

ANALYTICAL REPORT

November 14, 2018

FEB 2 6 2019

Wood E&I Solutions Inc. - Knoxville, TN

Sample Delivery Group:

L1043082

Samples Received:

11/10/2018

Project Number:

3031142002.02

Description:

Aqua Chem

Report To:

William Teichert

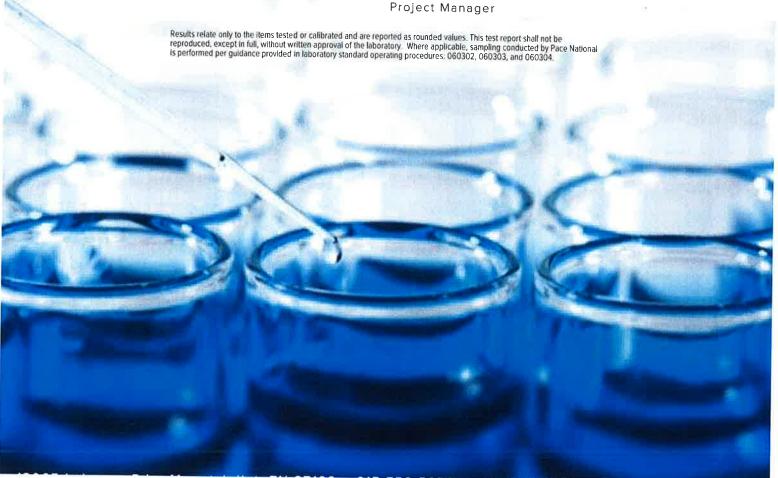
2030 Falling Waters Road

Suite 300

Knoxville, TN 37922

Entire Report Reviewed By: Panula A. Lyford

Pam Langford
Project Manager



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WINE LAW, INCHININGEDE Collected by Collected date/time Received date/time SWOF-001 L1043082-01 WW Jacob Parker 11/09/18 11:35 11/10/18 08:45 Method Batch Dilution Preparation Analysis Analyst date/time date/time Wet Chemistry by Method 300.0 WG1194469 1 11/10/18 11:02 11/10/18 11:02 MAJ Metals (ICP) by Method 200.7 WG1194715 1 11/12/18 07:59 11/13/18 10:42 TRB Collected by Collected date/time Received date/time SWOF-002 L1043082-02 WW Jacob Parker 11/09/18 11:15 11/10/18 08:45 Method Batch Dilution Preparation Analysis Analyst date/time date/time Wet Chemistry by Method 300.0 WG1194469 1 11/10/18 11:17 11/10/18 11:17 MAJ Metals (ICP) by Method 200.7 WG1194715 1 11/12/18 07:59 11/13/18 10:45 RDS Collected by Collected date/time Received date/time Jacob Parker SWOF-003 L1043082-03 WW 11/09/18 11:05 11/10/18 08:45 Method Batch Dilution Preparation Analysis Analyst date/time date/time Wet Chemistry by Method 300.0 WG1194469 11/10/18 11:34 1 11/10/18 11:34 MAJ Metals (ICP) by Method 200.7 WG1194715 1 11/12/18 07:59 11/13/18 10:47 TRB Collected by Collected date/time

SWOF-005 L1043082-04 WW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 300.0	WG1194469	1	11/10/18 12:23	11/10/18 12:23	MAJ
Metals (ICP) by Method 200.7	WG1194715		11/12/18 07:59	11/13/18 10:50	TRB

Sı

G

Received date/time

11/10/18 08:45

PPO IECT.

Jacob Parker

11/09/18 11:25

PAGE:

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.

Pam Langford Project Manager

Panula a. Inford

2_T















SVV UF-UUZCollected date/time: 11/09/18 11:15

SAIVIPLE RESULTS - UZ

Wet Chemistry by Method 300.0

	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	mg/l		mg/l		date / time		
Nitrate as (N)	ND		0.100 1/30/19	1	11/10/2018 11:17	WG1194469	11/09/18

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	mg/l		mg/l		date / time	
Aluminum	ND		0.200	1	11/13/2018 10:45	WG1194715
Iron	ND		0.100	1	11/13/2018 10:45	WG1194715
Zinc	ND		0.0500	1	11/13/2018 10:45	WG1194715





















SVV UF-UUSCollected date/time: 11/09/18 11:05

SAIVITLE KESULIS - US

Wet Chemistry by Method 300.0

	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	mg/l		mg/l		date / time		
Nitrate as (N)	ND		0.100	1	11/10/2018 11:34	WG1194469	

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Aluminum	ND		0.200	1	11/13/2018 10:47	WG1194715
Iron	ND		0.100	1	11/13/2018 10:47	WG1194715
Zinc	ND		0.0500	1:	11/13/2018 10:47	WG1194715

























S VV U F-UU3 Collected date/time: 11/09/18 11:25

SAIVIPLE RESULTS - U4

Wet Chemistry by Method 300.0

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Nitrate as (N)	ND		0.100	1	11/10/2018 12:23	WG1194469

	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	mg/l		mg/l		date / time		
Aluminum	ND		0.200	1	11/13/2018 10:50	WG1194715	
Iron	ND		0.100	1	11/13/2018 10:50	WG1194715	
Zinc	ND		0.0500	1	11/13/2018 10:50	WG1194715	























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HAMMOUNDE CAL								11										EVO
SEC. 1850	0														RPD Limits	%	50	
															RPD	%	0.242	IIME.
															MSD Qualifier			DATE/TIME.
-															MS Qualifier			
OUIVIIVIAR I															Rec. Limits	%	80.0-120	ė ė
XUL S														(SD)	Dilution			
COINIROL S 11043082-01,02,03,04							DUP RPD Limits							plicate (N	.5 MSD Rec.	%	ර. ගි ර	
WUALL 1							DUP Qualifier Limi	%	20			LCS Qualifier		x Spike Du)-5 11/10/18 10:4 MS Rec.	%	2.5	DDO IECT.
) J		MB RDL	l/gm	0.100	JP)		DUP RPD DUF		2			Rec. Limits %	90.0-110	(MS) • Matri	MSD) R335914C MSD Result	l/gm	5.61	Cgg
		MB MDL	mg∕l	0.0227	olicate (DL	1/10/18 10:12	Dilution DU	%	1 1.32			LCS Rec. %	102	trix Spike	10/18 10:29 • (MS Result	∥gm	5.62	
		MB Qualifier			Ind • (SO) a	R3359140-3 1	DUP Result	l/gm	0.673	CS)		LCS Result mg/l	8.15	(OS) • Ma	33359140-4 11/10/18 10:29 Original Result MS Result		0.664	
S Wethod 300.0	MB)	1/18 08:31 MB Result	mg/l	n	riginal Sample	10/18 09:56 • (DUP)	Original Result DUP Result	/gm	0.664	trol Sample (L	10/18 08:47	Spike Amount mg/l	8.00	riginal Sample	10/18 09:56 • (MS) R Spike Amount	mg/l	5,00	ACCOUNT.
VV GIIU440U Wet Chemistry by Method 300.0	Method Blank (MB)	(MB) R3359140-1 11/10/18 08:31 MB	Analyte	Nitrate	L1042884-02 Original Sample (OS) • Duplicate (DUP)	(OS) L1042884-02 11/10/18 09:56 • (DUP) R3359140-3 11/10/18 10:12		Analyte	Nitrate	Laboratory Control Sample (LCS)	(LCS) R3359140-2 11/10/18 08:47	Analyte	Nitrate	L1042884-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)	(OS) L1042884-02 11/10/18 09:56 • (MS) R3359140-4 11/10/18 10:29 • (MSD) R3359140-5 11/10/18 10:45 Spike Amount Original Result MS Result MSD Result MS Rec.	Analyte	Nitrate	

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Metals (ICP) by Method 200.7

QUALIT CONTROL DOININIART

L1043082-01,02,03,04

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Method Blank (MB)

Analyte MB Result mg/l MB MDL mg/l MB RDL mg/l Aluminum 0.0347 ½ 0.0273 0.200 Iron U 0.0282 0.100 Zinc U 0.00340 0.05600	(MB) R3359346-1 11/13/18 09:53	1/13/18 09:53				
rinum 0.0347 ½ 0.0273 0.200 U 0.0282 0.100 U 0.00340 0.0500		MB Result	MB Qualifier	MB MDL	MB RDL	
inum 0.0347 <u>J</u> 0.0273 0.200 U 0.0282 0.100 U 0.00340 0.0500	Analyte	l/gm		mg/l	∥g/l	
ם ס	Aluminum	0.0347	ار	0.0273	0.200	
n	Iron	Ω		0.0282	0.100	
	Zinc	Π		0.00340	0.0500	

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

(LCS) R3359346-2 11/13/18 09:55 • (LCSD) R3359346-3 11/13/18 09:58	/18 09:55 • (LCSD)) R3359346-3	11/13/18 09:58							
	Spike Amount LCS Result	LCS Result	LCSD Result LCS Rec.	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier LCS	LCSD Qualifier RPD	RPD Limits	
Analyte	l/gm	l/gm	mg/l	%	%	%		%	%	
Aluminum	10.0	9.85	9.83	98,5	98,3	85.0-115		0.181	20	
Iron	10.0	16.6	9.94	1.66	99.4	85.0-115		0.236	20	
Zinc	1.00	0.985	0.987	98,5	98.7	85.0-115		0.223	20	

L1043084-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

Analyte MSD Result MSD Result	(US) L1043084-01 1;	OS) L1043084-01 11/13/18 10:01 • (MS) R3359346-5 11/13/18 10:06 • (MSD) R3359346-6 11/13/18 10:09	359346-5 11/13	/18 10:06 • (MS	SD) R3359346-1	5 11/13/18 10:0	ത							
mg/l mg/l mg/l mg/l % <		Spike Amount	Original Result		MSD Result	MS Rec.	MSD Rec.		Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
10.0 ND 10.3 10.1 101 101 1 70,0-130 0.370 10.0 ND 10.1 10.2 100 101 1 70.0-130 0.877 1.00 ND 1.03 99.3 99.9 1 70.0-130 0.596	Analyte	l/gm	mg/l	∥/gш	mg/l	%	%		%			%	%	
ND 10.1 10.2 100 101 1 70.0-130 0.877 0.0596	Aluminum	10.0	N	10.3	10.3	101	101		70.0-130			0.370	20	1
ND 1.03 1.03 99.3 99.9 1 70.0-130 0.596	ron	10.0	Q.	10.1	10.2	100	101	-	70.0-130			0.877	20	
	Zinc	1.00	QN	1.03	1.03	99.3	6'66	,	70.0-130			0.596	20	

L1043170-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

		()		/-	25 1	1)	1						
(OS) L1043170-01 11/	OS) L1043170-01 11/13/18 10:11 • (MS) R3359346-7 11/13/18 10:14 • (MSD) R3359346-8 11/13/18 10:17	59346-7 11/13/1	8 10:14 • (MSD)	R3359346-8 1	11/13/18 10:17								
	Spike Amount	Spike Amount Original Result MS Result		MSD Result	MS Rec.	MSD Rec.	Dilution	Dilution Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	9
Analyte	l/gm	mg/l	l/gm	mg/l	%	%		%			%	%	
Aluminum	10.0	23.2	32.3	31.2	9.06	80.4		70.0-130			3.22	20	
Iron	10.0	31.9	39.0	38.2	70.9	63.2	-	70.0-130		91	1.98	20	
Zinc	1.00	1.62	2.47	2.47	85.0	85.5	-	70.0-130			0.213	20	

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DATE/TIME.

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

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	
В	The same analyte is found in the associated blank.	_
J	The identification of the analyte is acceptable; the reported value is an estimate.	
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.	

ACCOUNT

PPO IECT

SDG

DATE/TIME

PAGE.

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-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
Ilfinois	200008	Oklahoma	9915
ndiana	C-TN-01	Oregon	TN200002
owa	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	Al30792	Tennessee 14	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	CERTO086	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.



Pace Analytical*	Assistant Cavitar In Teating & troorditors	12065 Leberon Rd	Phone: 800-767-5859 Fact 615-758-7859	"# L1047082 F053	Acctnum: MACTECKTN	Template: 1.135430 Pretogin: P663330	75R: 633 - Pam Langford PB: 7-78-786-	Shipped Viz. FedEX Ground Semarks Sample # (lab.coly)	10-	60	03	70			1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		Lent volume sent:	Preservation Control Chenked: []	f preservation required by Login: Date/Time	Hold: Condition,
Milayaz / Contigues / Contigue																Flow Other		Blank Received: Yes / No) HCL / MedH	Tenp: °C Bottles Received	ारु ^{रामस} थ्राट
77				SUPTO		-3/10	51 3TA		×	×	×	×				.5 mP/hr	6217 3129			≅ ∑
Pres	þ	com	Knoxville, TN	Lab Project # MACTECKTN-AQUACHEM	अवका क्य	NA	Date Results Needed No.	Time Catra	1195 2	1115 2	1105 2	1135 2				RAD SCREEM: <0.5 mR/hr	Tracking # 4492	Received by (Signature)	Received by (Signature)	Received for lab by. Signature)
AMEC 9725 Cogdill Road	Knox/ille, TN 37932	Email To, Jacob parker@amectw.com; william.teichert@amectw.com	City/State Collected.	Lab Project #	3431H	Quote #		Date	11/9/18			>						Sime.	Time	Time:
	Knoxyil	Email To:			ופיא	Rush? (Lab MUST Be Notified)	S Day (Rad Only) ID Day (Rad Only)	Matrix * Depth	WW WA	WW	ww	ww \					ua: Courier	D 0	=	2
c Knoxvíl		Parker		Glent Project # 3031142002.02	Site/Facility ID #	Rush? (Lab M) Same Day	Next Bay Two Day Three Bay	Comp/Grab Ma	(orab V	٨	>	>			Domarke.	The state of the s	Samples retupfed via: UPS Ledex	Date	Date	Date
Wood E&I Solutions Inc Knoxville,	2030 Falling Waters Road	Repart to: William Teichert Treeb	Project Description: Aqua Chem	74	Collected by larling	Callected by (signature):	Immediately Packed on Ice N Y	Sample 10	SwoF-401	500F-002	Swar - 403	SwoF - Gos				AIR Air F-Filter undwater B-Bloassay steWater	a 1		Relinquished by : (Signature)	Refinquished by -{5:gnature}

Attachment B
Completed CN-1115 Forms



Tennessee Department of Environment and Conservation Division of Water Resources William R. Snodgrass Tennessee Tower

William R. Snodgrass Tennessee Tower 312 Rosa L. Parks Avenue, 11th Floor, Nashville, Tennessee 37243 FEB 2 6 2019

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): 2018	Outfall Number: SW001
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 6/27/18
Law Canadatia Maine Man Di Victoria	

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.

	Cut-off	Annual
Parameter	Conc.	Sample
	(mg/L)	Result (mg/L)
Aluminum, Total	0.75	<0.200 €
Ammonia	4.0	/2
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 g/
Lead, Total	0.15	\

Parameter (continued)	Cut-off Conc. (mg/L)	Annual Sample Result (mg/L)	
Magnesium, Total	0.0636		1
Mercury, Total	0.0024		1
Nickel, Total	0.875		1
Nitrate + Nitrite Nitrogen	0.68	0.388	G
Oil and Grease	15		1
pН	5.0-9.0		
Phosphorus, Total (as P)	2.0		1
Selenium, Total	0.2385		
Silver, Total	0.032		
Total Suspended Solids	150		
Zinc, Total	0.395	<0.0500	0

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.)

William (Paul) Teichert	Project Manager	71 Fortunt	2/22/19
Printed Name	Official Title	Signature	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

FEB 2 6 2019

ANNUAL STORMWATER MONITORING REPORT

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

TMSP Number: TNR050328
Phone Number: 865-540-1933
Outfall Number: SW001
Sample Date: 11/10/18 (repeat)

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.

	Cut-off	Annual
Parameter	Conc.	Sample
	(mg/L)	Result (mg/L)
Aluminum, Total	0.75	0.301
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	0.249
Lead, Total	0.15	

	Cut-off	Annual	
Parameter (continued)	Conc.	Sample	
	(mg/L)	Result (mg/L)	
Magnesium, Total	0.0636		
Mercury, Total	0.0024		
Nickel, Total	0.875		
Nitrate + Nitrite Nitrogen	0.68	0.117	
Oil and Grease	15		
рН	5.0-9.0		
Phosphorus, Total (as P)	2.0		
Selenium, Total	0.2385	1.1	
Silver, Total	0.032	40	
Total Suspended Solids	150		
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.)

William (Paul) Teichert	Project Manager	7 Status	2/22/19
Printed Name	Official Title	Signature	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): 2018	Outfall Number: SW002
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 6/27/18
And Company of the Market Market William Company of the Market Ma	

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.

	Cut-off	Annual
Parameter	Conc.	Sample
	(mg/L)	Result (mg/L)
Aluminum, Total	0.75	0.271
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	0.172
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	0.122	
Oil and Grease	15	\	
рН	5.0-9.0	XU	
Phosphorus, Total (as P)	2.0	1 1/2,	
Selenium, Total	0.2385	10	
Silver, Total	0.032		
Total Suspended Solids	150		
Zinc, Total	0.395	0.0547	

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.)

William (Paul) Teichert	Project Manager	Tel Vertund	2/22/19
Printed Name	Official Title	Signature	Date



Tennessee Department of Environment and Conservation Division of Water Resources William R. Snodgrass Tennessee Tower

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): 2018	Outfall Number: SW002
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 11/9/18 (repeat)

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	<0.100
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		
рН	5.0-9.0	1/01	
Phosphorus, Total (as P)	2.0	Draft 1	
Selenium, Total	0.2385	1100011	
Silver, Total	0.032	1 11	
Total Suspended Solids	150		
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.)

William (Paul) Teichert	Project Manager	7 The Sunting	2/22/19
Printed Name	Official Title	Signature	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)

TMSP Number: TNR050328
Phone Number: 865-540-1933
Outfall Number: SW003
Sample Date: 6/27/18

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.

,	Cut-off	Annual
Parameter	Conc.	Sample
	(mg/L)	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	0.143
Lead, Total	0.15	

Parameter (continued)	Cut-off Conc.	Annual Sample
r arbineter (continued)	(mg/L)	Result (mg/L)
Magnesium, Total	0.0636	
Mercury, Total	0.0024	
Nickel, Total	0.875	
Nitrate + Nitrite Nitrogen	0.68	0.414
Oil and Grease	15	
pH	5.0-9.0	. \
Phosphorus, Total (as P)	2.0	N/A/A
Selenium, Total	0.2385	(11)
Silver, Total	0.032	100
Total Suspended Solids	150	
Zinc, Total	0.395	0.705

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.)

William (Paul) Teichert	Project Manager	The Victory	2/22/19
Printed Name	Official Title	Signature	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

FEB 2 6 2019

ANNUAL STORMWATER MONITORING REPORT

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

umber: 865-540-1933
lumber: SW003
Date: 11/9/18 (repeat)
_

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	<0.100
Lead, Total	0.15	

Parameter (continued)	Cut-off Conc.	Annual Sample
Magnesium, Total	(mg/L) 0.0636	Result (mg/L)
Mercury, Total	0.0034	
Nickel, Total	0.875	
Nitrate + Nitrite Nitrogen	0.68	<0.100
Oil and Grease	15	1
рН	5.0-9.0	
Phosphorus, Total (as P)	2.0	() XV
Selenium, Total	0.2385	100
Silver, Total	0.032	1 01
Total Suspended Solids	150	
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.)

William (Paul) Teichert	Project Manager	7/8 Judet	2/22/19
Printed Name	Official Title	Signature	Date



Tennessee Department of Environment and Conservation Division of Water Resources William R. Snodgrass Tennessee Tower

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): 2018	Outfall Number: SW005
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 6/27/18
List all TWSP Sectors which apply to discharge from this outlant. AA	Sample Date: 6/2//18

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	0.926
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	0.373
Lead, Total	0.15	

	Cut-off	Annual
Parameter (continued)	Conc.	Sample
	(mg/L)	Result (mg/L)
Magnesium, Total	0.0636	
Mercury, Total	0.0024	
Nickel, Total	0.875	
Nitrate + Nitrite Nitrogen	0.68	0.350
Oil and Grease	15	
рН	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	1.33

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.)

William (Paul) Teichert	Project Manager	The Suntint	2/22/19
Printed Name	Official Title	Signature	Date



Tennessee Department of Environment and Conservation Division of Water Resources William R. Snodgrass Tennessee Tower

William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor, Nashville, Tennessee 37243

ANNUAL STORMWATER MONITORING REPORT

FEB 2 6 2019

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): 2018	Outfall Number: SW005
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 11/9/18 (repeat)
Law Concentration Walver (Note 2): list all management for subject the facility in	

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	<0.100
Lead, Total	0.15	

	Cut-off	Annual
Parameter (continued)	Conc.	Sample
	(mg/L)	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	
рН	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

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.)

William (Paul) Teichert	Project Manager	West A	2/22/19
Printed Name	Official Title	Signature	Date

WOOD.

February 25, 2019

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

Subject: 2018 Annual Storm Water Discharge Monitoring Report

Aqua-Chem, Inc.

3001 E. Gov John Sevier Highway

Knoxville, Tennessee

TMSP Number: TNR050328 Wood Project No. 3031142002 TN Dept. of Env. & Conservation

FEB 2 7 2019

Division of Water Resources

Dear Ms. Murphy:

On behalf of Aqua-Chem, Inc. (Water Technology Division), Wood Environment & Infrastructure Solutions, Inc. (Wood), submits the attached 2018 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 June 27, 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. Attachment A provides a copy of the analytical results.

In accordance with Section 5.1.2 of the Sector AA permit, Aqua-Chem, Inc. provided notification to the Tennessee Department of Environment and Conservation (TDEC), Knoxville Field Office that exceedances of the benchmarks occurred in the annual sampling results on July 23, 2018. 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 implemented the following operational changes and Best Management Practices (BMPs):

2018 Stormwater Discharge Monitoring Report Aqua-Chem Site E. Governor John Sevier Highway, Knoxville, TN

February 20,2019

- Drain filters, which have been changed out on a weekly basis, are now inspected daily and changed as needed. The current filter frame or housing was modified to simplify change outs.
- A single layer of fabric has been used on the floor and outside of the paint booth to prevent track out. The revised BMP now uses a double layer of fabric to further reduce the potential for track out.
- Fabric or paper was placed outside the sand blast area to capture disbursement or overspray of sand from sand blasting operations. The paper or fabric is inspected daily, and sand is 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 was provided with secondary containment.

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 November 9, 2018. The analytical report is provided in Attachment A. Analytical parameters were below detection limits at Outfall SWOF-002, SWOF-003, and SWOF-005. Aluminum, iron, and nitrate was detected at SWOF-001 but were below their respective benchmarks. Completed CN-1115 forms for both sampling events are provide 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

goodfach

Attachment A Analytical Results



ANALYTICAL REPORT MAR 8 6 2019



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

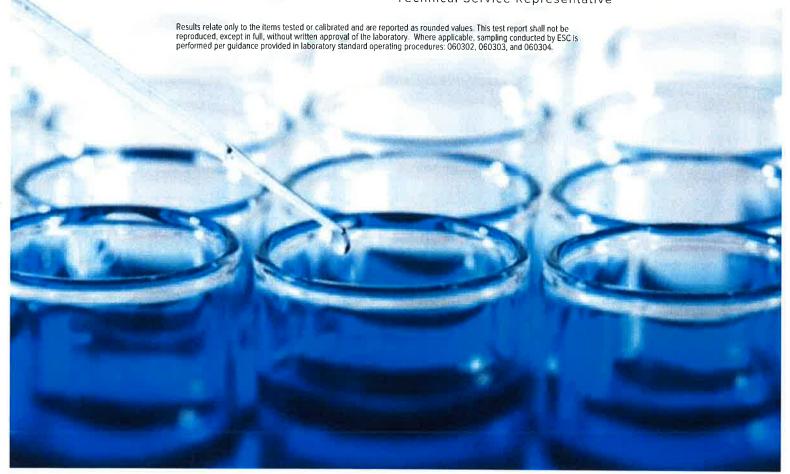
Knoxville, TN 37922

TN Dept. of Env. & Conserve

Division of Water Resources

Entire Report Reviewed By: Panula d. Lyford

Pam Langford Technical Service Representative



Cp: Cover Page		1
Tc: Table of Contents		2
Ss: Sample Summary		3
Cn: Case Narrative		4
Sr: Sample Results		5
SWOF-001 L1005109-01		5
SWOF-002 L1005109-02		6
SWOF-003 L1005109-03		7
SWOF-005 L1005109-04		8
Qc: Quality Control Summary		9
Wet Chemistry by Method 300.0		9
Metals (ICP) by Method 200.7		10
GI: Glossary of Terms		11
Al: Accreditations & Locations		12
Sc: Sample Chain of Custody		13

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			Collected by	Collected date/time	Received date/time
SWOF-001 L1005109-01 WW			Noel Garland	06/27/18 15:15	06/28/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
	ii		date/time	date/time	
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
			Collected by	Collected date/time	Received date/time
SWOF-002 L1005109-02 WW			Noel Garland	06/27/18 14:25	06/28/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Wet Chemistry by Method 300.0	WG1131111	Ĭ	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
			Collected by	Collected date/time	Received date/time
SWOF-003 L1005109-03 WW			Noel Garland	06/27/18 14:35	06/28/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
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
			Collected by	Collected date/time	Received date/time
SWOF-005 L1005109-04 WW			Noel Garland	06/27/18 15:10	06/28/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Wet Chemistry by Method 300.0	WG1131111	1	06/28/18 21:31	06/28/18 21:31	MAJ

WG1130993

Metals (ICP) by Method 200.7

PRO IECT.

06/30/18 06:48

07/02/18 13:23

TRB

DATE/TIME

PAGE:

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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.

Pam Langford

Technical Service Representative

Panula a. Inform

SWUL-UUI

SAIVIPLE RESULTS - UT

Collected date/time: 06/27/18 15:15

Wet Chemistry by Method 300.0

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Nitrate as (N)	0,388		0.100	1	06/28/2018 20:45	WG1131111

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

























SWUT-UUZ Collected date/time: 06/27/18 14:25 SAIVITLE RESULTS - UZ

Wet Chemistry by Method 300.0

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

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	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	WGf130993
Zinc	0.0547	<u>B</u>	0.0500	1	07/02/2018 12:27	WG1130993





















SAIVITLE RESULTS - US

SYVUT-UUSCollected date/time: 06/27/18 14:35

Wet Chemistry by Method 300.0

		Result	Qualifier R	DL	Dilution	Analysis	Batch
Analyte		mg/l	m	g/l		date / time	
Nitrate as (N)	18	0.414	0.	100	1	06/28/2018 21:16	WG1131111

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	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

























CUU-TUWC Collected date/time: 06/27/18 15:10 SAIVIPLE RESULTS - U4

Wet Chemistry by Method 300.0

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

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	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























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Wet Chemistry by Method 300.0	
Method Blank (MB)	

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L1005109-01.02.03.04

(MB) R3321929-1 06/28/18 11:34	8 11:34				
	MB Result	MB Qualifier MB MDL	MB MDL	3 MDL MB RDL	
Analyte	l/gm		mg/l	l/gm	
Nitrate	Π		0.0227	0.100	

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

	DUP Qualifier DUP RPD Limits	%	20
6/28/18 22:02	Dilution DUP RPD	%	3.05
JP) R3321929-4 0	Original Result DUP Result Dilution	l/gm	1,40
(OS) L1005110-02 06/28/18 21:47 • (DUP) R3321929-4 06/28/18 22:02	Original Re	l/gm	1,36
(OS) L1005110-02		Analyte	Nitrate

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

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

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

	LCS Qualifier LCSD Qualifier RPD RPD Limits	%	0.890 20
	Rec. Limits	%	90.0-110
	LCSD Rec.	%	101
+	LCS Rec.	%	100
\$ 06/28/18 12:04	Spike Amount LCS Result LCSD Result LCS	l/gm	8.11
J K3321929-5	LCS Result	l/6m	8.03
[LCS] K33Z19Z3-Z U6/Z8/18 11:49 • [LCSD] K33Z19Z9-3 U6/Z8/18 12:04	Spike Amount	l/gm	8.00
(LCS) R3321929-2 U		Analyte	Nitrate

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

	RPD Limits	%	20
	r RPD	%	1.46
	MSD Qualifier		
	MS Qualifier		
	ilution Rec. Limits	%	80.0-120
	Dilution		
18 22:33	MSD Rec.	%	103
1929-0 06/28/18 22:3	MS Rec.	%	101
• (MSD) R33213	Spike Amount Original Result MS Result MSD Result	l/gm	6.50
7/26/18 22:18	MS Result	l/gm	6.41
3521923-0 00	Original Result	mg/l	1.36
US) LIOUSIIO-02 00/20/10 21:47 • (IVIS) RSSZ1928-5 00/20/18 22:18 • (IVISD) RSSZ1	Spike Amount	l/gm	5.00
(03) EIOO3IIO-02 00		Analyte	Nitrate

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L1005109-01,02,03,04

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Method Blank (MB)

Analyte MB Result mg/l MB Qualifier mg/l 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	(MB) R3322620-1 07/02/18 12:20	18 12:20				
mg/l mg/l mg/l u 0.0273 0,200 U 0.0282 0,100 0,00693 J 0.00340 0,0500		MB Result	MB Qualifier	MB MDL	MB RDL	
U 0.0273 0.200 U 0.0282 0.100 0.00693 J 0.00340 0.0500	Analyte	l/gm		mg/l	l/gm	
0.00693 J 0.00340 0.0500	Aluminum	n		0.0273	0,200	
0.00693 0.00340 0.0500	Iron	ח		0.0282		
	Zinc	0.00693	71	0.00340		

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

	RPD Limits	%	20	20	20
	LCSD Qualifier RPD		0.0447	0,893	0.730
	LCS Qualifier				
	Rec. Limits	%	85,0-115	85.0-115	85.0-115
	LCSD Rec.	%	106	109	8.66
:25	LCS Rec.	%	106	110	1.66
-3 07/02/18 12	LCSD Result LCS Rec.	mg/l	10.6	10.9	866'0
SD) R3322620	Spike Amount LCS Result	mg/l	10.6	11.0	0.991
7/02/18 12:22 • (LC.	Spike Amount	l/6m	10.0	10.0	1.00
(LCS) R3322620-2 07/02/18 12:22 • (LCSD) R3322620-3 07/02/18 12:25		Analyte	Aluminum	Iron	Zinc

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

8 12:35	MSD Rec. Dilution Rec. Limits MS Qualifier MSD Qualifier RPD RPD Limits	% %		110 1 70.0-130 0.721 20	99.5 1 70.0-130 0.395 20
:32 • (MSD) R3322620-6 0	MSD Result MS Rec.	% ∥⁄gш	10.9	11.2 109	1.05
AS) R3322620-5 07/02/18 12	Spike Amount Original Result MS Result	l/gm l/gm	0.271 10.9	0.172	0.0547 1.05
OS) L1005109-02 07/02/18 12:27 • (MS) R3322620-5 07/02/18 12:32 • (MSD) R3322620-6 07/02/18 12:35	Spike Amor	Analyte mg/l	Numinum 10.0	ron 10.0	Zinc 1.00

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

2/18	72:37 • (MS) R	.OS) L1005188-01 07/02/18 12:37 • (MS) R3322620-7 07/02/18 12:40 • (MSD) R33228	/UZ/18 12:40 •	(MSD) R33226	620-8 07/02/18 12:43	18 12:43	:	:	9	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	:
7	ike Amount	Spike Amount Original Kesuit MS Kesuit MSD Kesuit	MS Kesult	MSD Result	Ms Kec.	MSD Rec.	Dilution	Kec. Limits	Ms Qualifier	MSD Qualifier	KPD	RPD Limits
_	mg/l	mg/l	l/gm	mg/l	%	%		%			%	%
	10.0	QN Q	10.6	10.8	105	107	-	70.0-130			1.95	20
	10.0	9	10.8	11.0	108	110		70.0-130			1.90	20
	1.00	Q.	1.01	1.04	98.5	101	· •	70.0-130			2.19	20

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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 Relat ive 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 resu 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 fo 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.

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Description

В	The same analyte is found in the associated blank
.1	The identification of the analyte is acceptable; the reported value is an

ACCOUNT

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

ka 17-026 ona AZ0612 onsas 88-0469 fornia 2932 orado TN00003	Nevada New Hampshire New Jersey—NELAP New Mexico ¹ New York	TN-03-2002-34 2975 TN002 n/a
Insas 88-0469 fornia 2932 orado TN00003	New Jersey–NELAP New Mexico ¹	TN002
fornia 2932 orado TN00003	New Mexico ¹	
orado TN00003		n/a
	New York	11/0
		11742
necticut PH-0197	North Carolina	Env375
da E87487	North Carolina 1	DW21704
rgia NELAP	North Carolina 3	41
rgia ¹ 923	North Dakota	R-140
o TN00003	Ohio-VAP	CL0069
sis 200008	Oklahoma	9915
ana C-TN-01	Oregon	TN200002
364	Pennsylvania	68-02979
E-10277	Rhode Island	LAO00356
sucky ^{1 6} 90010	South Carolina	84004
rucky ² 16	South Dakota	n/a
siana Al30792	Tennessee 1 4	2006
siana ¹ LA180010	Texas	T 104704245-17-14
TN0002	Texas ⁵	LAB0152
vland 324	Utah	TN00003
sachusetts M-TN003	Vermont	VT2006
lgan 9958	Virginia	460132
nesota 047-999-395	Washington	C847
issippi TN00003	West Virginia	233
ouri 340	Wisconsin	9980939910
tana CERT0086	Wyoming	AZLA

Third Party Federal Accreditations

A2LA - ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
			100769
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.



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ANALYTICAL REPORT

November 14, 2018

Wood E&I Solutions Inc. - Knoxville, TN

Sample Delivery Group:

L1043082

Samples Received:

11/10/2018

Project Number:

3031142002.02

Description:

Aqua Chem

Report To:

William Teichert

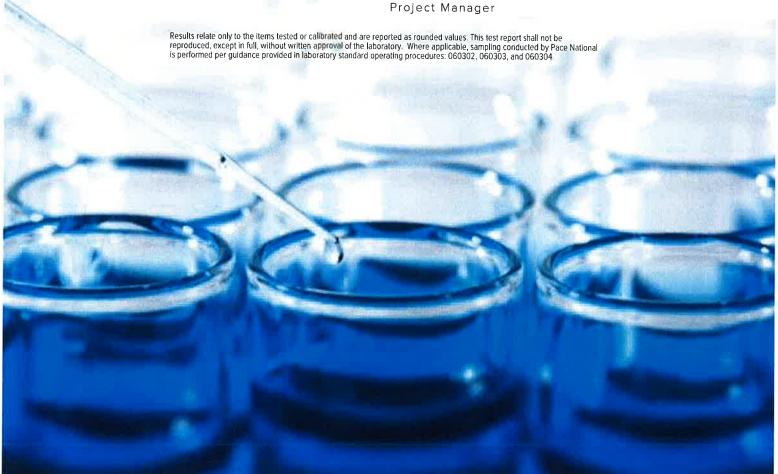
2030 Falling Waters Road

Suite 300

Knoxville, TN 37922

Entire Report Reviewed By: Panula A. Lyford

Pam Langford



Cp: Cover Page	1
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Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
SWOF-001 L1043082-01	5
SWOF-002 L1043082-02	6
SWOF-003 L1043082-03	7
SWOF-005 L1043082-04	8
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Metals (ICP) by Method 200.7	10
GI: Glossary of Terms	11
Al: Accreditations & Locations	12
Sc: Sample Chain of Custody	12

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⁶ Q
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9

			Collected by	Collected date/time	Received date/time
SWOF-001 L1043082-01 WW			Jacob Parker	11/09/18 11:35	11/10/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
	Ē		date/time	date/time	- 3
Wet Chemistry by Method 300.0	WG1194469	1	11/10/18 11:02	11/10/18 11:02	MAJ
Metals (ICP) by Method 200.7	WG1194715	1	11/12/18 07:59	11/13/18 10:42	TRB
			Collected by	Collected date/time	Received date/time
SWOF-002 L1043082-02 WW			Jacob Parker	11/09/18 11:15	11/10/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Wet Chemistry by Method 300.0	WG1194469	1	11/10/18 11:17	11/10/18 11:17	LAM
Metals (ICP) by Method 200.7	WG1194715	1	11/12/18 07:59	11/13/18 10:45	RDS
			Collected by	Collected date/time	Received date/time
SWOF-003 L1043082-03 WW			Jacob Parker	11/09/18 11:05	11/10/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Wet Chemistry by Method 300.0	WG1194469	3	11/10/18 11:34	11/10/18 11:34	MAJ
Metals (ICP) by Method 200.7	WG1194715	3,	11/12/18 07:59	11/13/18 10:47	TRB
			Collected by	Collected date/time	Received date/time
SWOF-005 L1043082-04 WW			Jacob Parker	11/09/18 11:25	11/10/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
W			date/time	date/time	
Wet Chemistry by Method 300.0	WG1194469	1	11/10/18 12:23	11/10/18 12:23	MAJ
Metals (ICP) by Method 200.7	WG1194715	1	11/12/18 07:59	11/13/18 10:50	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 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.

Pam Langford Project Manager

Panula a. Inford

C

















2MOL-OOL

SAIVITLE RESULTS - UT

Collected date/time: 11/09/18 11:35

Wet Chemistry by Method 300.0

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/I		mg/l		date / time	
Nitrate as (N)	0.117		0.100	1	11/10/2018 11:02	WG1194469

Metals (ICP) by Method 200.7

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Aluminum	0.301	<u>B</u>	0.200	1	11/13/2018 10:42	WG1194715
Iron	0.249		0.100	1	11/13/2018 10:42	WG1194715
Zinc	ND		0.0500	1	11/13/2018 10:42	WG1194715





















SAIVIPLE RESULTS - UZ

SVV UF-UUZ Collected date/time: 11/09/18 11:15

Wet Chemistry by Method 300.0

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Nitrate as (N)	ND		0.100	1	11/10/2018 11:17	WG1194469

Metals (ICP) by Method 200.7

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Aluminum	ND		0,200	1	11/13/2018 10:45	WG1194715
Iron	ND		0.100	1	11/13/2018 10:45	WG1194715
Zinc	ND		0.0500	1	11/13/2018 10:45	WG1194715























SWUT-UUS

SAIVIPLE RESULTS - US

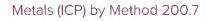
OINE DAD INA HOUMING

Collected date/time: 11/09/18 11:05

Wet Chemistry by Method 300.0

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Nitrate as (N)	ND		0.100	1	11/10/2018 11:34	WG1194469





	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Aluminum	ND		0.200	1	11/13/2018 10:47	WG1194715
Iron	ND		0.100	1	11/13/2018 10:47	WG1194715
Zinc	ND		0.0500	1	11/13/2018 10:47	WG1194715















SWOL-OOD

SAIVIPLE KESULIS - U4

Collected date/time: 11/09/18 11:25

Wet Chemistry by Method 300.0

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Nitrate as (N)	ND		0.100	1	11/10/2018 12:23	WG1194469

Metals (ICP) by Method 200.7

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l		date / time	
Aluminum	ND		0.200	1	11/13/2018 10:50	WG1194715
Iron	ND		0.100	1	11/13/2018 10:50	WG1194715
Zinc	ND		0.0500	1	11/13/2018 10:50	WG1194715





















VV GIISTHOS Wet Chemistry by Method 300.0	ى Method 300.0			3	WUALL I	COINTRUL SUIVIIVIAR I 11043082-01,02,03,04	10L SC 02.03.04	JIVIIVIAR	1 2			All the series of the	NA HORANDE.	K
Method Blank (MB)	MB)													
(MB) R3359140-1 11/10/18 08:31 MB	1/18 08:31 MB Result	MB Qualifier	MB MDL	MB RDL									àS	
Analyte	l/gm		l/bm	∥gm										Ţ
Nitrate	D		0.0227	0.100										ا ا
L1042884-02 Original Sample (OS) • Duplicate (DUP)	riginal Sample	dnQ • (SO) i	licate (DU	(A										Ŋ [4
(OS) L1042884-02 11/10/18 09:56 • (DUP) R3359140-3 11/10/18 10:12	10/18 09:56 • (DUP)	R3359140-3 11	/10/18 10:12											<u>ပ</u>
	Original Result DUP Result	DUP Result	Dilution DUF	DUP RPD DU	DUP Qualifier DI	DUP RPD Limits								т (
Analyte Nitrate	mg/l 0.664	mg/l 0.673	1 1.32		% 50									<u></u>
						¥								O
Laboratory Control Sample (LCS)	trol Sample (Lo	CS)												G ₇
(LCS) R3359140-2 11/10/18 08:47	10/18 08:47 Snike Amount	- CS Result	I CS Rec	Rec limits	LCS Qualifier									
Analyte	mg/l		%	%										\ \
Nitrate	8.00	8,15	102	90.0-110										ا م
L1042884-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)	riginal Sample	(OS) • Mat	rix Spike (MS) • Matri	x Spike D	uplicate (M	SD)							
(OS) L1042884-02 11/10/18 09:56 • (MS) R3359140-4 11/10/18 10:29 • (MSD) R3359140-5 11/10/18 10:45	10/18 09:56 • (MS) F	29:56 - (MS) R3359140-4 11/10/18 10:29 Soile Amount Original Result MS Result	0/18 10:29 • (h MS Result	ASD) R3359140 MSD Result	0-5 11/10/18 10 MS Rec	:45 MSD Rec	Dilution	Rec Limits	MS Qualifier	MSD Qualifier	CIGA	RPD I imits		
Analyte	mg/l	mg/l	mg/l	mg/l	%	%		%			2 %	%		
Nitrate Target	00.0	0.004	79. G	0 	7.55	n xi xi n		0.71-0.08			0.242	07		
	ACCO! IMT.			Ca	PDO IECT.		Ū	ښ م		DATE/TIME.	TIME:		האס	

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L1043082-01,02,03,04

Method Blank (MB)

(MB) R3359346-1 11/13/18 09:53	3 09:53			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	mg/l		l/gm	l/gm
Aluminum	0.0347	71	0,0273	0,200
Iron	n		0.0282	0.100
Zinc	D		0.00340	0.0500

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

(LCS) R3359346-2	(LCS) R3359346-2 11/13/18 09:55 • (LCSD) R3359346-3 11/13/18 09:58	J) K3359346-0	3 TI/13/18 U9:58							
	Spike Amount	Spike Amount LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier RPD	RPD Limits	
Analyte	∥gm	₩g/I	mg/l	%	%	%		%	%	
Aluminum	10.0	9.85	9.83	98.5	98.3	85.0-115		0.181	20	
Iron	10.0	9.91	9.94	99,1	99.4	85.0-115		0.236	20	
Zinc	1.00	0.985	0.987	98.5	7.86	85.0-115		0.223	20	

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L1043084-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

	IR.				
	RPD Limits	%	20	20	20
	lifier RPD	%	0.370	0.877	0.596
	MSD Qualifier				
	MS Qualifier				
	Rec. Limits	%	70.0-130	70.0-130	70.0-130
	Dilution		-	-	-
60	MSD Rec.	96	101	101	6.66
5-6 11/13/18 10:	MS Rec.	%	101	100	99.3
ISD) R3359346	MSD Result	₩g/I	10.3	10.2	1.03
13/18 10:06 • (N	It MS Result	Mg/I	10.3	10.1	1,03
3359346-5 11/	Spike Amount Original Result MS Result	™g/l	Q.	9	P
3/18 10:01 • (MS) R	Spike Amount	∥gm	10.0	10.0	1.00
(OS) L1043084-01 11/13/18 10:01 • (MS) R3359346-5 11/13/18 10:06 • (MSD) R3359346-6 11/13/18 10:09		Analyte	Aluminum	lon	Zinc

L1043170-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1043170-01 11	(OS) L1043170-01 11/13/18 10:11 • (MS) R3359346-7 11/13/18 10:14 • (MSD) R3359346-8 11/	59346-7 11/13/18	8 10:14 · (MSD	n) R3359346-8	11/13/18 10:17							
	Spike Amount	Spike Amount Original Result MS Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	l/gm	mg/l	l/gm	l/gm	%	%		%			%	%
Aluminum	10.0	23.2	32.3	31.2	9.06	80.4	-	70.0-130			3.22	20
Iron	10.0	31.9	39.0	38.2	6.07	63.2	-	70.0-130		97	1.98	20
Zinc	1.00	1.62	2.47	2.47	85.0	85.5	-	70.0-130			0.213	20

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DATE/TIME

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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 resul 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 fo 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
В	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low,

ACCOUNT:

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DATE/TIME

PAGE

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 conductive 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 datached report.

* Accorditation is only applicable to the total methods excellenged as a capability to the data that he data the data of the part of the property of the property of the part of the property of the property of the part of the property of the property of the property of the part of the property of the part of the part of the property of the part of the property of the part of the property of the part of the part of the part of the property of the part of

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

State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana 1	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
VirgInia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA - ISO 17025	1461.01	
A2LA - ISO 17025 5	1461.02	
Canada	1461.01	
EPA-Crypto	TN00003	

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

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.





Wood E&I Solutions Inc Knoxville,	ic Knoxvi		AMEC / Seedill Road	III Road		Sign of the sign o	7.7			A S		2 1		Pace	Pace Analytical
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Repart to:	Parket	<u> </u>	mail To: Jac	Email To; Jacob parker@amocfw.com; william.teichert@amocfw.com	echw.com; om			She.						Monute Juliet, TN 37122 Phone: 615-758-5858	
Project Description: Aqua Chem				City/State Collected:	Knowiller	1/2			is the second				W. E.	tar 615-758-5859	1
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Attachment B
Completed CN-1115 Forms



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): 2018	Outfall Number: SW001
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 6/27/18

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	<0.100
Lead, Total	0.15	

	Cut-off	Annual
Parameter (continued)	Conc.	Sample
	(mg/L)	Result (mg/L)
Magnesium, Total	0.0636	
Mercury, Total	0.0024	
Nickel, Total	0.875	
Nitrate + Nitrite Nitrogen	0.68	0.388
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

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.)

William (Paul) Teichert	Project Manager	74 Fortal	2/22/19
Printed Name	Official Title	Signature	Date



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): 2018	Outfall Number: SW001
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 11/10/18 (repeat)
List all TMSP sectors which apply to discharge from this outrail: AA	

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.	Annual Sample
	(mg/L)	Result (mg/L/)
Aluminum, Total	0.75	0.301
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	0
Iron, Total	5.0	0.249
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	0.117
Oil and Grease	15	
рН	5.0-9.0	
Phosphorus, Total (as P)	2.0	
Selenium, Total	0.2385	
Silver, Total	0.032	
Total Suspended Solids	150	Δ
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.)

William (Paul) Teichert	Project Manager	787 Stefan	2/22/19
Printed Name	Official Title	Signature	Date



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)

TMSP Number: TNR050328
Phone Number: 865-540-1933
Outfall Number: SW002
Sample Date: 6/27/18

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.

	Cut-off	Annual
Parameter	Conc.	Sample
	(mg/L)	Result (mg/L)
Aluminum, Total	0.75	0.271
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	0.172
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	0.122
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	0.0547

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.)

William (Paul) Teichert	Project Manager	Tell Turken	2/22/19
Printed Name	Official Title	Signature	Date



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): 2018	Outfall Number: SW002
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 11/9/18 (repeat)

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	<0.100
Lead, Total	0.15	

Parameter (continued)	Cut-off Conc.	Annual Sample
	(mg/L)	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	
рН	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

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.)

William (Paul) Teichert	Project Manager	ZIF Sunt	2/22/19
Printed Name	Official Title	Signature	Date



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)

	TMSP Number: TNR050328
Facility Name: Aqua-Chem, Inc.	Phone Number: 865-540-1933
Contact Person: Frank Keefer	Outfall Number: SW003
This report is submitted for the following calendar year (e.g. 2015): 2018	Sample Date: 6/27/18
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date. 6/2/116

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	THE PARTY OF THE PARTY.
Copper, Total	0.018	
Cyanide, Total	0.064	
Fluoride	1.8	<u> </u>
Iron, Total	5.0	0.143
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	0-	
Nitrate + Nitrite Nitrogen	0.68	0.414	
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	0.705	

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.)

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William (Paul) Teichert	Project Manager	To Streland	2/22/19
William (Faul) relence	(Contract of the contract of th	Date
Printed Name	Official Title	Signature	



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): 2018	Outfall Number: SW003
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 11/9/18 (repeat)

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	<0.100
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	
рН	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

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.)

William (Paul) Teichert	Project Manager	7/2 Justin	2/22/19
Printed Name	Official Title	Signature	Date



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)

TMSP Number: TNR050328
Phone Number: 865-540-1933
Outfall Number: SW005
Sample Date: 6/27/18

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.

	Cut-off	Annual
Parameter	Conc.	Sample
	(mg/L)	Result (mg/L)
Aluminum, Total	0.75	0.926
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	0.373
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	0.350
Oil and Grease	15	1
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	1.33

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.)

William (Paul) Teichert	Project Manager	The Sunting	2/22/19
Printed Name	Official Title	Signature	Date



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): 2018	Outfall Number: SW005
List all TMSP sectors which apply to discharge from this outfall: AA	Sample Date: 11/9/18 (repeat)
Law Concentration Mainer (Alete 3): list all annual and for subject to the facility to	

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.

	Cut-off	Annual	
Parameter	Conc.	Sample	
	(mg/L)	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	<0.100	
Lead, Total	0.15		

D	Cut-off	Annual
Parameter (continued)	Conc.	Sample
	(mg/L)	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

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.)

William (Paul) Teichert	Project Manager	all the	2/22/19
Printed Name	Official Title	Signature	Date