

State of TN Laboratory

Sample Delivery Group: L1636190
Samples Received: 07/18/2023
Project Number: OUTFALL X01
Description: Oak Ridge USDOE- ORNL
Site: TN0002941
Report To: Sarah Snyder
3711 Middlebrook Pike
Knoxville, TN 37921

Entire Report Reviewed By: 










Dorothy P Roberts
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

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SAMPLE SUMMARY

OUTFALL X01 SAMPLE 1 L1636190-01 WW

Collected by Sarah Snyder Collected date/time 07/17/23 08:41 Received date/time 07/18/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Aquatic Toxicity by Method 1000.0	WG2101792	1	07/18/23 13:40	07/18/23 13:40	NAH	Mt. Juliet, TN
Aquatic Toxicity by Method 1002.0	WG2101792	1	07/18/23 13:54	07/18/23 13:54	NAH	Mt. Juliet, TN
Calculated Results	WG2097369	1	07/25/23 17:06	07/25/23 17:06	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2098669	1	07/20/23 17:27	07/20/23 17:27	ARD	Mt. Juliet, TN
Metals (ICP) by Method 200.7	WG2097369	1	07/19/23 13:44	07/25/23 17:06	ZSA	Mt. Juliet, TN



OUTFALL X01 SAMPLE 2 L1636190-02 WW

Collected by Sarah Snyder Collected date/time 07/19/23 08:39 Received date/time 07/20/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2098879	1	07/28/23 17:07	07/28/23 17:07	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2100933	1	07/25/23 11:21	07/25/23 11:21	BJM	Mt. Juliet, TN
Metals (ICP) by Method 200.7	WG2098879	1	07/21/23 14:03	07/28/23 17:07	ZSA	Mt. Juliet, TN



OUTFALL X01 SAMPLE 3 L1636190-03 WW

Collected by Sarah Snyder Collected date/time 07/21/23 08:22 Received date/time 07/22/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2100194	1	07/30/23 15:09	07/30/23 15:09	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2102588	1	07/27/23 10:00	07/27/23 10:00	BJM	Mt. Juliet, TN
Metals (ICP) by Method 200.7	WG2100194	1	07/24/23 23:53	07/30/23 15:09	ZSA	Mt. Juliet, TN



CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, 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.



Dorothy P Roberts
Project Manager

Project Narrative

Please review all information in this report for accuracy and completeness. Contact our office within ten days if there are any questions.

Chronic Test Methods are described in "Short Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms" (EPA-821-R-02-013 October 2002, Fourth Edition).

Acute Test Methods are described in "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms"(EPA-821-R-02-012 October 2002, Fifth Edition).

The Biomonitoring results in this report are only a summary of the tests performed. A detailed report will follow. The detailed report (not this summary sheet) must be submitted to the appropriate regulatory agency.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

OUTFALL X01 SAMPLE 1

Collected date/time: 07/17/23 08:41

SAMPLE RESULTS - 01

L1636190

Aquatic Toxicity by Method 1000.0

Analyte	Result	Qualifier	Analysis date / time	Batch
IC25 - Minnow	>100 (PASS)		07/18/2023 13:40	WG2101792

Aquatic Toxicity by Method 1002.0

Analyte	Result	Qualifier	Analysis date / time	Batch
IC25 - C. dubia	>100 (PASS)		07/18/2023 13:54	WG2101792

Calculated Results

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	133		0.118	2.50	1	07/25/2023 17:06	WG2097369

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Alkalinity	49.3		8.45	20.0	1	07/20/2023 17:27	WG2098669

Sample Narrative:

L1636190-01 WG2098669: Endpoint pH 4.5 Headspace

Metals (ICP) by Method 200.7

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Calcium	38.7		0.0473	1.00	1	07/25/2023 17:06	WG2097369
Magnesium	8.89		0.115	1.00	1	07/25/2023 17:06	WG2097369

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	135		0.118	2.50	1	07/28/2023 17:07	WG2098879

¹ Cp

² Tc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Alkalinity	35.4		8.45	20.0	1	07/25/2023 11:21	WG2100933

³ Ss

⁴ Cn

Sample Narrative:

L1636190-02 WG2100933: Endpoint pH 4.5 Headspace

⁵ Sr

⁶ Qc

Metals (ICP) by Method 200.7

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Calcium	39.0		0.0473	1.00	1	07/28/2023 17:07	WG2098879
Magnesium	9.03		0.115	1.00	1	07/28/2023 17:07	WG2098879

⁷ Gl

⁸ Al

⁹ Sc

OUTFALL X01 SAMPLE 3

Collected date/time: 07/21/23 08:22

SAMPLE RESULTS - 03

L1636190

Calculated Results

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	139		0.118	2.50	1	07/30/2023 15:09	WG2100194

1 Cp

2 Tc

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Alkalinity	41.2		8.45	20.0	1	07/27/2023 10:00	WG2102588

3 Ss

4 Cn

Sample Narrative:

L1636190-03 WG2102588: Endpoint pH 4.5 Headspace

5 Sr

6 Qc

Metals (ICP) by Method 200.7

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Calcium	40.7	O1	0.0473	1.00	1	07/30/2023 15:09	WG2100194
Magnesium	9.17	O1	0.115	1.00	1	07/30/2023 15:09	WG2100194

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3951024-2 07/20/23 15:02

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1634741-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1634741-01 07/20/23 16:01 • (DUP) R3951024-3 07/20/23 16:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	52.4	53.3	1	1.66		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1636513-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1636513-01 07/20/23 17:47 • (DUP) R3951024-4 07/20/23 17:51

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	124	124	1	0.431		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3951024-1 07/20/23 14:58

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	101	101	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5



Method Blank (MB)

(MB) R3952407-1 07/25/23 09:05

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1636155-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1636155-01 07/25/23 09:26 • (DUP) R3952407-3 07/25/23 09:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	203	206	1	1.50		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1636841-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1636841-07 07/25/23 11:54 • (DUP) R3952407-4 07/25/23 11:57

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	543	542	1	0.116		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3952407-2 07/25/23 09:14

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	101	101	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5



Method Blank (MB)

(MB) R3953630-2 07/27/23 09:10

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1636108-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1636108-02 07/27/23 09:39 • (DUP) R3953630-4 07/27/23 09:44

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	151	153	1	1.29		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1636841-22 Original Sample (OS) • Duplicate (DUP)

(OS) L1636841-22 07/27/23 13:44 • (DUP) R3953630-6 07/27/23 13:48

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	296	298	1	0.660		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3953630-1 07/27/23 09:05

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	108	108	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3952697-1 07/25/23 16:18

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Calcium	0.0558	⌵	0.0473	1.00
Magnesium	U		0.115	1.00

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3952697-2 07/25/23 16:20

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Calcium	10.0	10.4	104	85.0-115	
Magnesium	10.0	10.4	104	85.0-115	

4 Cn

5 Sr

6 Qc

L1636446-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1636446-01 07/25/23 16:23 • (MS) R3952697-4 07/25/23 16:29 • (MSD) R3952697-5 07/25/23 16:31

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Calcium	10.0	34.3	45.0	45.5	106	111	1	70.0-130			1.09	20
Magnesium	10.0	1.75	11.8	11.9	100	101	1	70.0-130			0.907	20

7 Gl

8 Al

9 Sc

L1636447-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1636447-01 07/25/23 16:34 • (MS) R3952697-6 07/25/23 16:37 • (MSD) R3952697-7 07/25/23 16:39

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Calcium	10.0	75.3	82.7	84.1	74.3	88.2	1	70.0-130			1.66	20
Magnesium	10.0	4.69	14.7	14.9	100	102	1	70.0-130			1.32	20

Method Blank (MB)

(MB) R3954416-1 07/28/23 16:28

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Calcium	U		0.0473	1.00
Magnesium	U		0.115	1.00

Laboratory Control Sample (LCS)

(LCS) R3954416-2 07/28/23 16:31

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Calcium	10.0	10.2	102	85.0-115	
Magnesium	10.0	10.0	100	85.0-115	

L1636587-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1636587-03 07/28/23 16:34 • (MS) R3954416-4 07/28/23 16:39 • (MSD) R3954416-5 07/28/23 16:42

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Calcium	10.0	18.8	30.0	30.1	112	113	1	70.0-130			0.432	20
Magnesium	10.0	9.07	20.0	20.1	110	110	1	70.0-130			0.0591	20

L1637125-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1637125-01 07/28/23 16:44 • (MS) R3954416-6 07/28/23 16:47 • (MSD) R3954416-7 07/28/23 16:50

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Calcium	10.0	9.93	19.7	19.9	97.5	100	1	70.0-130			1.30	20
Magnesium	10.0	1.47	11.5	11.8	101	103	1	70.0-130			2.21	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3954605-1 07/30/23 15:04

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Calcium	U		0.0473	1.00
Magnesium	U		0.115	1.00

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3954605-2 07/30/23 15:07

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Calcium	10.0	10.7	107	85.0-115	
Magnesium	10.0	10.6	106	85.0-115	

L1636190-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1636190-03 07/30/23 15:09 • (MS) R3954605-4 07/30/23 15:15 • (MSD) R3954605-5 07/30/23 15:17

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Calcium	10.0	40.7	52.5	51.6	117	109	1	70.0-130			1.67	20
Magnesium	10.0	9.17	19.6	19.3	104	102	1	70.0-130			1.33	20

L1637605-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1637605-02 07/30/23 15:21 • (MS) R3954605-6 07/30/23 15:23 • (MSD) R3954605-7 07/30/23 15:26

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Calcium	10.0	179	188	195	94.3	168	1	70.0-130		√	3.83	20
Magnesium	10.0	21.0	30.8	32.1	98.9	111	1	70.0-130			3.87	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

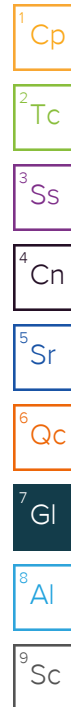
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
V	The sample concentration is too high to evaluate accurate spike recoveries.



ACCREDITATIONS & LOCATIONS

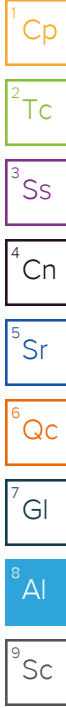
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122


Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

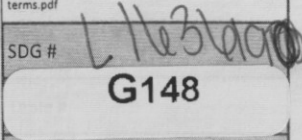
¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

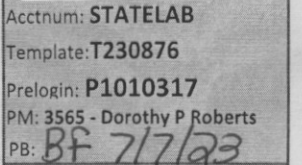
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



Company Name/Address: State of TN Laboratory 3711 Middlebrook Pike Knoxville, TN 37921		Billing Information: Robin M. Holjes - GPP.Health@tn.gov Procurement Manager, Lab Services		Analysis / Container / Preservative				Chain of Custody Page ___ of ___	
Report to: Sarah Snyder		City/State Collected: Oak Ridge, TN		Please Circle: PT MT CT ET		Pres Chk		 MT JULIET, TN <small>12065 Lebanon Rd Mount Juliet, TN 37122 Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf</small>	
Project Description: Oak Ridge USDOE- ORNL		Client Project # OUTFALL X01		Lab Project # STATELAB-BIO OAK RID		Pres Chk			

Phone: 865-809-5086		Client Project # OUTFALL X01		Lab Project # STATELAB-BIO OAK RID		Pres Chk		 G148	
Collected by (print): <i>Sarah Snyder</i>		Site/Facility ID # TN0002941		P.O. #		Pres Chk			

Collected by (signature): <i>Sarah Snyder</i>		Rush? (Lab MUST Be Notified)		Quote #		Pres Chk		 Acctnum: STATELAB Template: T230876 Prelogin: P1010317 PM: 3565 - Dorothy P Roberts PB: BF 7/7/23	
Immediately Packed on Ice N ___ Y <input checked="" type="checkbox"/>		<input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day		Date Results Needed		No. of Cntrs			

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	ALK 125mlHDPE-NoPres	BIOMONS1 1 Gal-HDPE-NoPres	BIOMONS2 1 Gal-HDPE-NoPres	Hardness 250mlHDPE-HNO3	Pres Chk	Remarks	Sample # (lab only)
OUTFALL X01 SAMPLE 1	Comp	WW		7/17/23	8:41	4	X	X	X	X			01

* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other _____		Remarks: Potential for RAD; contact Donna Edison-Pace x 918 520 7887 Sample #1 - Collect a 24-hr composite sample from Sun-Mon. Ship samples OVERNIGHT delivery to arrive at lab on Tuesday		pH _____ Temp _____ Flow _____ Other _____		PH-10BDH#321 TRC-21A4161 CRE-20221V		Sample Receipt Checklist COC Seal Present/Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N COC Signed/Accurate: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Bottles arrive intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Correct bottles used: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Sufficient volume sent: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N If Applicable VOA Zero Headpace: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Preservation Correct/Checked: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N RAD Screen <0.5 mR/hr: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
Samples returned via: ___ UPS ___ FedEx ___ Courier _____		Tracking # 684183405137		Trip Blank Received: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		HCL/MeOH TBR		Bottles Received: _____	

Relinquished by: (Signature) <i>Sarah Snyder</i>		Date: 7/17/23	Time: 9:30	Received by: (Signature)		Temp 23 °C		If preservation required by Login: Date/Time	
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Temp 5.5 °C		Bottles Received: _____	
Relinquished by: (Signature)		Date:	Time:	Received for lab by: (Signature) <i>Christopher J. ...</i>		Date: 7/18/23	Time: 0900	Hold:	Condition: OK

Company Name/Address:
State of TN Laboratory

3711 Middlebrook Pike
Knoxville, TN 37921

Billing Information:

Robin M. Holjes -
GPP.Health@tn.gov
Procurement Manager, Lab
Services

Email To: sarah.snyder@tn.gov

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___



MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody
constitutes acknowledgment and acceptance of the
Pace Terms and Conditions found at:
<https://info.pacelabs.com/hubs/pas-standard-terms.pdf>

SDG # 463190
E035

Actnum: STATELAB

Template: T230879

Prelogin: P1010318

PM: 3565 - Dorothy P Roberts

PB: BF 7/7/23

Shipped Via: **FedEX Ground**

Remarks Sample # (lab only)

Report to:
Sarah Snyder

Project Description:
Oak Ridge USDOE- ORNL

City/State
Collected: **Oak Ridge, TN**

Please Circle:
PT MT CT ET

Phone: **865-809-5086**

Client Project #
OUTFALL X01

Lab Project #
STATELAB-BIO OAK RID

Collected by (print):
Sarah Snyder

Site/Facility ID #
TN0002941

P.O. #

Collected by (signature):
Sarah Snyder

Rush? (Lab MUST Be Notified)

Quote #

___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

No.
of
Cntrs

Immediately
Packed on Ice N ___ Y W

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

Cntrs

OUTFALL X01 SAMPLE 2

Comp

WW

7-19-23 8:39

4

X

X

X

X

-02

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks: Potential for RAD; contact Donna Edison Pace x918-520-7887
Sample #2 - Collect a 24-hr composite sample from Tues-Wed. Ship OVERNIGHT delivery to arrive at lab on Thursday

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
___ UPS ___ FedEx ___ Courier

Tracking # **6841 5340 5760**

Sample Receipt Checklist	
COC Seal Present/Intact:	<u>MP</u> Y <input type="checkbox"/> N <input type="checkbox"/>
COC Signed/Accurate:	<u>Y</u> Y <input type="checkbox"/> N <input type="checkbox"/>
Bottles arrive intact:	<u>Y</u> Y <input type="checkbox"/> N <input type="checkbox"/>
Correct bottles used:	<u>X</u> Y <input type="checkbox"/> N <input type="checkbox"/>
Sufficient volume sent:	<u>Y</u> Y <input type="checkbox"/> N <input type="checkbox"/>
If Applicable	
VOA Zero Headspace:	<u>Y</u> Y <input type="checkbox"/> N <input type="checkbox"/>
Preservation Correct/Checked:	<u>Y</u> Y <input type="checkbox"/> N <input type="checkbox"/>
RAD Screen <0.5 mR/hr:	<u>Y</u> Y <input type="checkbox"/> N <input type="checkbox"/>

Relinquished by: (Signature)

Sarah Snyder

Date:

7-19-23

Time:

9:30

Received by: (Signature)

Trip Blank Received: Yes / No

HCL / MeOH
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: °C Bottles Received:

5.5 to 5.5 4

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: Time:

Hana Mwachira 7-20-23 0915

Hold:

Condition:
NCF OK

PH-1020H4321 TRC-2144141
CR6-202210

Company Name/Address:
State of TN Laboratory
3711 Middlebrook Pike
Knoxville, TN 37921

Billing Information:
Robin M. Holjes -
GPP.Health@tn.gov
Procurement Manager, Lab Services
P.O. Box 10000, Lebanon, TN 37087

Analysis / Container / Preservative
Pres Chk
62
PH-10BDH4321 TRC-2144141
CR6-20221V



MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at:
<https://info.pacelabs.com/hubs/pas-standard-terms.pdf>

Report to:
Sarah Snyder

Email To: sarah.snyder@tn.gov

Project Description:
Oak Ridge USDOE- ORNL

City/State: Collected: **Oak Ridge, TN**
Please Circle: PT MT CT ET

Phone: **865-809-5086**

Client Project #
OUTFALL X01

Lab Project #
STATELAB-BIO OAK RID

Collected by (print):
Sarah Snyder

Site/Facility ID #
TN0002941

P.O. #

Collected by (signature):
Sarah Snyder

Rush? (Lab MUST Be Notified)
Same Day Five Day
Next Day 5 Day (Rad Only)
Two Day 10 Day (Rad Only)
Three Day

Quote #
Date Results Needed

Immediately
Packed on Ice N ___ Y

No. of Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
-----------	-----------	----------	-------	------	------	--------------

OUTFALL X01 SAMPLE 3	Comp	WW		7-21-23	8:00	5

	ALK 125mlHDPE-NoPres	BIOMONS1 1 Gal-HDPE-NoPres	BIOMONS2 1 Gal-HDPE-NoPres	Hardness 250mlHDPE-HNO3														
	X	X	X	X														-03

SDG # **L1636190**
D174

Acctnum: STATELAB

Template: T230885

Prelogin: P1010319

PM: 3565 - Dorothy P Roberts

PB: **BF 7/17/23**

Shipped Via: **FedEX Ground**

Remarks Sample # (lab only)

- * Matrix:
- SS - Soil AIR - Air F - Filter
- GW - Groundwater B - Bioassay
- WW - WasteWater
- DW - Drinking Water
- OT - Other _____

Remarks: Potential for RAD; contact Donna Edison-Pace x 918 520 7867
Sample #3 - Collect a 24-hr composite sample from Thru-Fri. Ship SATURDAY DELIVERY to arrive at lab on Saturday

pH _____ Temp _____
Flow _____ Other _____

Sample Receipt Checklist

COC Seal Present/Intact: NP Y ___ N ___
COC Signed/Accurate: Y ___ N ___
Bottles arrive intact: Y ___ N ___
Correct bottles used: Y ___ N ___
Sufficient volume sent: Y ___ N ___
If Applicable
VOA Zero Headpace: ___ Y ___ N ___
Preservation Correct/Checked: ___ Y ___ N ___
RAD Screen <0.5 mR/hr: Y ___ N ___

Samples returned via: ___ UPS ___ FedEx ___ Courier ___
Tracking # **6841 8340 5207**

Relinquished by: (Signature)
Sarah Snyder

Date: **7-21-23**

Time: **9:30**

Received by: (Signature)

Trip Blank Received: Yes (No)
HCL / MeOH
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: **5.7+0=5.7** °C Bottles Received: **5**

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)
Naayla J

Date: **7/22/23** Time: **9:15**

Hold: Condition: NCF / OK