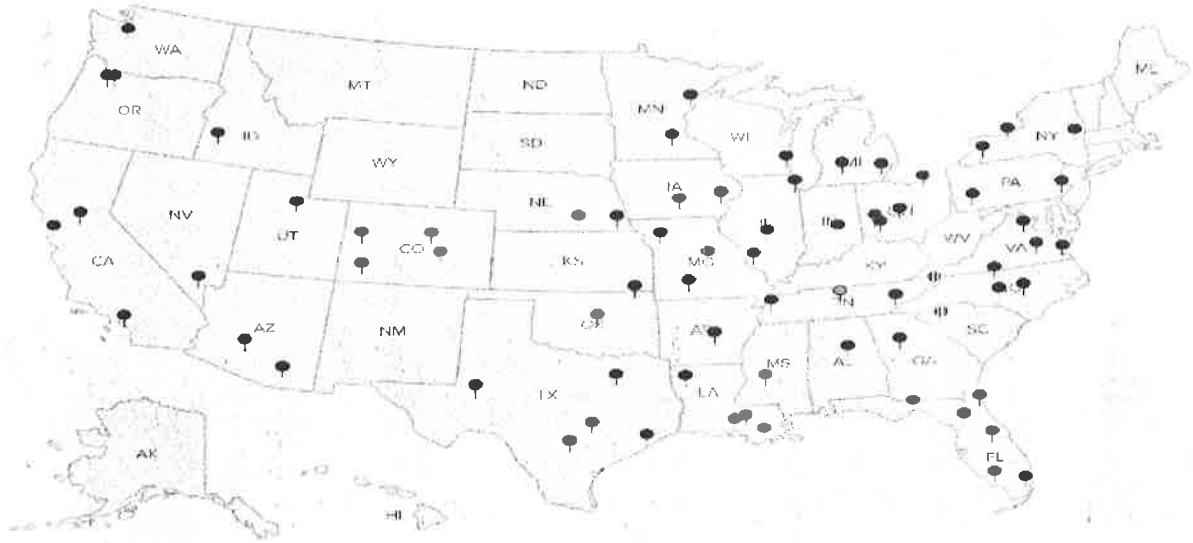
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [na] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



MICROBAC

LB 28905

CERTIFICATE OF ANALYSIS

Danny P Neely
Baileyton, Town of
8530 Horton Hwy
Greeneville, TN 37745

Date Reported: 12/24/2014
Date Received: 12/2/2014
Cust #: V14
PO#:

Workorder: 1421404 **Project:** Digestor Sludge

Analyte	Result	Units	Qualifier	MDL	MRL	Analyst	Analyzed	Method
Digestor Sludge Sampled: 12/02/2014 14:45								
1421404-01 (Solid)								
Wet Chemistry							Analyzed By:Microbac Laboratories, Inc. - Chic	
Nitrogen, Ammonia (As N)	14	mg/Kg		7.1	9.3	RAINW	12/18/2014 13:28	EPA 350.1 Rev 2.0
Nitrogen, Kjeldahl, Total	640	mg/Kg		220	240	GRIEF	12/23/2014 10:33	EPA 351.2 Rev 2.0
Wet Chemistry							Analyzed By:Microbac Knoxville Division	
Nitrite (as N)	<0.0756	mg/kg		0.0756	0.0756	AJW	12/03/2014 16:58	SW846 9056A
% Solids	41.6	% by Weight		0.00	0.00	TGH	12/09/2014 17:47	SM 2540 G-1997
Metals, Total by EPA 6000/7000 Series Methods							Analyzed By:Microbac Knoxville Division	
Arsenic	<0.471	mg/kg		0.471	1.24	JNB	12/16/2014 17:09	SW846 6010B
Cadmium	<0.0749	mg/kg		0.0749	0.619	JNB	12/16/2014 17:09	SW846 6010B
Copper	2.76	mg/kg		0.101	0.826	JNB	12/16/2014 17:09	SW846 6010B
Lead	<0.290	mg/kg		0.290	1.65	JNB	12/16/2014 17:09	SW846 6010B
Mercury	<0.00114	mg/kg	M2, M5	0.00114	0.00955	JNB	12/12/2014 11:32	SW846 7471B
Molybdenum	<0.169	mg/kg		0.169	1.24	JNB	12/16/2014 17:09	SW846 6010B
Nickel	<0.102	mg/kg		0.102	0.826	JNB	12/16/2014 17:09	SW846 6010B
Selenium	<0.858	mg/kg		0.858	1.65	JNB	12/16/2014 17:09	SW846 6010B
Zinc	8.34	mg/kg		0.236	0.330	JNB	12/16/2014 17:09	SW846 6010B
General Microbiology							Analyzed By:Microbac Knoxville Division	
Fecal Coliforms	<4	MPN/g dry wt.		4	4	TJM	12/02/2014 19:30	EPA 1680
Digestor Sludge Sampled: 12/02/2014 14:45								
1421404-01RE1 (Solid)								
Wet Chemistry							Analyzed By:Microbac Knoxville Division	
Nitrate (as N)	205	mg/kg	M2, R2	2.23	2.23	AJW	12/03/2014 18:26	SW846 9056A

505 East Broadway Avenue Maryville, TN 37804 | 865.977.1200 p | 865.984.9515 f | www.microbac.com
2109 West Market Street Johnson City, TN 37604 | 423.926.6385 p | 423.926.6997 f | www.microbac.com
2631 Grandview Avenue Nashville, TN 37211 | 615.242.1480 p | 615.242.5522 f | www.microbac.com

Company Name/Address: Bailey OZ

Billing Information:

Report to: Danny Neely

Email To:

Project Description: Annual Sludge

City/State Collected:

Phone: 620-8208

Fax:

Client Project #

Lab Project #

Collected by (print): A.J. Bernhardt

Site/Facility ID #

P.O. #

Collected by (signature): [signature]

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? __No __Yes
FAX? __No __Yes

Analysis / Container / Preservative

Chain of Custody Page __ of __

ESC LAB SCIENCES
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L828905

A127

Acctnum:
Template: T111405
Prelogin:
TSR: L Cushman
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Rem./Contaminant	Sample # (lab only)
Sludge	Grab	SS	N/A	4/11/16	1345	12		

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ______

Remarks: * Parameter list is Stapled to COC *

pH ______ Temp ______
Flow ______ Other ______

Hold #

Condition: (lab use only) TALL

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
A.J. Bernhardt	4/11/16	1700	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☒ Cap.

Temp: 2.1 °C Bottles Received: 12

Date: 4/12/16 Time: 0830

COC Seal Intact: ✓ Y ___ N ___ NA

pH Checked: NCF: