

February 22, 2021

wood.

Ms. Jessica Murphy
Enforcement and Compliance Section
Tennessee Department of Environment and Conservation
Division of Water Pollution Control
6th Floor, L&C Annex, 401 Church Street
Nashville, TN 37243-1534

TN DEPT. OF ENV. & CONSERVATION

MAR 02 2021

DIVISION OF WATER RESOURCES

**Subject: 2020 Annual Storm Water Discharge Monitoring Report
Aqua-Chem, Inc.
3001 E. Gov John Sevier Highway
Knoxville, Tennessee
TMSP Number: TNR050328
Wood Project No. 3031142002**

Dear Ms. Murphy:

On behalf of Aqua-Chem, Inc. (Water Technology Division), Wood Environment & Infrastructure Solutions, Inc. (Wood), is submitting the attached 2020 Annual Stormwater Monitoring Reports for Outfalls SW-001 through SW-005 (SW-004 combines and comingles with SW-003 and has been deleted).

Aqua-Chem Inc. (Water Technology Division), located at 3001 East Governor John Sevier Highway, Knoxville, Tennessee is covered under Sector AA of the Tennessee Multi-Sector General Permit for industrial stormwater discharges (TNR 050000). Annual stormwater sampling was initially conducted on September 24, 2020.

At Outfalls SWOF-001 and SWOF-003, the concentrations of nitrate were 9.41 milligrams per liter (mg/L) and 1.25 mg/L respectively, exceeding the benchmark concentration of 0.68 mg/L. At Outfall SWOF-002, the concentration of iron was 7.06 mg/L, exceeding the benchmark concentration of 5.0 mg/L. The stormwater run-off flow patterns and outfall locations are provided in Figure 1. Attachment A provides a copy of the analytical results. Completed CN-1115 forms for the sampling event is provided in Attachment B.

In accordance with Section 5.1.2 of the Sector AA permit, Aqua-Chem, Inc. provided notification on November 3, 2020 to the Tennessee Department of Environment and Conservation (TDEC), Knoxville Field Office that exceedance of the benchmark occurred in the annual sampling results. Outfall SWOF-001 receives run-off from the southwest portion of the facility which is primarily a grassy area. Outfall SWOF-003 receives run-off from the northwest and central portions of the facility, which includes equal parts pavement and grass covered areas.

Aqua-Chem does not use any bulk product or bulk source material containing nitrogen. The only material containing nitrogen used at the site is approximately 500 milliliters of nitric acid that is kept in a chemical closet that is in secondary containment. Additionally, Aqua-Chem has prohibited the fertilization of vegetation at the facility since October 2019. The sources of the nitrate exceedances at SWOF-01 or SWOF-03 have not been identified. Aqua-chem will continue to investigate the nitrogen source and evaluate stormwater runoff.

Outfall SWOF-002 receives run-off from a paved area on the west side of the facility. A root cause investigation determined that the iron exceedance at SWOF-002 resulted from welding and machining dust generated in the fabrication area in the northwest portion of the building shown in Figure 1. Based on the investigation, Aqua-Chem will be implementing the following operational changes and Best Management Practices (BMPs):

- The bay doors located near the loading dock will remain closed as much as possible.
- The paved area near the loading dock will street swept a minimum of two times per month.

As a result of the exceedances, the stormwater pollution protection plan (SWPPP) was revised and the outfalls were resampled after the revised BMPs were implemented. Resampling of the stormwater from each outfall was conducted on February 11, 2020. The analytical report is provided in Attachment A. Aluminum and zinc were not detected in any of the samples. Nitrate was detected at Outfall SWOF-001 and Outfall SWOF-005. Iron was detected at Outfall SWOF-002, Outfall SWOF-003, and Outfall SWOF-005. All detected parameters were below their respective benchmarks. Completed CN-1115 forms for both sampling events are provided in Attachment B.

If you have any questions or require any additional information, please contact me at (865) 218-1028 or william.teichert@woodplc.com in Knoxville.

Sincerely,

Wood Environment & Infrastructure Solutions, Inc.



W. Paul Teichert
Senior Environmental Principal



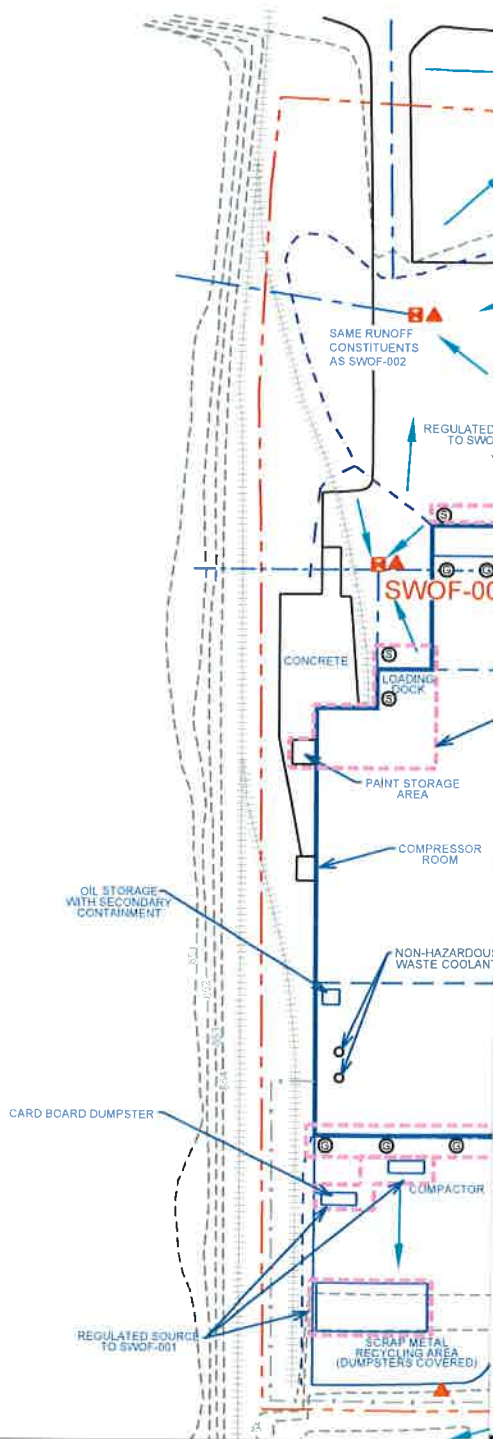
Jacob Parker, PE
Senior Engineer

Figure

Source: This drawing obtained from others.

LEGEND

- FENCE (WIRED FOR INTRUSION)
- - - PROPERTY LINE
- - - CONTOUR ELEVATION
- - - DRAINAGE BOUNDARY
- - - CULVERT
- + + + RAIL LINE
- ▲ AREA INLET
- REGULATED AREAS
- FLOW DIRECTION
- CURRENT STORM WATER OUTFALL
- FORMER STORM WATER OUTFALL
- TRANSFORMER ON GROUND
- *ROOF DRAINS TO GROUND SURFACE
- *ROOF DRAINS TO UNDERGROUND SYSTEM
- 12,000 GALLON LIQUID ARGON



RAINS FROM MANUFACTURING BUILDINGS, AREAS OF HANDLING, AND LOADING/UNLOADING AREAS ARE SOURCES OF REGULATED STORMWATER.

NOTES:

CLIENT:
Aqua-Chem, Inc.
 3001 East Governor John Sevier Highway
 Knoxville, TN

DRAW: MJP	REVIEW: MJP	SCALE: AS SHOWN
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CHECK: WPT	DATE: 10/29/2018	FIGURE: 1
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PROJ. NO.:
 3031142004

Plotted By: Parker, Jacob October 30, 2018 09:57:13am
 \\KX1-FS1\projects\CADD\Projects\3031\3031142004_Aqua
 Chem\Work\MJP\3031142004_fig2&3.dwg

Attachment A
Analytical Results

ANALYTICAL REPORT

October 05, 2020

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc

Wood E&I Solutions Inc. - Knoxville, TN

Sample Delivery Group: L1266952
Samples Received: 09/26/2020
Project Number: 3031142002.05
Description: Aqua Chem ECS

Report To: William Teichert
2030 Falling Waters Road
Suite 300
Knoxville, TN 37922

Entire Report Reviewed By:



Jennifer Huckaba
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.



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SAMPLE SUMMARY

SWOF-005 L1266952-01 WW

Collected by: Jacob Parker
 Collected date/time: 09/24/20 16:15
 Received date/time: 09/26/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 300.0	WG1549714	1	09/26/20 13:49	09/26/20 13:49	ELN	Mt. Juliet, TN
Metals (ICP) by Method 200.7	WG1550823	1	10/02/20 19:15	10/05/20 10:05	CCE	Mt. Juliet, TN

SWOF-001 L1266952-02 WW

Collected by: Jacob Parker
 Collected date/time: 09/24/20 16:25
 Received date/time: 09/26/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 300.0	WG1549714	1	09/26/20 14:05	09/26/20 14:05	ELN	Mt. Juliet, TN
Metals (ICP) by Method 200.7	WG1550823	1	10/02/20 19:15	10/05/20 10:08	CCE	Mt. Juliet, TN

SWOF-002 L1266952-03 WW

Collected by: Jacob Parker
 Collected date/time: 09/24/20 16:30
 Received date/time: 09/26/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 300.0	WG1549714	1	09/26/20 14:22	09/26/20 14:22	ELN	Mt. Juliet, TN
Metals (ICP) by Method 200.7	WG1550823	1	10/02/20 19:15	10/05/20 10:11	CCE	Mt. Juliet, TN

SWOF-003 L1266952-04 WW

Collected by: Jacob Parker
 Collected date/time: 09/24/20 16:40
 Received date/time: 09/26/20 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 300.0	WG1549714	1	09/26/20 14:39	09/26/20 14:39	ELN	Mt. Juliet, TN
Metals (ICP) by Method 200.7	WG1550823	1	10/02/20 19:15	10/05/20 14:51	CCE	Mt. Juliet, TN





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.

Jennifer Huckaba
Project Manager

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Wet Chemistry by Method 300.0

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate as (N)	ND		0.100	1	09/26/2020 13:49	WG1549714

1 Cp

2 Tc

Metals (ICP) by Method 200.7

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.200	1	10/05/2020 10:05	WG1550823
Iron	ND		0.100	1	10/05/2020 10:05	WG1550823
Zinc	0.0521	<u>B</u>	0.0500	1	10/05/2020 10:05	WG1550823

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 300.0

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate as (N)	9.41		0.100	1	09/26/2020 14:05	WG1549714

Metals (ICP) by Method 200.7

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.200	1	10/05/2020 10:08	WG1550823
Iron	0.109		0.100	1	10/05/2020 10:08	WG1550823
Zinc	ND		0.0500	1	10/05/2020 10:08	WG1550823

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Wet Chemistry by Method 300.0

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate as (N)	ND		0.100	1	09/26/2020 14:22	WG1549714

¹ Cp

² Tc

Metals (ICP) by Method 200.7

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.248		0.200	1	10/05/2020 10:11	WG1550823
Iron	7.06		0.100	1	10/05/2020 10:11	WG1550823
Zinc	0.0607	<u>B</u>	0.0500	1	10/05/2020 10:11	WG1550823

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

SWOF-003

Collected date/time: 09/24/20 16:40

SAMPLE RESULTS - 04

L1266952

ONE LAB NATIONWIDE



Wet Chemistry by Method 300.0

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate as (N)	1.25		0.100	1	09/26/2020 14:39	WG1549714

1 Cp

2 Tc

Metals (ICP) by Method 200.7

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.200	1	10/05/2020 14:51	WG1550823
Iron	0.120		0.100	1	10/05/2020 14:51	WG1550823
Zinc	0.101		0.0500	1	10/05/2020 14:51	WG1550823

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

ACCOUNT:

Wood E&I Solutions Inc. - Knoxville, TN

PROJECT:

3031142002.05

SDG:

L1266952

DATE/TIME:

10/05/20 20:11

PAGE:

8 of 13



[L1266952-01,02,03,04](#)

Method Blank (MB)

(MB) R3574882-1 09/26/20 08:23

Analyte	MB Result mg/l	MB MDL mg/l	MB RDL mg/l
Nitrate	U	0.0480	0.100

L1266606-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1266606-01 09/26/20 08:40 • (DUP) R3574882-2 09/26/20 08:57

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate	ND	ND	1	0.000		20

L1266353-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1266353-01 09/26/20 21:59 • (DUP) R3574882-6 09/26/20 22:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate	0.295	0.248	1	17.4		20

Laboratory Control Sample (LCS)

(LCS) R3574882-3 09/26/20 09:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate	8.00	7.95	99.4	90.0-110	

L1266952-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1266952-04 09/26/20 14:39 • (MS) R3574882-4 09/26/20 14:56 • (MSD) R3574882-5 09/26/20 15:13

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Nitrate	5.00	1.25	6.27	6.28	100	101	1	80.0-120		0.199	20	

L1266353-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1266353-02 09/26/20 22:33 • (MS) R3574882-7 09/26/20 22:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate	5.00	0.246	5.36	102	1	80.0-120	

1 Cp	2 Tc	3 Ss	4 Cn	5 Sr	6 Qc	7 Gl	8 Al	9 Sc
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Method Blank (MB)

(MB) R3577940-1 10/05/20 09:23

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum	U	0.0592	0.200	0.200
Iron	U	0.0205	0.100	0.100
Zinc	0.00667	0.00578	0.0500	0.0500

Laboratory Control Sample (LCS)

(LCS) R3577940-2 10/05/20 09:26

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	10.0	9.75	97.5	85.0-115	
Iron	10.0	9.85	98.5	85.0-115	
Zinc	1.00	1.00	100	85.0-115	

L1266950-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

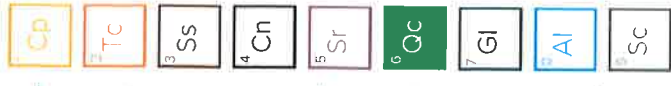
(OS) L1266950-02 10/05/20 14:43 • (MS) R3577940-4 10/05/20 14:45 • (MSD) R3577940-5 10/05/20 14:48

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum	10.0	ND	9.61	9.60	96.1	96.0	1	70.0-130	0.102	0.102	0.102	20
Iron	10.0	1.73	11.3	11.4	95.8	96.2	1	70.0-130	0.377	0.377	0.377	20
Zinc	1.00	ND	0.980	0.985	97.0	97.5	1	70.0-130	0.482	0.482	0.482	20

L1266952-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1266952-04 10/05/20 14:51 • (MS) R3577940-6 10/05/20 14:54 • (MSD) R3577940-7 10/05/20 14:56

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum	10.0	ND	9.90	9.98	98.3	99.1	1	70.0-130	0.809	0.809	0.809	20
Iron	10.0	0.120	9.92	9.95	98.0	98.3	1	70.0-130	0.342	0.342	0.342	20
Zinc	1.00	0.101	1.06	1.06	95.7	95.6	1	70.0-130	0.107	0.107	0.107	20





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.
ND	Not detected at the Reporting Limit (or MDL where applicable).
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
-----------	-------------

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.



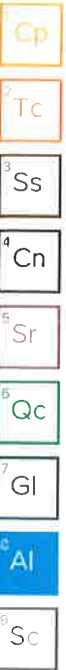
ACCREDITATIONS & LOCATIONS

ONE LAB NATIONWIDE



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



State Accreditations

Alabama	40660	Nebraska	NE-05-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
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}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

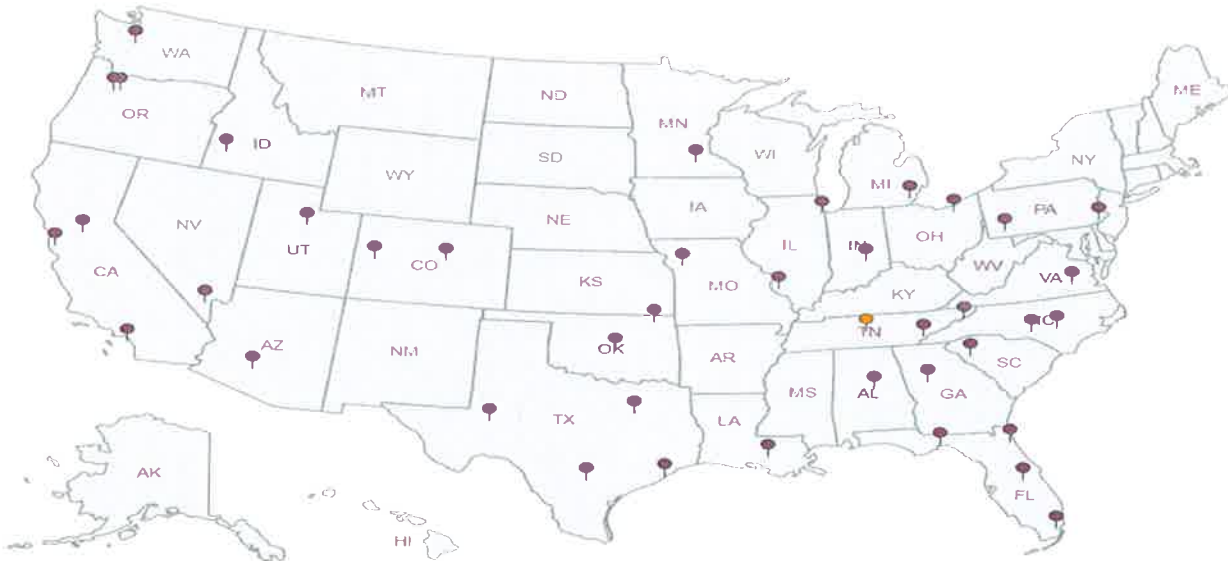
Third Party Federal Accreditations

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

Our Locations

Pace National 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. Pace National performs all testing at our central laboratory.





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

SDG # 1206952
Table # E097

Account: MACTECKTN
Template: T135430
Prelog in: P789753
PM: 633 - Pam Langford
PB: 8/4/20 NWB
Shipped Via: FedEx Ground

Remarks	Sample # (lab only)
	-01
	02
	03
	04

Chain of Custody

Analysis / Container / Preservative

Pres Chk

Metals 250mHDPE-HNO3	NITRATE 125mHDPE-NOPres
X	X
X	X
X	X
X	X

Sample Receipt Checklist	Y	N
COC Seal Present/Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
COC Signed/Accurate:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Bottles arrive intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Correct bottles used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sufficient volume sent:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
VCA Zero Headspace:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Preservation Correct/Checked:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PAD Screen <0.5 mR/hr:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Billing Information:
AMEC
9725 Cogdill Road
Knoxville, TN 37932
← same as this

Report to:
William Teichert
Project Description:
Aqua Chem EGS

City/State Collected: Knoxville, TN
Client Project #: 3031142002.05
Site/Facility ID #: Aqua Chem

Collected by (print): Jacob Parker
Collected by (signature): *Jacob Parker*

Rush? (Lab MUST Be Notified)
Same Day ___ Five Day ___
Next Day ___ 5 Day (Rad Only) ___
Two Day ___ 10 Day (Rad Only) ___
Three Day ___
Immediately Packed on Ice N ___ Y

Sample ID	Comp/Grab	Matrix	Depth	Date	Time	No. of Cntrs
SWOF-045	Grab	WW	NA	7/24/20	1615	2
SWOF-041	↓	WW	↓	1625	1625	2
SWOF-042	↓	WW	↓	1630	1630	2
SWOF-043	Grab	WW	↓	1640	1640	2

Lab Project #
MACTECKTN-AQUACHEM

P.O.#
3931 H899205

Quote #
NA

Date Results Needed
Specified

PH ___ Temp ___
Flow ___ Other ___

Trip Blank Received: Yes / No
HCL / MeOH TBR
Bottles Received: 8
Date: 8-26-20 Time: 8:00

Reinquisitioned by: (Signature)

Reinquisitioned by: (Signature)

Reinquisitioned by: (Signature)

Reinquisitioned by: (Signature)

Reinquisitioned by: (Signature)

Condition: NCF / 09

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

Samples returned via:
UPS ___ FedEx ___ Courier ___

Date: 9-25-20 Time: 1600
Date: 9-25-20 Time: 1700
Date: _____ Time: _____

Tracking #
Received by: (Signature)
Received by: (Signature)
Received for lab by: (Signature)

Signature: *Jacob Parker*

Signature: *William Teichert*

Signature: *William Teichert*

Signature: *William Teichert*

Signature: *William Teichert*

Signature: *William Teichert*



Wood E&I Solutions Inc. - Knoxville, TN

Sample Delivery Group: L1316433
Samples Received: 02/12/2021
Project Number: 3031142002.05
Description: Aqua Chem ECS
Site: AQUA CHEM
Report To: William Teichert
2030 Falling Waters Road
Suite 300
Knoxville, TN 37922

Entire Report Reviewed By:



Jennifer Huckaba
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

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com



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SWOF-001 L1316433-01	5	
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SAMPLE SUMMARY



SWOF-001 L1316433-01 WW Collected by: Jacob Parker
Collected date/time: 02/11/21 10:10
Received date/time: 02/12/21 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 300.0	WG1620534	1	02/12/21 11:01	02/12/21 11:01	MCG	Mt. Juliet, TN
Metals (ICP) by Method 200.7	WG1622128	1	02/19/21 13:15	02/19/21 18:22	KMG	Mt. Juliet, TN

SWOF-002 L1316433-02 WW Collected by: Jacob Parker
Collected date/time: 02/11/21 10:25
Received date/time: 02/12/21 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 300.0	WG1620534	1	02/12/21 15:44	02/12/21 15:44	MCG	Mt. Juliet, TN
Metals (ICP) by Method 200.7	WG1622128	1	02/19/21 13:15	02/19/21 18:25	KMG	Mt. Juliet, TN

SWOF-003 L1316433-03 WW Collected by: Jacob Parker
Collected date/time: 02/11/21 10:20
Received date/time: 02/12/21 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 300.0	WG1620534	1	02/12/21 16:32	02/12/21 16:32	MCG	Mt. Juliet, TN
Metals (ICP) by Method 200.7	WG1622128	1	02/19/21 13:15	02/19/21 18:28	KMG	Mt. Juliet, TN

SWOF-005 L1316433-04 WW Collected by: Jacob Parker
Collected date/time: 02/11/21 10:15
Received date/time: 02/12/21 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 300.0	WG1620534	1	02/12/21 16:47	02/12/21 16:47	MCG	Mt. Juliet, TN
Metals (ICP) by Method 200.7	WG1622128	1	02/19/21 13:15	02/19/21 18:31	KMG	Mt. Juliet, TN

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



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.

Jennifer Huckaba
Project Manager

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate as (N)	0.184		0.100	1	02/12/2021 11:01	WG1620534

1 Cp

2 Tc

Metals (ICP) by Method 200.7

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.200	1	02/19/2021 18:22	WG1622128
Iron	ND		0.100	1	02/19/2021 18:22	WG1622128
Zinc	ND		0.0500	1	02/19/2021 18:22	WG1622128

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 300.0

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Nitrate as (N)	ND		0.100	1	02/12/2021 15:44	WG1620534

¹ Cp

² Tc

Metals (ICP) by Method 200.7

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.200	1	02/19/2021 18:25	WG1622128
Iron	0.108	<u>B</u>	0.100	1	02/19/2021 18:25	WG1622128
Zinc	ND		0.0500	1	02/19/2021 18:25	WG1622128

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

^C Al

⁹ Sc



Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate as (N)	ND		0.100	1	02/12/2021 16:32	WG1620534

¹ Cp

² Tc

Metals (ICP) by Method 200.7

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.200	1	02/19/2021 18:28	WG1622128
Iron	0.152	<u>B</u>	0.100	1	02/19/2021 18:28	WG1622128
Zinc	ND		0.0500	1	02/19/2021 18:28	WG1622128

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate as (N)	0.136		0.100	1	02/12/2021 16:47	WG1620534

¹ Cp

² Tc

Metals (ICP) by Method 200.7

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.200	1	02/19/2021 18:31	WG1622128
Iron	0.120	B	0.100	1	02/19/2021 18:31	WG1622128
Zinc	ND		0.0500	1	02/19/2021 18:31	WG1622128

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3622237-1 02/12/21 09:08

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate	U	0.0480	0.100	

L1316433-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1316433-01 02/12/21 11:01 • (DUP) R3622237-3 02/12/21 11:16

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate	0.184	0.172	1	6.97		20

L1316569-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1316569-03 02/12/21 17:51 • (DUP) R3622237-6 02/12/21 18:07

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate	0.897	0.902	1	0.545		20

Laboratory Control Sample (LCS)

(LCS) R3622237-2 02/12/21 09:24

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Nitrate	8.00	8.00	100	90.0-110	

L1316433-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1316433-02 02/12/21 15:44 • (MS) R3622237-4 02/12/21 16:00 • (MSD) R3622237-5 02/12/21 16:16

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MSD Rec. %	MSD Qualifier	RPD %	RPD Limits %
Nitrate	5.00	ND	4.70	4.90	94.1	1	80.0-120	97.9	3.99		20

L1316569-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1316569-03 02/12/21 17:51 • (MS) R3622237-7 02/12/21 18:23

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Nitrate	5.00	0.897	5.80	98.0	1	80.0-120	



Method Blank (MB)

(MB) R3623449-1 02/19/21 17:41

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum	U		0.0592	0.200
Iron	0.0229	J	0.0205	0.100
Zinc	U		0.00578	0.0500

Laboratory Control Sample (LCS)

(LCS) R3623449-2 02/19/21 17:44

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	10.0	9.42	94.2	85.0-115	
Iron	10.0	9.36	93.6	85.0-115	
Zinc	1.00	0.928	92.8	85.0-115	

L1315420-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1315420-01 02/19/21 17:46 • (MS) R3623449-4 02/19/21 17:52 • (MSD) R3623449-5 02/19/21 17:54

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum	10.0	0.639	10.2	10.2	95.5	95.5	1	70.0-130			0.0579	20
Iron	10.0	ND	9.62	9.49	95.3	94.0	1	70.0-130			1.36	20
Zinc	1.00	ND	0.934	0.925	93.4	92.5	1	70.0-130			0.945	20

L1316454-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1316454-02 02/19/21 17:57 • (MS) R3623449-6 02/19/21 18:00 • (MSD) R3623449-7 02/19/21 18:02

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum	10.0	ND	9.51	9.44	95.1	94.4	1	70.0-130			0.749	20
Iron	10.0	0.570	10.1	10.0	95.4	94.4	1	70.0-130			1.00	20
Zinc	1.00	ND	0.954	0.964	94.8	95.8	1	70.0-130			0.993	20

Guide to Reading and Understanding Your Laboratory Report

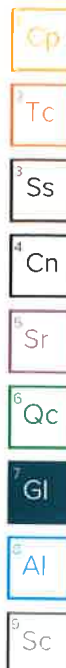
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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
ND	Not detected at the Reporting Limit (or MDL where applicable).
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
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.

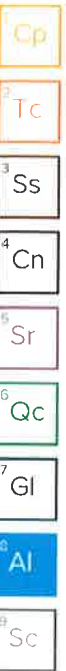


ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE



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



Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN, 37122

Alabama	40660	Nebraska	NE-05-15-05
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	EB7487	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		

Pace Analytical National 1313 Point Mallard Parkway SE Suite B Decatur, AL, 35601

Alabama	40160
ANSI National Accreditation Board	L2239

Pace Analytical National 660 Bercut Dr, Ste. C Sacramento, CA, 95811

California	2961	Oregon	CA300002
Minnesota	006-999-465	Washington	C926
North Dakota	R-214		

Pace Analytical National 6000 South Eastern Avenue Ste 9A Las Vegas, NV, 89119

Nevada	NV009412021-1
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Pace Analytical National 1606 E. Brazos Street Suite D Victoria, TX, 77901

Texas	T104704328-20-18
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¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

ACCOUNT:

Wood E&I Solutions Inc. - Knoxville, TN

PROJECT:

3031142002.05

SDG:

L1316433

DATE/TIME:

02/21/21 19:38

PAGE:

12 of 13



2065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-725-5859
Fax: 615-758-5859

SDG # **L316433**
Table **F106**

Account: **MACTECKTN**
Template: **T135430**
Prelogin: **P808268**
PMT: **3513 - Jennifer Huckaba**
PB: **11-4-2016**
Shipped Via: **FedEX Ground**

Remarks: Sample # (lab only)

Analysis / Container / Preservative

Analysis / Container / Preservative	Pres	Chk
Metals 250mlHDPF-HNO3	X	
NITRATE 125mlHDPF-NOPres	X	

Wood E&I Solutions Inc. - Knoxville, TN
2030 Falling Waters Road
Suite 300
Knoxville, TN 37922

Billing information:
Accounts Payable
2030 Falling Waters Road
Suite 300
Knoxville, TN 37922

Client Project # **3031142002.05**
Site/Facility ID # **Aquachen**
Lab Project # **MACTECKTN-AQUACHEM**
P.O. # **3431142442.45**
Quote # **NA**
Date Results Needed **Started**

Report to: **William Teichert**
Project Description: **Aqua Chem ECS**
City/State Collected: **PT MT CT ET**
Please Circle:

Sample ID	Comp/Grab	Matrix	Depth	Date	Time	No. of	Ents
SWOF-441	Grab	WW	NA	2/11/21	1014	2	
SWOF-442	↓	WW	↓	1025		2	
SWOF-443	↓	WW	↓	1026		2	
SWOF-445	↓	WW	↓	1015		2	

Remarks: **Nitrate (short hold) (ship same day)**, Metals = Al, Fe, Zn
Analyze Immediately

Samples returned via: UPS FedEx Courier

Relinquished by: (Signature) **[Signature]** Date: **2/11/21** Time: **1345**

Relinquished by: (Signature) **[Signature]** Date: **2-11-21** Time: **17W**

Relinquished by: (Signature) **[Signature]** Date: **2/12/21** Time: **8:00**

Received by: (Signature) **[Signature]** Date: **2/12/21** Time: **8:00**

Received by: (Signature) **[Signature]** Date: **2/12/21** Time: **8:00**

Received for lab by: (Signature) **[Signature]** Date: **2/12/21** Time: **8:00**

Sample Receipt Checklist

COC Seal Present/Intact: NP

COC Signed/Accurate: NP

Bottles arrive intact: NP

Correct bottles used: NP

Sufficient volume sent: NP

If Applicable

VOA Zero Headspace: NP

Preservation Correct/Checked: NP

PAD Screen <0.5 mR/hr: NP

If preservation required by Login: Date/Time

Hold: **Condition: NCF / OK**

Attachment B
Completed CN-1115 Forms



March 14, 2017

Aqua-Chem, Inc.
3001 East Governor John Sevier Highway
Knoxville, TN 37914

RE: CERTIFICATE OF DELEGATION

I hereby authorize William (Paul) Teichert of Amec Foster Wheeler Environment & Infrastructure, Inc. on behalf of the Aqua-Chem, Inc., with signatory authority and to execute all necessary certifications for permit applications, environmental reports and information request responses to Federal, state, and local governmental agencies, in accordance with the relevant environmental rules as necessary and appropriate to support Plant operations and affairs.


Signed _____

Frank Keefer
Operations Manager

03/14/2017
Date _____


Signed _____

Gary Edwards
Chief Executive Officer

03/14/2017
Date _____



Tennessee Department of Environment and Conservation
 Division of Water Resources
 William R. Snodgrass Tennessee Tower
 312 Rosa L. Parks Avenue, 11th Floor, Nashville, Tennessee 37243

ANNUAL STORMWATER MONITORING REPORT
 for Stormwater Discharges Associated with Industrial Activity under the
TENNESSEE MULTI-SECTOR GENERAL PERMIT (TMSP)

Facility Name: Aqua-Chem, Inc.	TMSP Number: TNR050328
Contact Person: Frank Keefer	Phone Number: 865-540-1933
This report is submitted for the following calendar year (e.g. 2015): 2020	Outfall Number: SW001
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 2/11/21
Low Concentration Waiver (Note 3): list all parameters for which the facility is certifying that there has not been a significant change in industrial activity or the pollution prevention measures in the area of the facility that drains to the outfall for which sampling was waived:	

DIRECTIONS: In the spaces below, provide the results of stormwater monitoring for the designated outfall. For each outfall, one Annual Stormwater Monitoring Report must be submitted. The parameters for which monitoring must be conducted depend on which industry sector(s) of the TMSP applies to the discharge. Look up your sector(s) in the TMSP and analyze for the parameters that apply. If parameter is not listed below, submit additional sheets. All samples should be grab.

Parameter	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)	Parameter (continued)	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)
Aluminum, Total	0.75	<0.200	Magnesium, Total	0.0636	
Ammonia	4.0		Mercury, Total	0.0024	
Arsenic, Total	0.16854		Nickel, Total	0.875	
BOD, 5-Day	30		Nitrate + Nitrite Nitrogen	0.68	0.184
Cadmium, Total	0.0159		Oil and Grease	15	
COD	120		pH	5.0-9.0	
Copper, Total	0.018		Phosphorus, Total (as P)	2.0	
Cyanide, Total	0.064		Selenium, Total	0.2385	
Fluoride	1.8		Silver, Total	0.032	
Iron, Total	5.0	<0.100	Total Suspended Solids	150	
Lead, Total	0.15		Zinc, Total	0.395	<0.0500

CERTIFICATION AND SIGNATURE: (Make all entries in ink, not with a pencil. This report must be signed by a responsible corporate officer for a corporation, a general partner for a partnership, the proprietor for a sole proprietorship, or a principal executive officer or ranking elected official for a public agency.)

I certify under penalty of law that this document and all of its attachments were prepared under my direction or my supervision in accordance with a system designed to assure qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

William (Paul) Teichert	Project Manager		2/22/21
Printed Name	Official Title	Signature	Date



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 Division of Water Resources
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ANNUAL STORMWATER MONITORING REPORT
 for Stormwater Discharges Associated with Industrial Activity under the
TENNESSEE MULTI-SECTOR GENERAL PERMIT (TMSP)

Facility Name: Aqua-Chem, Inc.	TMSP Number: TNR050328
Contact Person: Frank Keefer	Phone Number: 865-540-1933
This report is submitted for the following calendar year (e.g. 2015): 2020	Outfall Number: SW002
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 2/11/21
Low Concentration Waiver (Note 3): list all parameters for which the facility is certifying that there has not been a significant change in industrial activity or the pollution prevention measures in the area of the facility that drains to the outfall for which sampling was waived:	

DIRECTIONS: In the spaces below, provide the results of stormwater monitoring for the designated outfall. For each outfall, one Annual Stormwater Monitoring Report must be submitted. The parameters for which monitoring must be conducted depend on which industry sector(s) of the TMSP applies to the discharge. Look up your sector(s) in the TMSP and analyze for the parameters that apply. If parameter is not listed below, submit additional sheets. All samples should be grab.

Parameter	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)
Aluminum, Total	0.75	<0.200
Ammonia	4.0	
Arsenic, Total	0.16854	
BOD, 5-Day	30	
Cadmium, Total	0.0159	
COD	120	
Copper, Total	0.018	
Cyanide, Total	0.064	
Fluoride	1.8	
Iron, Total	5.0	0.108
Lead, Total	0.15	

Parameter (continued)	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)
Magnesium, Total	0.0636	
Mercury, Total	0.0024	
Nickel, Total	0.875	
Nitrate + Nitrite Nitrogen	0.68	<0.100
Oil and Grease	15	
pH	5.0-9.0	
Phosphorus, Total (as P)	2.0	
Selenium, Total	0.2385	
Silver, Total	0.032	
Total Suspended Solids	150	
Zinc, Total	0.395	<0.0500

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Printed Name	Official Title	Signature	Date



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ANNUAL STORMWATER MONITORING REPORT
 for Stormwater Discharges Associated with Industrial Activity under the
TENNESSEE MULTI-SECTOR GENERAL PERMIT (TMSP)

Facility Name: Aqua-Chem, Inc.	TMSP Number: TNR050328
Contact Person: Frank Keefer	Phone Number: 865-540-1933
This report is submitted for the following calendar year (e.g. 2015): 2020	Outfall Number: SW003
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 2/11/21
Low Concentration Waiver (Note 3): list all parameters for which the facility is certifying that there has not been a significant change in industrial activity or the pollution prevention measures in the area of the facility that drains to the outfall for which sampling was waived:	

DIRECTIONS: In the spaces below, provide the results of stormwater monitoring for the designated outfall. For each outfall, one Annual Stormwater Monitoring Report must be submitted. The parameters for which monitoring must be conducted depend on which industry sector(s) of the TMSP applies to the discharge. Look up your sector(s) in the TMSP and analyze for the parameters that apply. If parameter is not listed below, submit additional sheets. All samples should be grab.

Parameter	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)
Aluminum, Total	0.75	<0.200
Ammonia	4.0	
Arsenic, Total	0.16854	
BOD, 5-Day	30	
Cadmium, Total	0.0159	
COD	120	
Copper, Total	0.018	
Cyanide, Total	0.064	
Fluoride	1.8	
Iron, Total	5.0	0.152
Lead, Total	0.15	

Parameter (continued)	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)
Magnesium, Total	0.0636	
Mercury, Total	0.0024	
Nickel, Total	0.875	
Nitrate + Nitrite Nitrogen	0.68	<0.100
Oil and Grease	15	
pH	5.0-9.0	
Phosphorus, Total (as P)	2.0	
Selenium, Total	0.2385	
Silver, Total	0.032	
Total Suspended Solids	150	
Zinc, Total	0.395	<0.0500

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TENNESSEE MULTI-SECTOR GENERAL PERMIT (TMSP)

Facility Name: Aqua-Chem, Inc.	TMSP Number: TNR050328
Contact Person: Frank Keefer	Phone Number: 865-540-1933
This report is submitted for the following calendar year (e.g. 2015): 2020	Outfall Number: SW005
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 2/11/21
Low Concentration Waiver (Note 3): list all parameters for which the facility is certifying that there has not been a significant change in industrial activity or the pollution prevention measures in the area of the facility that drains to the outfall for which sampling was waived:	

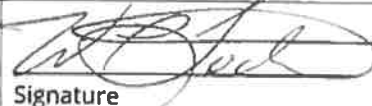
DIRECTIONS: In the spaces below, provide the results of stormwater monitoring for the designated outfall. For each outfall, one Annual Stormwater Monitoring Report must be submitted. The parameters for which monitoring must be conducted depend on which industry sector(s) of the TMSP applies to the discharge. Look up your sector(s) in the TMSP and analyze for the parameters that apply. If parameter is not listed below, submit additional sheets. All samples should be grab.

Parameter	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)
Aluminum, Total	0.75	<0.200
Ammonia	4.0	
Arsenic, Total	0.16854	
BOD, 5-Day	30	
Cadmium, Total	0.0159	
COD	120	
Copper, Total	0.018	
Cyanide, Total	0.064	
Fluoride	1.8	
Iron, Total	5.0	0.120
Lead, Total	0.15	

Parameter (continued)	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)
Magnesium, Total	0.0636	
Mercury, Total	0.0024	
Nickel, Total	0.875	
Nitrate + Nitrite Nitrogen	0.68	0.136
Oil and Grease	15	
pH	5.0-9.0	
Phosphorus, Total (as P)	2.0	
Selenium, Total	0.2385	
Silver, Total	0.032	
Total Suspended Solids	150	
Zinc, Total	0.395	<0.0500

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William (Paul) Teichert	Project Manager		2/22/21
Printed Name	Official Title	Signature	Date



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 Division of Water Resources
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ANNUAL STORMWATER MONITORING REPORT
 for Stormwater Discharges Associated with Industrial Activity under the
TENNESSEE MULTI-SECTOR GENERAL PERMIT (TMSP)

Facility Name: Aqua-Chem, Inc.	TMSP Number: TNR050328
Contact Person: Frank Keefer	Phone Number: 865-540-1933
This report is submitted for the following calendar year (e.g. 2015): 2020	Outfall Number: SW001
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 9/24/20
Low Concentration Waiver (Note 3): list all parameters for which the facility is certifying that there has not been a significant change in industrial activity or the pollution prevention measures in the area of the facility that drains to the outfall for which sampling was waived:	

DIRECTIONS: In the spaces below, provide the results of stormwater monitoring for the designated outfall. For each outfall, one Annual Stormwater Monitoring Report must be submitted. The parameters for which monitoring must be conducted depend on which industry sector(s) of the TMSP applies to the discharge. Look up your sector(s) in the TMSP and analyze for the parameters that apply. If parameter is not listed below, submit additional sheets. All samples should be grab.

Parameter	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)	Parameter (continued)	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)
Aluminum, Total	0.75	<0.200	Magnesium, Total	0.0636	
Ammonia	4.0		Mercury, Total	0.0024	
Arsenic, Total	0.16854		Nickel, Total	0.875	
BOD, 5-Day	30		Nitrate + Nitrite Nitrogen	0.68	9.41
Cadmium, Total	0.0159		Oil and Grease	15	
COD	120		pH	5.0-9.0	
Copper, Total	0.018		Phosphorus, Total (as P)	2.0	
Cyanide, Total	0.064		Selenium, Total	0.2385	
Fluoride	1.8		Silver, Total	0.032	
Iron, Total	5.0	0.109	Total Suspended Solids	150	
Lead, Total	0.15		Zinc, Total	0.395	<0.0500

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TENNESSEE MULTI-SECTOR GENERAL PERMIT (TMSP)

Facility Name: Aqua-Chem, Inc.	TMSP Number: TNR050328
Contact Person: Frank Keefer	Phone Number: 865-540-1933
This report is submitted for the following calendar year (e.g. 2015): 2020	Outfall Number: SW002
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 9/24/20
Low Concentration Waiver (Note 3): list all parameters for which the facility is certifying that there has not been a significant change in industrial activity or the pollution prevention measures in the area of the facility that drains to the outfall for which sampling was waived:	


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Parameter	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)
Aluminum, Total	0.75	0.248
Ammonia	4.0	
Arsenic, Total	0.16854	
BOD, 5-Day	30	
Cadmium, Total	0.0159	
COD	120	
Copper, Total	0.018	
Cyanide, Total	0.064	
Fluoride	1.8	
Iron, Total	5.0	7.06
Lead, Total	0.15	

Parameter (continued)	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)
Magnesium, Total	0.0636	
Mercury, Total	0.0024	
Nickel, Total	0.875	
Nitrate + Nitrite Nitrogen	0.68	<0.100
Oil and Grease	15	
pH	5.0-9.0	
Phosphorus, Total (as P)	2.0	
Selenium, Total	0.2385	
Silver, Total	0.032	
Total Suspended Solids	150	
Zinc, Total	0.395	0.0607

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Printed Name	Official Title	Signature	Date



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ANNUAL STORMWATER MONITORING REPORT
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TENNESSEE MULTI-SECTOR GENERAL PERMIT (TMSP)


Facility Name: Aqua-Chem, Inc.	TMSP Number: TNR050328
Contact Person: Frank Keefer	Phone Number: 865-540-1933
This report is submitted for the following calendar year (e.g. 2015): 2020	Outfall Number: SW003
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 9/24/20
Low Concentration Waiver (Note 3): list all parameters for which the facility is certifying that there has not been a significant change in industrial activity or the pollution prevention measures in the area of the facility that drains to the outfall for which sampling was waived:	

DIRECTIONS: In the spaces below, provide the results of stormwater monitoring for the designated outfall. For each outfall, one Annual Stormwater Monitoring Report must be submitted. The parameters for which monitoring must be conducted depend on which industry sector(s) of the TMSP applies to the discharge. Look up your sector(s) in the TMSP and analyze for the parameters that apply. If parameter is not listed below, submit additional sheets. All samples should be grab.

Parameter	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)	Parameter (continued)	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)
Aluminum, Total	0.75	<0.200	Magnesium, Total	0.0636	
Ammonia	4.0		Mercury, Total	0.0024	
Arsenic, Total	0.16854		Nickel, Total	0.875	
BOD, 5-Day	30		Nitrate + Nitrite Nitrogen	0.68	1.25
Cadmium, Total	0.0159		Oil and Grease	15	
COD	120		pH	5.0-9.0	
Copper, Total	0.018		Phosphorus, Total (as P)	2.0	
Cyanide, Total	0.064		Selenium, Total	0.2385	
Fluoride	1.8		Silver, Total	0.032	
Iron, Total	5.0	0.120	Total Suspended Solids	150	
Lead, Total	0.15		Zinc, Total	0.395	0.101

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ANNUAL STORMWATER MONITORING REPORT
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TENNESSEE MULTI-SECTOR GENERAL PERMIT (TMSP)

Facility Name: Aqua-Chem, Inc.	TMSP Number: TNR050328
Contact Person: Frank Keefer	Phone Number: 865-540-1933
This report is submitted for the following calendar year (e.g. 2015): 2020	Outfall Number: SW005
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 9/24/20
Low Concentration Waiver (Note 3): list all parameters for which the facility is certifying that there has not been a significant change in industrial activity or the pollution prevention measures in the area of the facility that drains to the outfall for which sampling was waived:	


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Aluminum, Total	0.75	<0.200
Ammonia	4.0	
Arsenic, Total	0.16854	
BOD, 5-Day	30	
Cadmium, Total	0.0159	
COD	120	
Copper, Total	0.018	
Cyanide, Total	0.064	
Fluoride	1.8	
Iron, Total	5.0	<0.100
Lead, Total	0.15	

Parameter (continued)	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)
Magnesium, Total	0.0636	
Mercury, Total	0.0024	
Nickel, Total	0.875	
Nitrate + Nitrite Nitrogen	0.68	<0.100
Oil and Grease	15	
pH	5.0-9.0	
Phosphorus, Total (as P)	2.0	
Selenium, Total	0.2385	
Silver, Total	0.032	
Total Suspended Solids	150	
Zinc, Total	0.395	0.0521

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William (Paul) Teichert	Project Manager		2/16/21
Printed Name	Official Title	Signature	Date