July 23, 2018

Tennessee Department of Environment and Conservation
Division of Water Resources
Knoxville Field Office
3711 Middlebrook Pike
Knoxville, TN 37921

Subject: Notice of Stormwater Exceedance
Aqua-Chem Site – E. Governor John Sevier Highway, Knoxville, Tennessee
Wood Project No. 3031142002

Dear Ms. McFall:

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 conducted on July 28, 2018. At Outfall SWOF-003, the concentration of zinc was 0.705 milligrams per liter (mg/L), exceeding the benchmark concentration of 0.395 mg/L. At Outfall SWOF-005, zinc (1.33 mg/L) and aluminum (0.926 mg/L) exceeded their benchmarks. The stormwater run-off flow patterns and outfall locations are provided in Figure 1. Attachment A provides a copy of the analytical results.

In accordance with Section 5.1.2 of the Sector AA permit, Aqua-Chem, Inc. is providing notification to the Tennessee Department of Environment and Conservation (TDEC), Knoxville Field Office that exceedances of the benchmarks occurred in the annual sampling results. Both Outfalls 003 and 005 receive run-off from the vicinity of the sandblast and paint booths. A root cause investigation determined that the exceedances potentially resulted from paint and sandblast tracking in the area and plugging of drain filters in the inverts in the area. Based on the investigation, Aqua-Chem will be implementing the following operational changes and Best Management Practices (BMPs):

- Drain filters, which have been changed out on a weekly basis, will be inspected daily and changed as needed. The current filter frame or housing will be modified to simplify change outs.

Wood Environment & Infrastructure Solutions, Inc.
2030 Falling Waters Road, Suite 300
Knoxville, TN 37922
USA
T: 865-671-6774
www.woodplc.com

- A single layer of fabric has been used on the floor and outside of the paint booth to prevent track out. The revised BMP will use a double layer of fabric to further reduce the potential for track out.

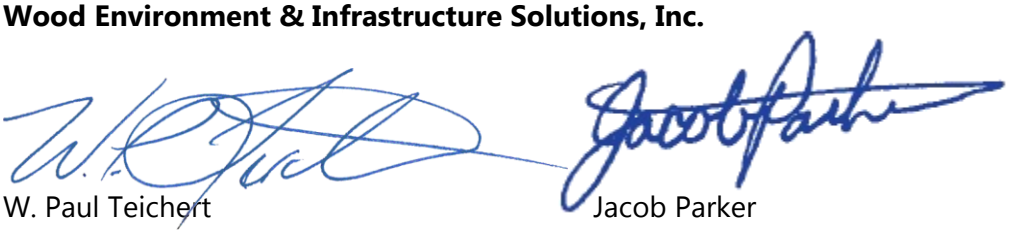
- Fabric or paper will be placed outside the sand blast area to capture disbursement or overspray of sand from sand blasting operations. The paper or fabric inspected daily and sand will be vacuumed or swept up from the area periodically as needed but at a minimum on a daily/weekly basis.

- Although releases have not occurred from the paint shaker, it will be provided with secondary containment.

These revised BMPs will be incorporated in an updated SWPPP and implemented within 60 days as required by the multi-sector general permit. Following implementation, Outfalls SWOF-003 and SWOF-005 will be re-sampled as soon as practical and those results will be provided to the Knoxville Field Office.

Sincerely,

Wood Environment & Infrastructure Solutions, Inc.



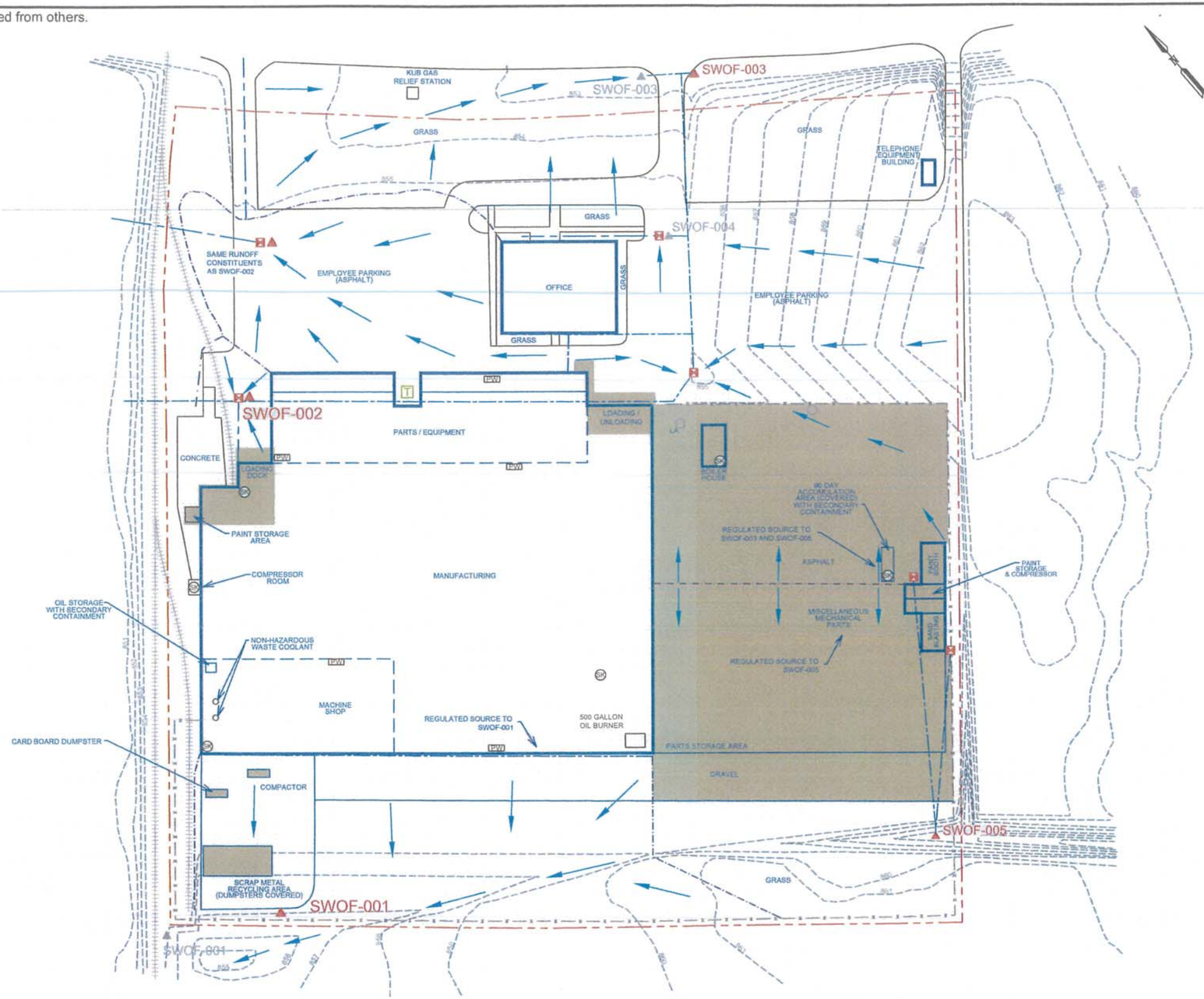
W. Paul Teichert
Project Manager

Jacob Parker
Project Engineer

cc: Mr. Frank Keefer, Aqua-Chem, Inc.

FIGURE

Source: This drawing obtained from others.



LEGEND

- FENCE (WIRED FOR INTRUSION)
- PROPERTY LINE
- CONTOUR ELEVATION
- DRAINAGE BOUNDARY
- CULVERT
- RAIL ROAD LINE
- AREA INLET BASIN
- FLOW DIRECTION
- SWOF-001 CURRENT STORM WATER OUTFALL
- SWOF-001 FORMER STORM WATER OUTFALL
- T TRANSFORMER ON GROUND
- SK SPILL KIT
- LA 12, 000 GALLON LIQUID ARGON
- PW PARTS WASHER (NON-HAZARDOUS)

NOTE:
SHADED AREA INDICATES RAW MATERIAL, FINISHED PRODUCT, AND/OR SCRAP MATERIALS STORAGE AND HANDLING AREAS.

NOTES:

Wood Environmental & Infrastructure Solutions, Inc.
9725 Cogdill Road
Knoxville, TN 37932

wood.

CLIENT:
AQUA-CHEM, INC.
3001 EAST GOVERNOR JOHN SEVIER HIGHWAY
KNOXVILLE, TENNESSEE

TITLE:
POTENTIAL STORMWATER POLLUTION
AQUA-CHEM, INC.
KNOXVILLE, TENNESSEE

DR:	REV:	PROJ. NO.:
WRW	NA	3031142004
CHK:	DATE:	DWG NO.
WPT	9/22/2014	NA
SCALE:		FIGURE. NO.:
N.T.S.		

P:\CADD\Projects\3031\3031142004 AquaChem\3031142004_fig2&3.dwg Sep. 22, 2014 william.wiers

ATTACHMENT A

ANALYTICAL RESULTS

ANALYTICAL REPORT

July 03, 2018

Wood E&I Solutions Inc. - Knoxville, TN

Sample Delivery Group:	L1005109
Samples Received:	06/28/2018
Project Number:	3031142002.02
Description:	Aqua Chem
Site:	AQUA CHEM
Report To:	William Teichert 2030 Falling Waters Road Suite 300 Knoxville, TN 37922

Entire Report Reviewed By:

Pam Langford
Technical Service Representative

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 ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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SWOF-001 L1005109-01 WW

Collected by	Collected date/time	Received date/time
Noel Garland	06/27/18 15:15	06/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 300.0	WG1131111	1	06/28/18 20:45	06/28/18 20:45	MAJ
Metals (ICP) by Method 200.7	WG1130993	1	06/30/18 06:48	07/02/18 13:13	TRB

SWOF-002 L1005109-02 WW

Collected by	Collected date/time	Received date/time
Noel Garland	06/27/18 14:25	06/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 300.0	WG1131111	1	06/28/18 21:01	06/28/18 21:01	MAJ
Metals (ICP) by Method 200.7	WG1130993	1	06/30/18 06:48	07/02/18 12:27	TRB

SWOF-003 L1005109-03 WW

Collected by	Collected date/time	Received date/time
Noel Garland	06/27/18 14:35	06/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 300.0	WG1131111	1	06/28/18 21:16	06/28/18 21:16	MAJ
Metals (ICP) by Method 200.7	WG1130993	1	06/30/18 06:48	07/02/18 13:15	TRB

SWOF-005 L1005109-04 WW

Collected by	Collected date/time	Received date/time
Noel Garland	06/27/18 15:10	06/28/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 300.0	WG1131111	1	06/28/18 21:31	06/28/18 21:31	MAJ
Metals (ICP) by Method 200.7	WG1130993	1	06/30/18 06:48	07/02/18 13:23	TRB

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 radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. 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.

Pamela A. Langford

Pam Langford
Technical Service Representative

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate as (N)	0.388		0.100	1	06/28/2018 20:45	WG1131111

Metals (ICP) by Method 200.7

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Aluminum	ND		0.200	1	07/02/2018 13:13	WG1130993
Iron	ND		0.100	1	07/02/2018 13:13	WG1130993
Zinc	ND		0.0500	1	07/02/2018 13:13	WG1130993

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate as (N)	0.122		0.100	1	06/28/2018 21:01	WG1131111

Metals (ICP) by Method 200.7

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Aluminum	0.271		0.200	1	07/02/2018 12:27	WG1130993
Iron	0.172		0.100	1	07/02/2018 12:27	WG1130993
Zinc	0.0547	B	0.0500	1	07/02/2018 12:27	WG1130993

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate as (N)	0.414		0.100	1	06/28/2018 21:16	WG1131111

Metals (ICP) by Method 200.7

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Aluminum	ND		0.200	1	07/02/2018 13:15	WG1130993
Iron	0.143		0.100	1	07/02/2018 13:15	WG1130993
Zinc	0.705		0.0500	1	07/02/2018 13:15	WG1130993

Wet Chemistry by Method 300.0

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Nitrate as (N)	0.350		0.100	1	06/28/2018 21:31	WG1131111

Metals (ICP) by Method 200.7

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Aluminum	0.926		0.200	1	07/02/2018 13:23	WG1130993
Iron	0.373		0.100	1	07/02/2018 13:23	WG1130993
Zinc	1.33		0.0500	1	07/02/2018 13:23	WG1130993

Method Blank (MB)

(MB) R3321929-1 06/28/18 11:34

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Nitrate	U		0.0227	0.100

L1005110-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1005110-02 06/28/18 21:47 • (DUP) R3321929-4 06/28/18 22:02

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate	1.36	1.40	1	3.05		20

L1005126-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1005126-03 06/29/18 00:36 • (DUP) R3321929-7 06/29/18 00:52

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Nitrate	1.34	1.40	1	4.49		20

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

(LCS) R3321929-2 06/28/18 11:49 • (LCSD) R3321929-3 06/28/18 12:04

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Nitrate	8.00	8.03	8.11	100	101	90.0-110			0.890	20

L1005110-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1005110-02 06/28/18 21:47 • (MS) R3321929-5 06/28/18 22:18 • (MSD) R3321929-6 06/28/18 22:33

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	1.36	6.41	6.50	101	103	1	80.0-120			1.46	20

Method Blank (MB)

(MB) R3322620-1 07/02/18 12:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum	U		0.0273	0.200
Iron	U		0.0282	0.100
Zinc	0.00693	J	0.00340	0.0500

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

(LCS) R3322620-2 07/02/18 12:22 • (LCSD) R3322620-3 07/02/18 12:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Aluminum	10.0	10.6	10.6	106	106	85.0-115			0.0447	20
Iron	10.0	11.0	10.9	110	109	85.0-115			0.893	20
Zinc	1.00	0.991	0.998	99.1	99.8	85.0-115			0.730	20

L1005109-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1005109-02 07/02/18 12:27 • (MS) R3322620-5 07/02/18 12:32 • (MSD) R3322620-6 07/02/18 12:35

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	0.271	10.9	10.9	106	106	1	70.0-130			0.375	20
Iron	10.0	0.172	11.1	11.2	109	110	1	70.0-130			0.721	20
Zinc	1.00	0.0547	1.05	1.05	99.1	99.5	1	70.0-130			0.395	20

L1005188-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1005188-01 07/02/18 12:37 • (MS) R3322620-7 07/02/18 12:40 • (MSD) R3322620-8 07/02/18 12:43

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	10.6	10.8	105	107	1	70.0-130			1.95	20
Iron	10.0	ND	10.8	11.0	108	110	1	70.0-130			1.90	20
Zinc	1.00	ND	1.01	1.04	98.5	101	1	70.0-130			2.19	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.

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.
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.

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.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

State Accreditations

Alabama	40660	Nebraska	NE-OS-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	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T 104704245-17-14
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

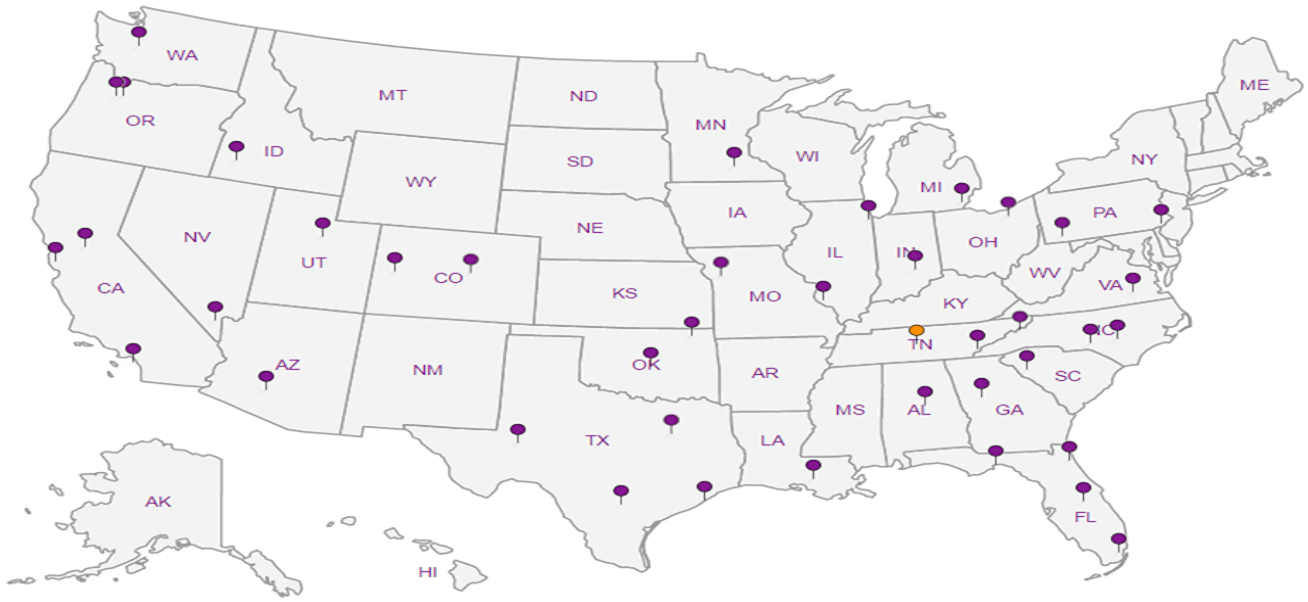
Third Party Federal Accreditations

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

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.



AMEC - Knoxville, TN

2030 Falling Waters Road
Suite 300
Knoxville, TN 37922

Billing Information:
AMEC
~~9725 Cogdill Road~~
Knoxville, ~~TN 37932~~

Report to: **William Teichert**

Email To: jacob.parker@amecfw.com; william.teichert@amecfw.com

Project Description: **Aqua Chem**

City/State Collected: Knoxville, TN

Phone: **865-671-6774**
Fax:

Client Project # **3031142002.02**

Lab Project # **MACTECKTN-AQUACHEM**

Collected by (print): Noel Garland

Site/Facility ID # Aqua Chem

P.O. # 3031142002.02

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

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: NA

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Metals 250mlHDPE-HNO3	NITRATE 125mlHDPE-NoPres	Remarks	Sample # (lab only)
SWOF-001	Grab	WW		6-27-18	15:15	2	X	X		01
SWOF-002	"	WW		"	14:25	2	X	X		02
SWOF-003	"	WW		"	14:35	2	X	X		03
SWOF-005	"	WW		"	15:10	2	X	X		04

Chain of Custody Page ___ of ___

ESC LABORATORIES
a subsidiary of Pace Analytical

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

L# 1005109

Table #

Acctnum: **MACTECKTN**

Template: **T135430**

Prelogin: **P649786**

TSR: **633 - Pam Langford**

PB: 6.27.18 CM

Shipped Via: **FedEX Ground**

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

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS ✓ FedEx __ Courier __ _____

Tracking # 4380 6865 2634

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 Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	6-27-18	16:30		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.1 °C Bottles Received: 6
				If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 6/28/18 Time: 845
				Hold:

Condition: NCF / OK