



GLOBAL SPLASH INC.

Zwolle #7 Well Pilot Study Quad Barrier Filtration System

Hwy. 71, Zwolle, Louisiana

January, 2020

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ZWOLLE PILOT STUDY – WELL #7

OVERVIEW

This Pilot study was approved by the LA DHH for testing of Global Splash, Inc. (GSI) patented Quad Barrier™ Model 3 Filtration Operator to remove “Total Organic Carbon (TOC)” from well water applications. The LA DHH required that all water that would be filtered from Well # 7 during this test would be put to waste and could not be used as potable water. A separate permit by the LA DHH would be required prior to allowing treated water from GSI into the City water supply.

The GSI Model 31012 portable unit was set up on the Town of Zwolle Well # 7 in June of 2019. This unit was manufactured using NSF 61 and NSF 372 components as required by the SWDA. New NSF 61 media consisting five 50 lbs. bags of 0.25 gravel (7”) for the header system, four 50 lbs. bags of 45-55 mm sand (6”), and three 50 lbs. bags of No.1 anthracite coal (9”) were installed in each of the ten filter beds of the GSI Unit on site. GSI installed a four inch perforated PVC pipe; twenty feet long to gradually disperse discharge well water from this well onto the ground and did not disturb the soil. Water from the well was used to level each layer of media to ensure proper fluidization of the beds during backwash cycles. It should be noted that this set up took four round trips from Pineville to Zwolle over a four-day period and requires approximately four hours per round trip.

The City had provided a new meter on well #7 that read 00148,500 gallons. GSI also had meter to monitor all filtered water that read 17,412,200 before beginning set up of the GSI unit. GSI ran the City well to waste at first to clean out any debris before cleanup of the newly installed media. GSI used a certified “HACH” model 2100Q portable turbidity meter to monitor the well water and GSI discharge water during media clean up. During the clean up process, GSI discovered that the well would only sustain a 78 GPM maximum flow rate while maintaining a 30-psi gage reading at the well. This was important because the GSI unit uses part of the total filtered water to backwash individual beds that are regulated by the GSI onboard PLC. GSI adjusted discharge filter flow rates, backwash rates and times, and delay times between backwash cycles that would allow the unit to operate properly without running out of water. This was a daunting task that required constant monitoring.

OPERATION OF THE GSI UNIT

Water enters the unit through a raw water chamber with a “float valve” that maintains the proper water level throughout the filtration process. This raw water is directed through a raw water manifold that directs raw water into the bottom of the “outside coagulation chamber”. The unit’s air blower directs 35 cfm of air into this chamber near the bottom of all ten chambers. The high volumes of air cause tiny suspended particles to mix and bind together prior to flowing through an opening near the top of this outside chamber over the filter media. The air also helps remove undesired gases in the water. In addition to the high volumes of air, there are three DC positively charged 316 Stainless Steel electrodes that are suspended from the top of each coagulation chamber that contact the raw water to attract dissolved and suspended negatively charged particles to be removed from the water.

This GSI patented process of combining bubble physics and electrochemistry is called coagulation kinetics and works extremely well in surface water applications. The unit has ten filter beds containing the same media in each bed. The filtered water flows through check valves and automated valves to a manifold that delivers the water to a filtered water chamber connected to a NSF 61 booster pump. The pump directs filtered water through a Tee that directs flow to the meter controlled by the globe valve. On the other side of the Tee, filtered water is directed through the appropriate automated valve to the filter bed during a timed backwash cycle. The PLC is mounted in the control box on the Unit and controls all automated valves, backwash times, and delays that can be easily changed by an onboard touch screen. This control system allows the GSI unit to backwash each filter bed individually and provide a continuous flow of filtered water using part of the filtrate to backwash each bed at desired times. The Portable GSI unit's filtered water discharge flow is set using a globe valve after the units' water meter. The flow rate is set by monitoring the GPM and a stopwatch and adjusting the globe valve to reach the desired setting.

TURBIDITY TESTING BY GSI

Ronney L. Broussard, inventor and Consultant for GSI and Donnie Sue Broussard, Managing Director of GSI using the portable HACH 2100Q turbidity meter, performed turbidity testing. GSI operated this unit and tested well water samples, filtered water samples, and backwash water samples for turbidity during the media "clean up" process, prior to any LA DHH certified lab testing. The raw well water was brown in color and smelled like hydrogen sulfide. GSI was told the well had been out of service for over a year. The Zwolle well meter reading on June 4, 2019 was 148500 BEFORE any water had been used and turbidity of the well water was 3.95 NTU. GSI used 90,600 gallons of water from the well to clean up the new media in the unit from June 4, 2019 until June 25, 2019. This process was accomplished by running the unit about eight hours a day at an average maximum flow rate of the well of 75 GPM during backwash cycles.

On June 25, 2019, GSI began turbidity testing at various intervals. The Zwolle well meter reading started at 239100, turned on well at 10:30 am.

10:42 am - Well water was 2.09 NTU, Filtered water was 4.56 NTU, Unit flow rate 58 GPM, Maximum Flow rate at well 76 GPM during BW cycles, Delay set 13 minutes, BW set at 12minutes.

12:32 pm – Well water was 2.12 NTU, GSI water was 2.45 NTU,

2:17 pm – Well water was 1.77 NTU, GSI water was 1.89 NTU,

4:05 pm – Well water was 1.82 NTU, GSI water was 2.06, Reduced unit flow to 50 GPM, Max Flow rate at well 76 GPM during BW cycles, Changed Delay to 10 min and BW to 12 minutes.

7:35 pm – Well water was 1.71 NTU, Filtered water 2.06 NTU, shut off unit.

On June 26, 2019 GSI began Turbidity Testing at various intervals. The Zwolle meter reading started at 290140, turned on well at 10:36 am, well ran at 76 GPM during BW cycles, GSI flow rate set at 50 GPM.

11:12 am – Well water 2.75 NTU, GSI water 2.85 NTU, Delay 12 min and BW 15 min

12:39 pm – Well water 2.06 NTU, GSI water 2.89 NTU, Changed Delay and BW times to 15minutes each.
2:09 pm – Well water 1.97 NTU, GSI water 2.06 NTU.
2:39 pm – Well water 1.89 NTU, GSI water 1.97 NTU.
5:09 pm – Well water 1.75 NTU, GSI water 1.93 NTU Stopped unit at 5:24 pm.

On June 27, 2019, GSI began Turbidity Testing at 30-minute intervals at 9:32 am. The Zwolle water meter reading starting was 353000. Well at 70 GPM during BW cycles, GSI at 54 GPM

11:43 am – Well water 1.78 NTU, GSI water 3.55 NTU. Delay set 12 min, BW 15min.
1:28 pm – Well water 1.72 NTU, GSI water 1.88 NTU.
2:10 pm – Well water 1.70 NTU, GSI water 1.84 NTU.
2:52 pm – Well water 1.72 NTU, GSI water 1.77 NTU, and Delay set 10 min, BW 15 min.
5:12 pm – Well water 1.70 NTU, GSI water 1.81 NTU, Stopped unit at 5:18 pm

LABORATORY TESTING

On July 9, 2019, GSI began Turbidity Testing at 10:30 am for impending LA DHH Laboratory testing by Cenla Environmental Science in Alexandria, Louisiana at various intervals. The goal was to let our unit run continuously for over 24 hours before TOC samples were taken on July 10, 2019. We stayed in the Zwolle Inn across the street to monitor the well pressure so it would not run out of water. We had no previous water data on this well from anyone at this time. Zwolle water meter reading started at 375200. GSI flow rate was set at 54 GPM. Zwolle well produced 75 GPM during BW cycles. Delay was set for 12 minutes, BW set for 12 minutes for all ten filter beds. We did turbidity testing at the following times:

7:45 pm – Well water 2.23 NTU, GSI water 2.02 NTU.
10:00 pm – Well water 1.75 NTU, GSI water 2.03 NTU.
2:00 am – Well water 1.79 NTU, GSI 2.05 NTU.
3:45 am – Changed: Delay 12 min, BW to 10 min on beds 1-9, Set recycle bed 10 for 15 minutes.
8:00 am – Well water 1.73 NTU, GSI 2.10 NTU, Reduced flow rate from 54 to 47 GPM.
10:00 am – Well water 1.72 NTU, GSI 1.9 NTU.
11:00 am – Increased flow rate to 50 GPM, Reset BW to 13 min for beds 1-9 and 15 min on bed 10 (recycle) NOTE: All BW water from beds 1-9 are directed to Bed 10 to recycle part of BW water.
1:00 pm – Cenla Environmental Science Tech Lady took samples for Lab testing. Did not place in a chilled container in trunk of car. NOTE: Well #7 had been running continuously for 26.5 hours

8/06/2019 – Cenla Environmental Science Report on TOC result were 2.8 for Well water and 2.1 for GSI water NOTE: See report!

On October 1, 2019, GSI decided to continue with Pilot study at Zwolle Well # 7 and began making changes to the GSI Unit in hopes of making the technology more effective for TOC removal. GSI converted the recycle Bed 10 into a regular filter bed, removed the BW

restrictor set at 32 GPM and increased the BW rate to 40 GPM. All revisions were completed by October 10, 2019. Turbidity retesting was done on October 12, 2019 and October 13, 2019 until turbidity readings revealed GSI NTU readings were lower than Zwolle well water NTU readings.

On October 16, 2019, GSI turned on unit at 8:31 am with flow rate set at 40 GPM, BW set at 15 minutes and Delay set for 15 minutes. Zwolle well ran at 76 GPM during BW cycles, continuously for 25.5 hours until 10:00 am October 17, 2019. Water samples were taken for testing from the well water at 9:10 am and from GSI unit at 9:45 am for LA DHH approved Laboratory, Pace Analytical, by Mr. Glenn Foret, P.E with H&K Engineering. **UNFORTUNATELY**, this lab suffered a “Computer Glitch” that rendered their test unusable.

On December 5, 2019, GSI turned on unit at 7:00 am with GSI flow rate set at 50 GPM, BW set at 12 min, Delay set at 18 min, and Zwolle well holding at 76 GPM during BW cycles. Zwolle well meter reading started at 691400.

On December 5, 2019 at 1:00 pm, GSI employees carefully took a ZWOLLE WELL SAMPLE ONLY using an “ice chest” kit from LA DHH approved Laboratory, ALS Environmental for TOC testing. This well sample was quickly iced and packaged according to the instructions and was driven to the FEDEX offices in Alexandria, Louisiana for over night delivery in Houston, Texas. **NOTE:** see lab Report from ALS dated December 12, 2019.

Also, On December 5, 2019, Global Splash, Inc. arranged for another sample FROM THE GSI UNIT ONLY for TOC and Fluoride testing by LA DHH approved laboratory, ANA-LAB CORP in Kilgore, Texas. These samples were taken by the ANA-LAB tech person at 1:50 pm, quickly iced and transported to their lab in Kilgore, Texas. **NOTE:** See lab report from ANA-LAB dated December 12, 2019.

On December 18, 2019, GSI turned on Unit at 4:58 am with a Zwolle well meter reading of 714800. GSI flow rate set at 45 GPM, BW rate of 40 GPM for 10 min, Delay set for 10 minutes. GSI ran until 1:51 pm for a total of 8.9 hours. Well flow rate 76 GPM during BW cycle. Final well meter reading was 745600 at 1:51 pm. GSI ordered another “ice chest” sample test kit from ALS Environmental for TOC and Fluoride Testing results for water samples taken FROM THE GSI UNIT ONLY. These GSI samples were taken according to the instructions, quickly iced and packaged in the ice chest at 1:50 pm. The samples were delivered to the FEDEX office in Alexandria, Louisiana and shipped overnight to their lab in Houston, Texas. **NOTE:** See lab Report dated December 24, 2019.

In summary, Sample (1) ANA LAB taken on 12/5/2019 using sample method, SM5310-C was a POST FILTER SAMPLE with GSI control settings at 50 GPM for continuous post filter water, backwash (BW) flow rate of 40 GPM set for 12 minutes, and DELAY between BW was 18 minutes. FLOW RATE of WELL was 76 GPM during BW CYCLE of GSI unit.

Sample (2) ALS LAB taken on 12/5/2019 was a PRE-FILTER SAMPLE using SM5310B from the Zwolle Well No. 7 using the same GSI settings.

Sample (3) ALS LAB Taken 12/18/2019 was a POST FILTER SAMPLE using SM5310-B from the GSI unit with control settings GSI continuous FLOW RATE at 45 GPM, BW flow rate of 40 GPM for 10 minutes, DELAY set at 10 minutes. WELL FLOW RATE was 76 GPM during the GSI BW CYCLE.

NOTE: The purpose of Sample (3) test was to prove that the more frequent the BW CYCLES, the more TOC removal, compared to the WELL SAMPLE by ANA LAB on 12/5/2019 on Sample (1) and a greater reduction of TOC from the Zwolle Well No. 7 in Sample (2) by ALS LAB on 12/5/2019. This was recommended due to fact of carbon absorption and the potential efficiency of the carbon absorption. Shorter cycles prove to increase the efficiency of total carbon reduction. With this application, water quality can be maintained to meet the drinking water standards of Louisiana requirements.

CONCLUSION

GSI Patented Technology did reduce TOC and Fluoride from the water treated from well # 7 by a certain percentage. Historical data acquired by GSI from the Mayor of Zwolle showed Zwolle Well #7 with higher TOC and Fluoride results from previous lab testing. The October 2, 2018, report by Cenla Environmental Science lab showed TOC results of 5.8 that were considered "over the limit" as opposed to the town of Zwolle's other six wells. These new test reported on 8/06/2019 by Cenla and two other labs all show that results taken from Well #7 are much lower than a year ago. GSI pumped over 200,000 gallons from well # 7 prior to the first lab test. This pumping certainly dropped the turbidity more than half and appears to have also dropped the TOC levels prior to treatment by the GSI Unit. The reduction of TOC were better before the removal of the GSI "Recycle" filter bed and it appears that the shorter the Delay the better the TOC removal results. The GSI Unit can easily be plumbed to recycle more treated water into the raw water chamber and further reduce the TOC levels in these wells. GSI used the same media to treat Red River surface water that removed suspended particles below 3 microns; however, reducing or eliminating the sand and adding more No. 1 Anthracite Coal in the filter beds will remove even more TOC from well water. Also, pumping each well to waste for 48 hours once a month can significantly reduce the TOC levels in the other six wells. I would also recommend having samples sent to different labs for testing in the future.

It is the opinion of this professional, with operational fine tuning, this application can work for the application of assuring water quality in the Zwolle area.



APPENDIX A

Water Well #7 Location

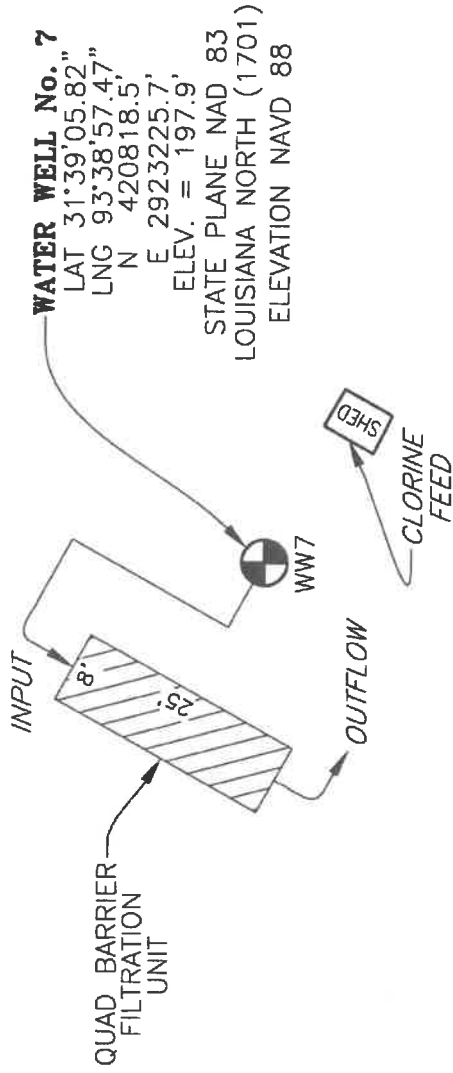
Town of Zwolle Water System Alterations Water Well 7 Location

N & A, INC.

NOBLE & ASSOCIATES, INC.
CONSULTING ENGINEERS - LAND SURVEYORS
740 FRONT STREET
P. O. BOX 1137
JENA, LOUISIANA 71342
PH NO. (518) 352-3685

DRAWN BY: KED	REVIEWED BY: JMJ	PROJECT NO. 131.020
DATE: 03/26/19	SHEET 1 OF 1	
REVISED: 05/07/19		

Y:\131020 ZWOLLE\131020 Well 7.DWG



OLD HWY 171

APPENDIX B

ANA LABORATORY ANALYTICAL RESULTS

(12/5/2019)



Ana-Lab Corp.
 P.O. Box 9000
 Kilgore, TX 75663
 903/984-0551

LELAP-accredited #02008

Report

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Global Splash Inc.
 Ronney Broussard
 318 Jones St
 Pineville, LA 71360

Account

GLSP-L

Project

900980

This report consists of this Table of Contents and the following pages:

<u>Report Name</u>	<u>Description</u>	<u>Pages</u>
900980_r03_03_ProjectResults	Ana-Lab Project P:900980 C:GLSP Project Results t:304	2
900980_r10_05_ProjectQC	Ana-Lab Project P:900980 C:GLSP Project Quality Control Groups	2
900980_r99_09_CoC__1_of_1	Ana-Lab CoC GLSP 900980_1_of_1	3
Total Pages:		7



Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662



NELAP-accredited #T104704201-19-15



Results

Printed: 12/12/2019 9:02

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Report To

Global Splash Inc.
Ronney Broussard
318 Jones St
Pineville, LA 71360

Account
GLSP-L

Results

1844529	Zwolle well #7							Received:	12/06/2019	
Drinking Water	Collected by: Client	Global Splash Inc.				PO:				
	Taken: 12/05/2019 13:50:00									
<hr/>										
EPA 300.0 2.1		Prepared:	872323	12/09/2019	08:32:00	Analyzed	872323	12/09/2019	08:32:00	ATN
Parameter	Results	Units	RL	Flag	CAS	Bottle				
N Fluoride	3.38	mg/L	0.500			01				
<hr/>										
SM 5310 C-2000		Prepared:	872906	12/10/2019	23:56:00	Analyzed	872906	12/10/2019	23:56:00	ALH
Parameter	Results	Units	RL	Flag	CAS	Bottle				
N Total Organic Carbon	3.17	mg/L	1.00			02				

Sample Preparation

1844529	Zwolle well #7							Received:	12/06/2019
<hr/>									
		Prepared:	12/09/2019	09:17:13	Calculated	12/09/2019	09:17:13	CAL	
Sampling/Transport	Verified								





Results

Printed: 12/12/2019 9:02

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Qualifiers:

We report results on an As Received or wet basis unless marked Dry Weight. Unless otherwise noted, testing was performed at Ana-labs corporate laboratory that holds the following Federal and State certificates: EPA Lab Number TX00063, US Department of Agriculture Soil Import Permit P330-17-00117, Texas Commission on Environmental Quality Commercial Drinking Water Lab Approval (Lab ID: TX219), Texas Commission on Environmental Quality NELAP T104704201-19-15, Louisiana Department of Environmental Quality Laboratory Certification (NELAP, LELAP) #02008, Louisiana Department of Health and Hospitals Drinking Water (NELAP) Certificate No LA026, Oklahoma Department of Environmental Quality TNI Laboratory Accreditation Program Certificate No. 2018-126, Arkansas Department of Environmental Quality Certification #18-068-0. The Accredited column designates accreditation by N -- NELAC, or z -- not covered under NELAC scope of accreditation.

These analytical results relate to the sample tested. This report may NOT be reproduced EXCEPT in FULL without written approval of Ana-Lab Corp. Unless otherwise specified, these test results meet the requirements of NELAC.

RL is the Reporting Limit (sample specific quantitation limit) and is at or above the Method Detection Limit (MDL). CAS is Chemical Abstract Service number. RL is our Reporting Limit, or Minimum Quantitation Level. The RL takes into account the Instrument Detection Limit (IDL), Method Detection Limit (MDL), and Practical Quantitation Limit (PQL), and any dilutions and/or concentrations performed during sample preparation (EQL). Our analytical result must be above this RL before we report a value in the 'Results' column of our report (without a 'J' flag). Otherwise, we report ND (Not Detected above RL), because the result is "<" (less than) the number in the RL column.

MAL is Minimum Analytical Level and is typically from regulatory agencies. Unless we report a result in the result column, or interferences prevent it, we work to have our RL at or below the MAL.

Bill Peery, MS, VP Technical Services





Quality Control

Printed 12/12/2019

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Report To

Global Splash Inc.
Ronney Broussard
318 Jones St
Pineville, LA 71360

Account
GLSP-L

Analytical Set 872323

EPA 300.0 2.1

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Fluoride	0.074	0.100	mg/L	74.0	50.0 - 150	120679887

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Fluoride	872323	ND	0.014	0.100	mg/L	120679881

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Fluoride	9.63	10.0	mg/L	96.3	90.0 - 110	120679878
Fluoride	9.72	10.0	mg/L	97.2	90.0 - 110	120679888

LCS Dup

Parameter	PrepSet	LCS	LCS D	Known	Limits%	LCS%	LCS D%	Units	RPD	Limit%
Fluoride	872323	4.95	4.92	5.00	88.0 - 110	99.0	98.4	mg/L	0.608	20.0

MSD

Parameter	Sample	MS	MSD	UNK	Known	Limits	MS%	MSD%	Units	RPD	Limit%
Fluoride	1844520	8.86	9.07	0.060	10.0	80.0 - 120	88.0	90.1	mg/L	2.36	20.0

Analytical Set 872906

SM 5310 C-2000

AWRL/MRL C

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	1.86	2.00	mg/L	93.0	50.0 - 150	120692688

Blank

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Organic Carbon	872906	ND	0.0618	0.500	mg/L	120692687
Total Organic Carbon	872906	ND	0.0618	0.500	mg/L	120692691
Total Organic Carbon	872906	0.0624	0.0618	0.500	mg/L	120692707
Total Organic Carbon	872906	0.0623	0.0618	0.500	mg/L	120692733

CCB

Parameter	PrepSet	Reading	MDL	MQL	Units	File
Total Organic Carbon	872906	0.0886	0.0618	0.500	mg/L	120692681
Total Organic Carbon	872906	0.152	0.0618	0.500	mg/L	120692697
Total Organic Carbon	872906	0.103	0.0618	0.500	mg/L	120692705
Total Organic Carbon	872906	0.0689	0.0618	0.500	mg/L	120692719
Total Organic Carbon	872906	0.0811	0.0618	0.500	mg/L	120692731
Total Organic Carbon	872906	0.444	0.0618	0.500	mg/L	120692743
Total Organic Carbon	872906	0.178	0.0618	0.500	mg/L	120692744

CCV

Parameter	Reading	Known	Units	Recover%	Limits%	File
Total Organic Carbon	9.86	10.0	mg/L	98.6	90.0 - 110	120692684

Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Ark-La-Miss Region: 4720 Viking Dr. Suite A Bossier City LA 71111



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Quality Control

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CCV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Total Organic Carbon	10.1	10.0	mg/L	101	90.0 - 110	120692693
	9.93	10.0	mg/L	99.3	90.0 - 110	120692698
	10.1	10.0	mg/L	101	90.0 - 110	120692706
	10.1	10.0	mg/L	101	90.0 - 110	120692720
	10.2	10.0	mg/L	102	90.0 - 110	120692732
	10.1	10.0	mg/L	101	90.0 - 110	120692745

ICL

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Total Organic Carbon	18.3	20.0	mg/L	91.5	90.0 - 110	120692683
	21.4	20.0	mg/L	107	90.0 - 110	120692689

ICV

<u>Parameter</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Total Organic Carbon	9.42	10.0	mg/L	94.2	90.0 - 110	120692685
	9.68	10.0	mg/L	96.8	90.0 - 110	120692690

LCS

<u>Parameter</u>	<u>PrepSet</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits</u>	<u>File</u>
Total Organic Carbon	872906	4.75	5.00	mg/L	95.0	89.8 - 111	120692686
	872906	4.94	5.00	mg/L	98.8	89.8 - 111	120692692
	872906	4.79	5.00	mg/L	95.8	89.8 - 111	120692708
	872906	4.78	5.00	mg/L	95.6	89.8 - 111	120692734

MSD

<u>Parameter</u>	<u>Sample</u>	<u>MS</u>	<u>MSD</u>	<u>UNK</u>	<u>Known</u>	<u>Limits</u>	<u>MS%</u>	<u>MSD%</u>	<u>Units</u>	<u>RPD</u>	<u>Limit%</u>
Total Organic Carbon	1844600	12.8	12.6	3.02	10.0	92.5 - 112	97.8	95.8	mg/L	2.07	20.0
	1844641	12.8	12.7	2.86	10.0	92.5 - 112	99.4	98.4	mg/L	1.01	20.0
	1844724	13.7	13.5	3.77	10.0	92.5 - 112	99.3	97.3	mg/L	2.03	20.0
	1844731	14.2	14.0	4.22	10.0	92.5 - 112	99.8	97.8	mg/L	2.02	20.0
	1845004	13.2	13.1	3.15	10.0	92.5 - 112	100	99.5	mg/L	1.00	20.0

Standard

<u>Parameter</u>	<u>Sample</u>	<u>Reading</u>	<u>Known</u>	<u>Units</u>	<u>Recover%</u>	<u>Limits%</u>	<u>File</u>
Total Organic Carbon		48.3	50.0	mg/L	96.6	90.0 - 110	120692682

* Out RPD is Relative Percent Difference: $\text{abs}(r1-r2) / \text{mean}(r1,r2) * 100\%$

Recover% is Recovery Percent: $\text{result} / \text{known} * 100\%$

Blank - Method Blank; CCV - Continuing Calibration Verification; AWRL/MRL C - Ambient Water Reporting Limit/Minimum Reporting Limit Check Std; LCS - Laboratory Control Sample; CCB - Continuing Calibration Blank; ICV - Initial Calibration Verification



1
2

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900980 CoC Print Group 001 of 001



Report To

Global Splash Inc.
Ronney Broussard
718 Jones St
Pineville, LA 71360
3/18
12-5

Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663
Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com LELAP-accredited #02008
Employee Owned Integrity Caring Continual Improvement

Chain of Custody

GLSP-L
101

COC Printed 12/03/2019 Page 1 of 2
Lab Number 1844529
PO Number
Phone 318/765-3398
Fax 318/445-7264

Zwolle well #7

Matrix: Drinking Water

Sample Collection Start

Date: 12-5-19 Time: 1350

Sampler Printed Name: MARK HIRSCH

Sampler Affiliation: ANA-LAB

Sampler Signature: *Mark Hirsch*

PWS # 1086032 well #7 GSI
Ronney L. Broussard

1	H2SO4 to pH Amber Glass 250 mL w/Teflon lined lid
N	TOCL Total Organic Carbon SM 5310 C-2000 (28.0 days)
1	Z -- No bottle required
1	PU95 Sampling/Transport
1	Polyethylene 1/2 gal (White)
N	IFIL Fluoride EPA 300.0 2.1 (28.0 days)

Ambient Conditions/Comments

Date	Time	Relinquished	Received
12-5-19	1350	Printed Name: <u>Mark Hirsch</u> Affiliation: <u>Ana-lab</u> Signature: <i>Mark Hirsch</i>	Printed Name: <u>Hickman Hotshot Service</u> Affiliation: <u>Hickman Hotshot Service</u> Signature: <i>[Signature]</i>
12-5	2030	Printed Name: <u>Hickman Hotshot Service</u> Affiliation: <u>Hickman Hotshot Service</u> Signature: <i>[Signature]</i>	Printed Name: <u>Secure Login Area</u> Affiliation: <u>Secure Login Area</u> Signature: <i>[Signature]</i>
12/6/19	0730	Printed Name: <u>Secure Login Area</u> Affiliation: <u>Secure Login Area</u> Signature: <i>[Signature]</i>	Printed Name: <u>Rayshawn Thompson Ana Lab</u> Affiliation: <u>Rayshawn Thompson Ana Lab</u> Signature: <i>Rayshawn Thompson</i>
		Printed Name: Affiliation: Signature:	Printed Name: Affiliation: Signature:

See Attached for Tracking # and Temp



Corporate Shipping: 2680 Dudley Rd. Kilgore, TX 75662

Ark-La-Miss Region: 4720 Vildng Dr. Suite A Bossier City LA 71111



NELAP-accredited #T104704201-19-15

1
2
3

900980 CoC Print Group 001 of 001



Ana-Lab Corp. P.O. Box 9000 Kilgore, TX 75663

Phone 903/984-0551 FAX 903/984-5914 e-Mail corp@ana-lab.com LELAP-accredited #02008
Employee Owned Integrity Caring Continual Improvement

Chain of Custody

COC Printed 12/03/2019 Page 2 of 2

Report To

Global Splash Inc.
Ronney Broussard
718 Jones St
Pineville, LA 71360

GLSP-L
101

Phone 318/765-3398
Fax 318/445-7264

Sample Received on Ice? Yes No Cooler/Sample Secure? Yes No
Method of Shipment: UPS Bus FedEx Lone Star Hand Delivered Other
If Shipped: Tracking Number & Temp - See Attached Hand Delivered to Region []

The accredited column designates accreditation by A - A2LA, N - NELAP, or z - not listed under scope of accreditation. Unless otherwise specified, ANA-LAB shall provide these ordered services pursuant to our Standard Terms & Conditions Agreement (available for download from the welcome page at <http://www.ana-lab.com>). Ana-Lab personnel collect samples as specified by Ana-Lab SOP #000323.

Comments



Corporate Shipping: 2600 Dudley Rd. Kilgore, TX 75662

Ark-La-Miss Region: 4720 Viking Dr. Suite A Bossier City LA 71111



NELAP-accredited #T104704201-19-15

900980 CoC Print Group 001 of 001

HICKMAN HOT SHOT SERVICE

835 North Street, Gilmer, Texas 75644
903-808-7402

Delivery Confirmation Sheet

Delivery Date:	12-5-2019
Pick-Up From:	ANALAB BCB
Released By:	X
Deliver To:	ANALAB Kilgore
Received By:	X
Delivery Time:	2030
Notes:	
5 coolers to TBC	
6 coolers to Kilgore	

12/6 0720 RT
 Date Time Tech
 Temp: 0.4/0.4 C
 Therm#: 6205 Corr Fact: 0.0 C

arges:	
arges:	
arges:	

Thank you for choosing Hickman HotShot
as your courier service provider.

Drivers Signature: _____



APPENDIX C

ALS LABORATORY ANALYTICAL RESULTS

(12/5/2019)



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

December 12, 2019

Ron Broussard
HK Engineering
241 Broussard Rd
Pollock, LA 71467

Work Order: **HS19120346**

Laboratory Results for: **HK Engineering**

Dear Ron,

ALS Environmental received 1 sample(s) on Dec 06, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy C. Neir'.

Generated By: JUMOKE.LAWAL
Andy C. Neir

Client: HK Engineering
Project: HK Engineering
Work Order: HS19120346

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19120346-01	PWS #1085032 Well #7	Water		05-Dec-2019 13:00	06-Dec-2019 08:48	<input type="checkbox"/>

Client: HK Engineering
Project: HK Engineering
Work Order: HS19120346

CASE NARRATIVE

WetChemistry by Method SM5310B

Batch ID: R352391

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: HK Engineering
Project: HK Engineering
Sample ID: PWS #1085032 Well #7
Collection Date: 05-Dec-2019 13:00

ANALYTICAL REPORT
WorkOrder:HS19120346
Lab ID:HS19120346-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL ORGANIC CARBON - SM5310B		Method:SM5310B				Analyst: MWG
Organic Carbon, Total	3.57		1.00	mg/L	1	12-Dec-2019 13:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: HK Engineering
Project: HK Engineering
WorkOrder: HS19120346

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R352391 (0)		Test Name : TOTAL ORGANIC CARBON - SM5310B			Matrix: Water	
HS19120346-01	PWS #1085032 Well #7	05 Dec 2019 13:00			12 Dec 2019 13:20	1

Client: HK Engineering
Project: HK Engineering
WorkOrder: HS19120346

QC BATCH REPORT

Batch ID: R352391 (0) **Instrument:** TOC_02 **Method:** TOTAL ORGANIC CARBON - SM5310B

MBLK	Sample ID: WBLKW1-121219	Units: mg/L	Analysis Date: 12-Dec-2019 10:29							
Client ID:	Run ID: TOC_02_352391	SeqNo: 5387296	PrepDate:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Organic Carbon, Total ND 1.00

LCS	Sample ID: WLCSW1-121219	Units: mg/L	Analysis Date: 12-Dec-2019 10:42							
Client ID:	Run ID: TOC_02_352391	SeqNo: 5387297	PrepDate:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Organic Carbon, Total 9.073 1.00 10 0 90.7 85 - 115

LCSD	Sample ID: WLCSDW1-121219	Units: mg/L	Analysis Date: 12-Dec-2019 10:55							
Client ID:	Run ID: TOC_02_352391	SeqNo: 5387298	PrepDate:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Organic Carbon, Total 9.589 1.00 10 0 95.9 85 - 115 9.073 5.53 20

MS	Sample ID: HS19120286-01MS	Units: mg/L	Analysis Date: 12-Dec-2019 12:36							
Client ID:	Run ID: TOC_02_352391	SeqNo: 5387303	PrepDate:	DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Organic Carbon, Total 22.98 1.00 10 13.9 90.8 80 - 120

The following samples were analyzed in this batch: HS19120346-01

Client: HK Engineering
Project: HK Engineering
WorkOrder: HS19120346

**QUALIFIERS,
 ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
SQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS, ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

Sample Receipt Checklist

Client Name: HK Engineering
 Work Order: HS19120346

Date/Time Received: **06-Dec-2019 08:48**
 Received by: **AC**

Checklist completed by: Asad Chaudhry 7-Dec-2019
 eSignature Date

Reviewed by: Andy C. Neir 9-Dec-2019
 eSignature Date

Matrices: **Water**

Carrier name: **FedEx Priority Overnight**

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes No Not Present
- Chain of custody present? Yes No 1 Page(s)
- Chain of custody signed when relinquished and received? Yes No COC IDs:206712
- Samplers name present on COC? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s): 2.3c U/C IR 11

Cooler(s)/Kit(s): 44833

Date/Time sample(s) sent to storage: 12/06/2019 19:00

Water - VOA vials have zero headspace? Yes No No VOA vials submitted

Water - pH acceptable upon receipt? Yes No N/A

pH adjusted? Yes No N/A

pH adjusted by:

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:



Cincinnati, OH
+1 513 733 5336
Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511
Holland, MI
+1 616 399 6070

Houston, TX
+1 281 530 5656
Middletown, PA
+1 717 944 5541
Spring City, PA
+1 610 948 4903
Salt Lake City, UT
+1 801 266 7700
South Charleston, WV
+1 304 356 3168
York, PA
+1 717 505 5280

Chain of Custody Form

Page 1 of 1

COC ID: 206712

Customer Information		ALS Project Manager:		ALS Work Order #:														
Purchase Order		Project Information		Parameter/Method Request for Analysis														
Work Order		Project Name		A TOC W/510E														
Company Name	HK Engineering	Project Number		B														
Send Report To	Ron Broussard	Bill To Company		C														
Address	241 Broussard Rd	Invoice Attn		D														
City/State/Zip	Pollark, LA 71467	Address		E														
Phone	(318) 765-3398	City/State/Zip		F														
Fax		Phone		G														
e-Mail Address	ronneybroussard@outlook.com	e-Mail Address		H														
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold	
1	PWS #1085032 Well #7	12-5-2019	13:00HR			2												
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

HS19120346
HK Engineering
HK Engineering



Sampler(s) Please Print & Sign: *Ronney L. Broussard*
Ronney L. Broussard
 Required Turnaround Time: (Check Box)
 STD 10-10 Mins
 5 Mins
 24-Hour
 Results Due Date: _____

Relinquished by: _____
 Received by: _____
 Date: 12/6/19
 Time: 05:48
 Checked by (Laboratory): _____

QC Packages: (Check One Box Below)
 Level II Std OC
 Level III Std OC
 Level IV SV/643/CLP
 TRRP Checklist
 TRRP Level IV

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 Page 10 of 11
 RIGHT SOLUTIONS | RIGHT PARTNER

TUW
SUITE 210
HOUSTON TX 77099

(281) 530-6887
REF: HK ENGINEERING - BO 89054 - AN
RMA: 111111



FedEx
Express
E

FedEx
JRM/ 1251 0292 4688
02E21

FRI - 06 DEC 10:30A
PRIORITY OVERNIGHT
156267-436

AR SGRA 77099



ALS
10460 Standcliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 6856
Fax. +1 281 530 6887

Date: 12-5-2015
Time: 13:20:18
Machine: 600
Compu: HKEY-B-461552-RC
AL ENGINEERING



ALS
10460 Standcliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 6856
Fax. +1 281 530 6887

12-5-2015 13:20:18
Name: RODNEY L. BEAUSSEAU
Address: HK ENGINEERING
CUSTODY SEAL
Date: Dec 10 8



Cincinnati, OH
+1 513 733 5336
Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511
Holland, MI
+1 616 399 6070

Chain of Custody Form

Houston, TX
+1 281 530 5656
Middletown, PA
+1 717 944 5541

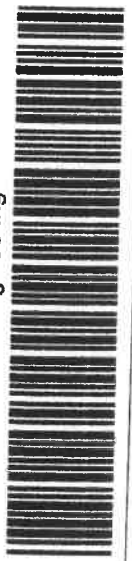
Spring City, PA
+1 610 948 4903
Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168
York, PA
+1 717 505 5280

Page 1 of 1
COC ID: 206712

Customer Information		ALS Project Manager:		ALS Work Order #:														
Purchase Order		Project Information	Parameter/Method Request for Analysis															
Work Order		Project Name	TOC W/5310E															
Company Name	HK Engineering	Project Number																
Send Report To	Ron Broussard	Bill To Company	HK Engineering															
Address	241 Broussard Rd	Invoice Attn	Ron Broussard															
City/State/Zip	Pollark, LA 71467	Address	241 Broussard Rd															
Phone	(318) 765-3398	City/State/Zip	Pollark LA 71467															
Fax		Phone																
e-Mail Address	ronneytroussard@outlook.com	e-Mail Address	ronneytroussard@outlook.com															
No.	Sample Description	Date	Time	Matrix	# Bottles	Pres.	A	B	C	D	E	F	G	H	I	J	Hold	
1	PWS #1085032 Well #7	12-5-2019	13:00HR		2													
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

HS19120346
HK Engineering
HK Engineering



Sample(s) Please Print & Sign Ronney L. Broussard
Ronney L. Broussard

Shipment Method: Next Bus
DAY

Required Turnaround Time: (Check Box)
 5 Wk. Days
 STD. 10 Wk. Days
 Other
 2 Wk. Days
 24 Hour

Results Due Date:

Received by: _____
 Received by (Laboratory): GC
 Checked by (Laboratory): _____
 Cooler ID: 44833
 Cooler Temp: 23
 QC Package: (Check One Box Below)
 Level II Site QC
 Level III Site QC/Raw Data
 Level IV SW823/CLP
 Other

Preservative Key: 1-HCl 2-HNO₃ 3-H₂SO₄ 4-NaOH 5-Na₂S₂O₃ 6-NaHSO₄ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.

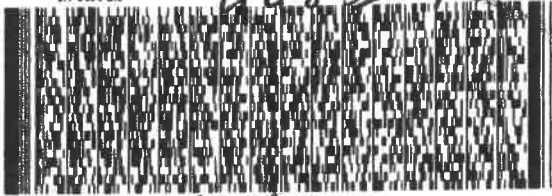
TU400
SUITE 210
HOUSTON TX 77099

(281) 530-5656

REF: HK ENGINEERING - BO 69054 - AN

RMA: ||| ||| |||

44833 NO



FedEx
Express



and
International
LTL

FedEx
TRK# 1251 0292 4688

Declois

FRI - 06 DEC 10:30A
PRIORITY OVERNIGHT

Package # 156297-435

AR SGRA

77099



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44833

Date: 12-5-2018
Name: Ronney L. Broussard
Company: HK ENGINEERING

CUSTODY SEAL	
Date: 12-5-2018	Time: 13:00 HR
Name: Ronney L. Broussard	
Company: HK ENGINEERING	
Seal Broken By: [Signature]	Date: [Signature]



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

44833

Date: 12-5-2018
Name: Ronney L. Broussard
Company: HK ENGINEERING

CUSTODY SEAL	
Date: 12-5-2018	Time: 13:00 HR
Name: Ronney L. Broussard	
Company: HK ENGINEERING	
Seal Broken By: [Signature]	Date: Declois

APPENDIX D

ALS LABORATORY ANALYTICAL RESULTS

(12/18/2019)



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

December 24, 2019

Ron Broussard
HK Engineering
241 Broussard Rd
Pollock, LA 71467

Work Order: **HS19121103**

Laboratory Results for: **HK Engineering**

Dear Ron,

ALS Environmental received 2 sample(s) on Dec 19, 2019 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy C. Neir', is written over a light blue horizontal line.

Generated By: JUMOKE.LAWAL
Andy C. Neir

Client: HK Engineering
Project: HK Engineering
Work Order: HS19121103

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS19121103-01	10850327 GSI	Water		18-Dec-2019 13:35	19-Dec-2019 10:20	<input type="checkbox"/>
HS19121103-02	10850327 GSIF	Water		18-Dec-2019 13:30	19-Dec-2019 10:20	<input type="checkbox"/>

Client: HK Engineering
Project: HK Engineering
Work Order: HS19121103

CASE NARRATIVE

WetChemistry by Method SM5310B

Batch ID: R353185

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E300

Batch ID: R353136

Sample ID: HS19121088-01MS

- MS and MSD are for an unrelated sample
-

Client: HK Engineering
 Project: HK Engineering
 Sample ID: 10850327 GSI
 Collection Date: 18-Dec-2019 13:35

ANALYTICAL REPORT
 WorkOrder:HS19121103
 Lab ID:HS19121103-01
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL ORGANIC CARBON - SM5310B		Method:SM5310B				Analyst: MWG
Organic Carbon, Total	2.65		1.00	mg/L	1	23-Dec-2019 22:21

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: HK Engineering
 Project: HK Engineering
 Sample ID: 10850327 GSIF
 Collection Date: 18-Dec-2019 13:30

ANALYTICAL REPORT
 WorkOrder:HS19121103
 Lab ID:HS19121103-02
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY E300.0		Method:E300		Analyst: KMU		
Fluoride	3.97		0.100	mg/L	1	23-Dec-2019 14:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: HK Engineering
Project: HK Engineering
WorkOrder: HS19121103

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: R353136 (0)		Test Name : ANIONS BY E300.0			Matrix: Water	
HS19121103-02	10850327 GSIF	18 Dec 2019 13:30			23 Dec 2019 14:22	1
Batch ID: R353185 (0)		Test Name : TOTAL ORGANIC CARBON - SM5310B			Matrix: Water	
HS19121103-01	10850327 GSI	18 Dec 2019 13:35			23 Dec 2019 22:21	1

Client: HK Engineering
 Project: HK Engineering
 WorkOrder: HS19121103

QC BATCH REPORT

Batch ID: R353136 (0) Instrument: ICS-Integrion Method: ANIONS BY E300.0

MBLK	Sample ID: WBLKW1-122319	Units: mg/L	Analysis Date: 23-Dec-2019 10:29						
Client ID:	Run ID: ICS-Integrion_353136	SeqNo: 5405857	PrepDate: DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit	RPD Qual
Fluoride	ND	0.100							

LCS	Sample ID: WLCSW1-122319	Units: mg/L	Analysis Date: 23-Dec-2019 10:46						
Client ID:	Run ID: ICS-Integrion_353136	SeqNo: 5405858	PrepDate: DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit	RPD Qual
Fluoride	3.993	0.100	4	0	99.8	90 - 110			

LCSD	Sample ID: WLCSDW1-122319	Units: mg/L	Analysis Date: 23-Dec-2019 11:02						
Client ID:	Run ID: ICS-Integrion_353136	SeqNo: 5405859	PrepDate: DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit	RPD Qual
Fluoride	3.918	0.100	4	0	97.9	90 - 110	3.993	1.91	20

MS	Sample ID: HS19121088-01MS	Units: mg/L	Analysis Date: 23-Dec-2019 11:36						
Client ID:	Run ID: ICS-Integrion_353136	SeqNo: 5405861	PrepDate: DF: 10						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit	RPD Qual
Fluoride	14.18	1.00	20	0.21	69.8	80 - 120			S

MSD	Sample ID: HS19121088-01MSD	Units: mg/L	Analysis Date: 23-Dec-2019 11:52						
Client ID:	Run ID: ICS-Integrion_353136	SeqNo: 5405862	PrepDate: DF: 10						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit	RPD Qual
Fluoride	13.67	1.00	20	0.21	67.3	80 - 120	14.18	3.63	20 S

The following samples were analyzed in this batch: HS19121103-02

Client: HK Engineering
 Project: HK Engineering
 WorkOrder: HS19121103

QC BATCH REPORT

Batch ID: R353185 (0) Instrument: TOC_02 Method: TOTAL ORGANIC CARBON - SM5310B

MBLK	Sample ID: WBLKW1-122319	Units: mg/L	Analysis Date: 23-Dec-2019 19:59						
Client ID:	Run ID: TOC_02_353185	SeqNo: 5406774	PrepDate: DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit	RPD Qual

Organic Carbon, Total ND 1.00

LCS	Sample ID: WLCSW1-122319	Units: mg/L	Analysis Date: 23-Dec-2019 20:12						
Client ID:	Run ID: TOC_02_353185	SeqNo: 5406775	PrepDate: DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit	RPD Qual

Organic Carbon, Total 9.355 1.00 10 0 93.6 85 - 115

LCSD	Sample ID: WLCSDW1-122319	Units: mg/L	Analysis Date: 23-Dec-2019 20:23						
Client ID:	Run ID: TOC_02_353185	SeqNo: 5406776	PrepDate: DF: 1						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit	RPD Qual

Organic Carbon, Total 9.283 1.00 10 0 92.8 85 - 115 9.355 0.773 20

MS	Sample ID: HS19121088-01MS	Units: mg/L	Analysis Date: 23-Dec-2019 21:01						
Client ID:	Run ID: TOC_02_353185	SeqNo: 5406779	PrepDate: DF: 5						
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit	RPD Qual

Organic Carbon, Total 63.95 5.00 50 15.64 96.6 80 - 120

The following samples were analyzed in this batch:

Client: HK Engineering
Project: HK Engineering
WorkOrder: HS19121103

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS, ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	19-028-0	27-Mar-2020
California	2919, 2019-2020	30-Apr-2020
Dept of Defense	ANAB L2231	20-Dec-2021
Florida	E87611-28	30-Jun-2020
Illinois	2000322019-2	09-May-2020
Kansas	E-10352 2019-2020	31-Jul-2020
Kentucky	123043, 2019-2020	30-Apr-2020
Louisiana	03087, 2019-2020	30-Jun-2020
Maryland	343, 2019-2020	30-Jun-2020
North Carolina	624-2019	31-Dec-2019
North Dakota	R-193 2019-2020	30-Apr-2020
Oklahoma	2019-067	31-Aug-2020
Texas	TX104704231-19-23	30-Apr-2020

Sample Receipt Checklist

Client Name: HK Engineering
Work Order: HS19121103

Date/Time Received: 19-Dec-2019 10:20
Received by: JRM

Checklist completed by: Paresh M. Giga
eSignature | 19-Dec-2019
Date

Reviewed by: Andy C. Neir
eSignature | 20-Dec-2019
Date

Matrices: Water

Carrier name: FedEx

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes No Not Present
- Chain of custody present? Yes No 1 Page(s)
- Chain of custody signed when relinquished and received? Yes No COC IDs:206560
- Samplers name present on COC? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Yes No

Temperature(s)/Thermometer(s): 1.3c U/c IR11

Cooler(s)/Kit(s): 44701

Date/Time sample(s) sent to storage: 12/19/19 19:35

Water - VOA vials have zero headspace? Yes No No VOA vials submitted

Water - pH acceptable upon receipt? Yes No N/A

pH adjusted? Yes No N/A

pH adjusted by:

Login Notes:

Client Contacted: Date Contacted: Person Contacted:
Contacted By: Regarding:

Comments:

Corrective Action:



Cincinnati, OH
+1 513 733 5336
Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511
Holland, MI
+1 616 399 6070

Chain of Custody Form

Page _____ of _____

COC ID: 206560

Houston, TX
+1 281 530 5656
Middletown, PA
+1 717 944 5541

Spring City, PA
+1 610 948 4903
Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3166
York, PA
+1 717 505 5280


Customer Information		Project Information		ALS Project Manager:		ALS Work Order #:	
Purchase Order		Project Name	HK Engineering	ALS Project Manager:		ALS Work Order #:	
Work Order		Project Number		ALS Project Manager:		ALS Work Order #:	
Company Name	HK Engineering	Bill To Company	HK Engineering	ALS Project Manager:		ALS Work Order #:	
Send Report To		Invoice Attn	Ron Broussard	ALS Project Manager:		ALS Work Order #:	
Address	241 Broussard Rd	Address	241 Broussard Rd	ALS Project Manager:		ALS Work Order #:	
City/State/Zip	Pollock, LA 71467	City/State/Zip	Pollock LA 71467	ALS Project Manager:		ALS Work Order #:	
Phone	(318) 765-3398	Phone		ALS Project Manager:		ALS Work Order #:	
Fax		Fax		ALS Project Manager:		ALS Work Order #:	
e-Mail Address		e-Mail Address	ronneybroussard@outlook.com	ALS Project Manager:		ALS Work Order #:	
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	
1	10850327 GSI	12/18/19	1335 HRS			2	
2	10850327 GSI F	12/18/19	1330 HRS			1	
3							
4							
5							
6							
7							
8							
9							
10							
Samples, Please Print & Sign: Ronney L. Broussard		Shipment Method: FEDEX OVERNIGHT		Required Turnaround Time: (Check Box)		Results Due Date:	
Relinquished by: Ronney L. Broussard		Received by:		<input type="checkbox"/> STD 10 Wk Days <input checked="" type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 -hour <input type="checkbox"/> Other		<input type="checkbox"/> Level II Std OC <input checked="" type="checkbox"/> Level III Std OC <input type="checkbox"/> Level IV SK4693CLP	
Relinquished by:		Received by (Laboratory):		Notes:		Cooler Temp. (Check One Box Below)	
Date: 12/19/19		Time: 10:20		HK Engineering		Cooler ID: 447701	
Relinquished by:		Checked by (Laboratory):		Cooler Temp. 4.3		Level III Std OC	
Date: 12/19/19		Time: 12:11		CFD		Level IV SK4693CLP	
Relinquished by:		Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ SO ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035		<input type="checkbox"/> RRP Checklet <input type="checkbox"/> RRP Level IV			

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

Copyright 2011 by ALS Environmental.

Page 12 of 13

RIGHT SOLUTIONS | RIGHT PARTNER

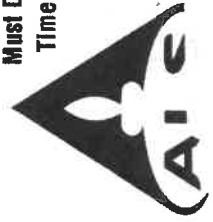
 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5687	10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5687	CUSTODY SEAL Date: 12/18/2019 Time: 3:50 HRS Name: AGNEV ROUSSARD Company: HK ENGINEERING	Seal Broken By: gm Date: 12/19/19
	10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5687	CUSTODY SEAL Date: 12/18/2019 Time: 3:50 HRS Name: AGNEV ROUSSARD Company: HK ENGINEERING	Seal Broken By: gm Date: 12/19/19

DEC 19 2019

 ALS 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5687	10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5687	CUSTODY SEAL Date: 12/18/2019 Time: 3:50 HRS Name: AGNEV ROUSSARD Company: HK ENGINEERING	Seal Broken By: gm Date: 12/19/19
	10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5687	CUSTODY SEAL Date: 12/18/2019 Time: 3:50 HRS Name: AGNEV ROUSSARD Company: HK ENGINEERING	Seal Broken By: gm Date: 12/19/19

Part # 159489-434 RIT2 EXP 10/20

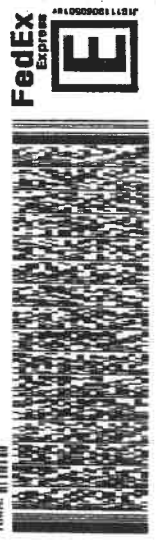
**Must Deliver Next Business Day
Time and Temperature Sensitive!**



uu701

RT 917 1 A
 10:30
 ORIGIN: HK ENGINEERING
 241 BROUSE FZ B03
 POLLOCK STR
 UNITED STATES
 DATE: 18DEC19
 9301 500120CFF82E11
 12.19 : 14x11x10 IN

TO CLIENT SERVICES
 ALS LABORATORY GROUP
 10450 STANCLIFF ROAD
 SUITE 210
 HOUSTON TX 77099
 (281) 530-5656
 REF: HK ENGINEERING - RO 68348 - AN



FedEx
 TXM 1251 0292 9381
 THU - 19 DEC 10:30A
 PRIORITY OVERNIGHT

AB SGRA

77099
 TX-US IAH



APPENDIX E

QUAD BARRIER FILTER DESIGN

Quad Barrier™ Filtration Model 3 Continuously Cleaned Media Filter

Simple, highly reliable, stainless steel, low energy, low maintenance, gravity flow media filtration of suspended solids below 5 microns.

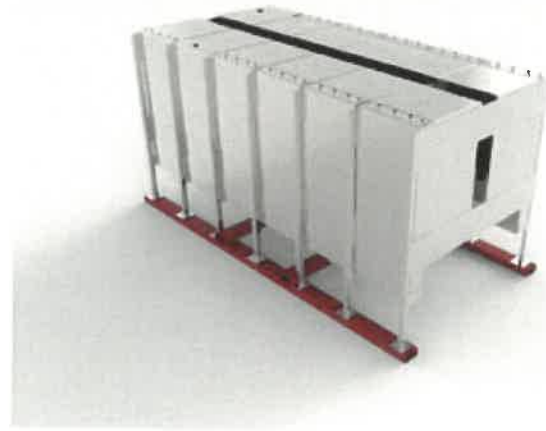
All potable water units are manufactured with materials and plumbing components that meet or exceed ANSI/NSF 61 and 372 certification, use UL certified electrical components, and are welded according to ANSI/NSF 61 Certification Standards as required by the US EPA under the Safe Drinking Water Act.

Model 3 can be mounted near a raw water source as a primary filtration, in a factory as pre-filtration in front of a membrane system, or on a transport device (truck or trailer) to provide mobility needed to use several raw water sources.

Highlights

- Recycles approximately 60% of backwash water
- Filter removes fine suspended solids below 5 microns and reduces biological oxygen demand by 45%
- Long life media without chemicals
- Total power consumption of 162 KWH per 100,800 gallons of filtrate
- NSF 61 and NSF 372 approved material and welded to meet ANSI/NSF 61 certification
- The pre-filtration application of this unit reduces fouling of membranes and other plant equipment
- Modular construction for redundant applications to provide unlimited flow rates
- Lowest operational cost, pays for itself quickly
- Media engineered to customer applications
- Voltage furnished per customer specifications
- Portable, floating intake available

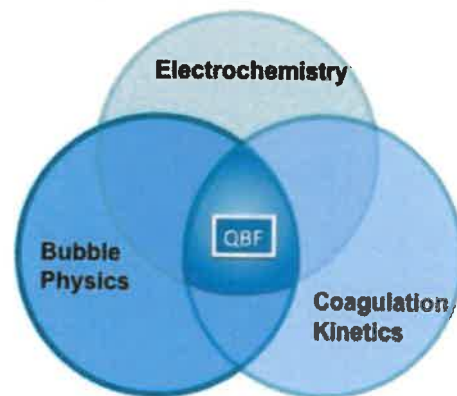
U. S. Patent 9,403,108



Quad Barrier™ Breakthrough

After years of research and development Global Splash has been able to develop a remarkably effective way to reduce turbidity, suspended solids, and total oxygen demand.

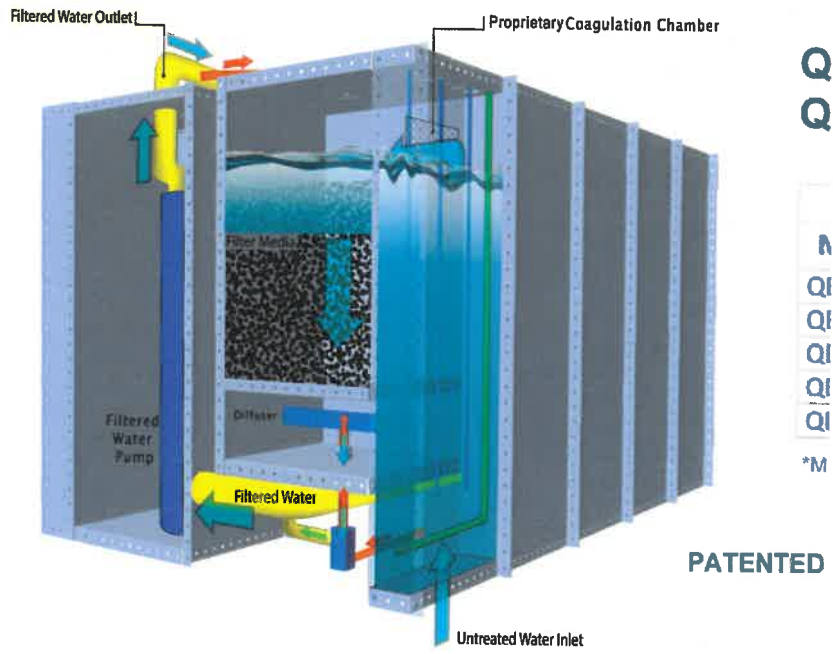
Our patented products combine research into electrochemistry, coagulation and bubble science to create superior reduction of contaminants less than 5 microns.



Rev 3/2017

318 Jones Street
Pineville, LA 71360-7097
Phone 855.255.2221
Fax 318.445.7264 www.globalsplashinc.com

THE QUAD BARRIER |



APPENDIX F

CORRESPONDENCES OF STUDY APPROVAL

N & A, INC.
NOWLIN & ASSOCIATES

CONSULTING ENGINEERS & LAND SURVEYORS

740 FRONT STREET
NATCHITOCHE, LA 71457
(318)-352-3665
(318)-352-8022 FAX

FIRM REGISTRATIONS

ENGINEERING: (LA: EF-192) (TX: 11589) (MS: E-2443)

SURVEYING: (LA: VF-211)

R. L. NOWLIN, PRESIDENT
J. NOLAN JOHNSON, P.E.
MICHAEL W. HILTON, P.E.
JAROD B. TAYLOR, E.I.

DEREK K. HOWARD, P.L.S.
BRANDON C. THORNTON, P.L.S.

April 4, 2019

Ms. Shelly Hebert
Department of Health and Hospitals
Office of Public Health, Enforcement
Post Office Box 4489
Baton Rouge, Louisiana 70821-4489

Re: Warning Letter for Town of Zwolle Water System, PWSID No.
1085032, Sabine Parish
N & A No. 131.020

Dear Ms. Hebert:

On September 28, 2018, the Town of Zwolle Water System received the warning letter regarding pending fines for the open Administrative Order No. C-16-085-0305-ETT. This letter is an updated response to that warning letter.

In our previous response letter, the Town of Zwolle submitted the following proposed timeline for resolving the outstanding ordered remedial action items of the above-mentioned administrative order. You can find the current status on the items listed in the timeline below.

October 2018 - Adjust level controls in the elevated storage tank to increase turnover in the elevated storage tank, decreasing age of water in the tank.

After monitoring the well use during peak hours of the day and the water level in elevated tank, it was determined that the elevated tank cycle was too long. The wells were running too often, about 18-20 hours a day, to keep up the water demand and the elevated tank was getting short

circuited. The elevated tank cycle was lowered from 11 feet to 6 feet. The daily well usage has decreased and there has been more turnover of the water in the elevated tank.

November 2018 - Choose treatment option for lowering TOC in source water/controlling D/DBP formations

The Town of Zwolle is planning to add a ground storage tank to allow for the water from six of the seven wells to combine and have adequate chlorine detention time before the treated water enters the distribution system. Well No. 7, the well with the highest TOC level, will be put in a pilot study with alternative equipment. This will lower the amount of chlorine required and stabilize the chlorine residuals in the distribution system. Once the ground storage tank is installed, an aeration system will be added to strip the TTHMs.

The process of seeking out funding options through USDA or the Safe Drinking Water Revolving Loan will be pursued.

April 2019 - Submit engineering plans for LDH approval

Engineering plans are still scheduled to be submitted for LDH approval in April 2019.

July 2019 - Begin construction on approved design

July 2020 - Implement new design

July 2021 - Achieve maintained compliance with state and federal maximum contaminant levels of D/DBPs

If you have any questions or if you feel further information is necessary, please feel free to contact us.

Sincerely,

N & A, Inc.

original signed by

Nolan Johnson, PE

cc: Town of Zwolle

Glenn Foret

From: Ronney Broussard <ronneybroussard@outlook.com>
Sent: Tuesday, September 17, 2019 12:47 PM
To: Glenn Foret
Subject: Fwd: Zwolle Water System

Begin forwarded message:

From: Autumn Permenter <Autumn.Permenter@la.gov>
Subject: RE: Zwolle Water System
Date: May 17, 2019 at 8:12:12 AM CDT
To: 'Nolan Johnson' <njohnson@nowlin-associates.com>
Cc: 'Jim Kilcoyne' <jkilcoyne@globalsplashinc.com>, 'Ronney Broussard' <ronneybroussard@outlook.com>, "G. J. \"Pie\" Martinez" <tozwolle@cp-tel.net>, Meghan Miller <mmiller@cenlaenvironmental.com>, "James Soileau (LDH)" <James.Soileau2@la.gov>, Hannah Beatty <Hannah.Beatty@la.gov>, Andrea Payton <Andrea.Payton1@la.gov>, James Monroe <James.Monroe@la.gov>

Nolan,

This pilot study is approved based on your responses below. Please be reminded that a full project review and permit approval will be required before the unit may be put into service for treatment of drinking water (no longer flushed to waste).

Let us know if you have any questions.

Thanks!

From: Nolan Johnson <njohnson@nowlin-associates.com>
Sent: Tuesday, May 7, 2019 5:06 PM
To: Autumn Permenter <Autumn.Permenter@la.gov>; James Monroe <James.Monroe@la.gov>
Cc: 'Jim Kilcoyne' <jkilcoyne@globalsplashinc.com>; 'Ronney Broussard' <ronneybroussard@outlook.com>; 'G. J. "Pie" Martinez' <tozwolle@cp-tel.net>; Meghan Miller <mmiller@cenlaenvironmental.com>
Subject: RE: Zwolle Water System

Ms. Permenter:

To Answer your questions we offer the following:

- It is our intention to connect the equipment to Well #7 and operate the equipment to treat the water from Well #7. The treated water from Well #7 will be flushed to waste. The water will be tested for removal of total organic compounds (TOC). Once we have established that it will remove TOC, we will seek to run chemical tests and a bacteriological test required by DHH/OPH

to supply the water to the public. Once we obtain that permission, we would then supply water to the public.

- The time necessary to determine the removal of TOC should be relatively short, no more than a few days. The chemical testing and bacteriological samples could be arranged after the TOC results are acceptable.
- Our intention is to remove precursors at Well #7 prior to disinfection. Other measures are being taken elsewhere in the system to address DBP's.
- SEE ATTACHED FLOW DIAGRAM.
- The stainless steel rods are expected to be changed on a 6-month frequency.

Nolan Johnson, PE
Civil & Environmental Engineering



740 Front Street
Natchitoches, LA 71457
(318) 352-3665 - Office
(318) 352-8022 - FAX
(318) 471-1241 - Cell

Firm Registrations:
Engineering (LA EF-192/TX 11589/ MS E-2443)
Surveying (LA VF-211)

From: Autumn Permenter [mailto:Autumn.Permenter@la.gov]
Sent: Tuesday, May 07, 2019 2:55 PM
To: 'Nolan Johnson'; James Monroe
Cc: 'Jim Kilcoyne'; 'Ronney Broussard'; 'G. J. "Pie" Martinez'
Subject: RE: Zwolle Water System

Nolan,

In order to approve the pilot study, we need clarification on a few items below:

- Will this be a full scale study or bench testing? Will a side stream from Well No. 7 be used and ultimately wasted, or will water be filtered and served to the public?
- What is the length of the proposed pilot study?
- Will DBP's be formed prior to the filter or will the filter be removing precursors, or both to compare best treatment options?
- Please provide a flow diagram of proposed treatment and filter arrangement.
- What metrics will you be using to determine ultimate success of the proposed filter?
- Will you be giving consideration to frequency of carbon regeneration once in use?

I appreciate your response.

Thanks!

From: Nolan Johnson <njohnson@nowlin-associates.com>
Sent: Friday, April 5, 2019 10:00 AM
To: James Monroe <James.Monroe@la.gov>; Autumn Permenter <Autumn.Permenter@la.gov>
Cc: Jim Kilcoyne <jkilcoyne@globalsplashinc.com>; 'Ronney Broussard' <ronneybroussard@outlook.com>; G. J. "Pie" Martinez <tozwolle@cp-tel.net>
Subject: Zwolle Water System

Ms. Permenter and Mr. Monroe:

Please find attached copies of the brochures from the parties wishing to perform the pilot study on Well #7 on the Zwolle water system.

If this study is successful, the TOC from this well will be greatly reduced, thereby reducing DBP precursors.

We should know what the results are fairly quickly. I believe we should have the results within a month or two.

If we achieve acceptable reduction of TOC's through the treatment process, we would like to perform the necessary water samples to put the system on water system.

Please notify us if this is an acceptable plan.

Thank you,

Nolan Johnson, PE
Civil & Environmental Engineering



740 Front Street
Natchitoches, LA 71457
(318) 352-3665 - Office
(318) 352-8022 - FAX
(318) 471-1241 - Cell

Firm Registrations:
Engineering (LA EF-192/TX 11589/ MS E-2443)
Surveying (LA VF-211)